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

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

April 8, 2015

Exemption No. 11290
Regulatory Docket No. FAA−2014−0474

Mr. Paul Misener
Vice President, Global Public Policy
Amazon.com
440 Terry Avenue North
Seattle, WA 98109

Dear Mr. Misener:

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

The Basis for Our Decision

By letter dated July 9, 2014,[1] you petitioned the Federal Aviation Administration (FAA) on behalf of Amazon.com (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct outdoor research and development testing for Prime Air.

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

Discussion of Public Comments:

A summary of the petition was published in the Federal Register on August 15, 2014 (79 FR 48294). Nine comments were received. Four commenters, the Small UAV Coalition (Coalition), Association for Unmanned Vehicle System International (AUVSI), the

[1] By letter dated December 7, 2014, and posted to the public docket on December 8, 2014, the petitioner responded to the FAA's request for information.

Unmanned Safety Institute (USI), and an individual supported the petition. Five commenters, the Air Line Pilots Association, International (ALPA) the National Agricultural Aviation Association (NAAA), and three individuals 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 Public Law 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 petitioner's UAS pose considerably less safety risk than larger UAS used for defense and other aerospace purposes. 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[2] 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: location, the airspace and altitude of its small UAV operations, limited operational site access, two-way communications capability, and pilot training and experience. 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 waive or exempt the requirement to hold an airman certificate. The Coalition further stated that applying manned aircraft pilot certification requirements to small unmanned aircraft is not necessary as a matter of safety, and does not make sense as a matter of public policy.

The FAA notes that, as discussed in the grant of exemption to Trimble Navigation Ltd. (Exemption No. 11110), neither Section 333, nor the FAA's exemption authority[3] allows the FAA to exempt pilots from the statutory requirement to hold an airman certificate as prescribed in 49 U.S.C. § 44711.

AUVSI asserted that Amazon's petition adequately addressed the safety requirements of a number of FAA regulations. AUVSI and an individual commenter noted that there is a

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[2] 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; . . . ."

[3] 49 U.S.C. § 44701(f)

compelling need for the FAA to allow Amazon to test their systems to ensure the next evolution in package delivery happens in the United States first. They also cited the economic benefits of small UAS.

USI supported the petitioner's proposed operating conditions and parameters, including the use of highly qualified crews, line of sight operations, and restricted operating areas. USI suggested the petitioner adopt a Safety Management System and ensure all crews are trained in risk identification and Crew Resource Management. USI encouraged the FAA to work with the petitioner to mitigate risks associated with the expansion of the project to a full scale network of delivery UAS.

ALPA expressed concern that the request is for an outdoor private test range, proximate to densely populated areas with substantial air traffic. ALPA stated that specific details of each operation must be coordinated with the FAA, which would result 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 that each exemption holder operate under a Certificate of Waiver or Authorization (COA) which addresses airspace considerations, including requiring issuance of a NOTAM prior to operations. The FAA recognizes that UAS integration will generate new NAS access demand and will review and adjust accordingly.

NAAA commented on pilot qualification stating that UAS operators should be required to hold commercial pilot certificate to ensure they are aware of their responsibilities as commercial operators in the NAS. They also stated that medical requirements ensure operators have the necessary visual and mental acuity to operate a commercial aircraft.

The FAA has reviewed the knowledge and training requirements of sport, recreational, private and commercial certificates and concluded that a UAS PIC holding a minimum of a sport pilot certificate, and operating under this exemption, would not adversely affect operations in the NAS or present a hazard to persons or property on the ground. Additionally, as discussed in Exemption No. 11213 (Aeryon Labs, Inc.) the FAA has determined that operating a UAS with a U.S. issued driver's license rather than an FAA-issued medical certificate will not adversely affect safety.

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 Airmen (NOTAM) 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, and be painted in high-visibility colors. NAAA also recommended UAS be operated strictly within the line-of-sight of the ground controller, with the assistance of a VO.

As discussed 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.

Individual commenters noted that the FAA should not permit commercial small UAS operations until noise levels are significantly reduced and a Preliminary System Safety Assessment in accordance with SAE ARP4761 is completed.

Airworthiness Certification

The UAS proposed by the petitioner is an Amazon-manufactured multi-rotor small UAS that has been described to the FAA in a confidential filing.

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

The Basis for Our Decision

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

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

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

Our Decision

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

Conditions and Limitations

In this grant of exemption, Amazon.com is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the an Amazon-manufactured multi-rotor small UAS that has been described to the FAA in a confidential filing when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all

potential discrepancies, e.g. inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

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

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of

the risk of operating closer to those objects and determined that it does not present an undue hazard.

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

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

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

This exemption terminates on April 30, 2017, unless sooner superseded or rescinded.

Sincerely,

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

amazon.com

VIA FDMS

The Honorable Michael P. Huerta
Administrator
Office of the Administrator
Federal Aviation Administration
800 Independence Avenue SW
Washington, DC 20591

July 9, 2014

Re: Amazon Petition for Exemption

Dear Administrator Huerta:

At Amazon, our energy comes from inventing on behalf of customers. Amazon Prime Air, a new delivery system that will get packages to customers in 30 minutes or less using aerial vehicles, is one invention we are incredibly passionate about. We believe customers will love it, and we are committed to making Prime Air available to customers worldwide as soon as we are permitted to do so.

Amazon shares Congress's goal of getting small aerial vehicles (a.k.a., small unmanned aircraft systems, or "sUAS") flying commercially in the United States safely and soon. In the FAA Modernization and Reform Act of 2012, Congress directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system" and, under Section 333 of that law, gave the FAA power to grant innovators "expedited operational authorization" to do so. By this petition, Amazon is seeking its first such authorization, in order to conduct additional research and development for Prime Air.

We are rapidly experimenting and iterating on Prime Air inside our next generation research and development lab in Seattle. In the past five months, we have made advancements toward the development of highly-automated aerial vehicles for Prime Air, including:

- Testing a range of capabilities for our eighth- and ninth-generation aerial vehicles, including agility, flight duration, redundancy, and sense-and-avoid sensors and algorithms;

- Developing aerial vehicles that travel over 50 miles per hour, and will carry 5-pound payloads, which cover 86% of products sold on Amazon; and

- Attracting a growing team of world-renowned roboticists, scientists, aeronautical engineers, remote sensing experts, and a former NASA astronaut.

Current FAA rules allow hobbyists and manufacturers of model aircraft wide latitude in flying their sUAS outdoors. Because Amazon is a commercial enterprise we have been limited to conducting R&D flights indoors or in other countries. Of course, Amazon would prefer to keep the focus, jobs, and investment of this important research and development initiative in the United States by conducting private research and development operations outdoors near Seattle – where our next generation R&D lab and distinguished team of engineers, scientists and aeronautical professionals are located. In order to allow outdoor R&D testing for Prime Air in the United States, we are submitting this petition for exemption pursuant to Section 333 of the FAA Modernization and Reform Act of 2012.

Granting Amazon an exemption to allow R&D testing outdoors in the United States is in the public interest because it advances Congress's goal of getting commercial sUAS flying in the United States safely and soon. It is a necessary step towards realizing the consumer benefits of Amazon Prime Air and, at this point, Amazon's continuing innovation in the United States requires the requested exemption for outdoor testing in support of our R&D.

Further, granting this request will do nothing more than allow Amazon to do what thousands of hobbyists and manufacturers of model aircraft do every day, and we will abide by much stronger safety measures than currently required for these groups by FAA policies and regulations. In this petition for exemption, we seek to engage in essentially the same type of sUAS operation that the FAA would permit us to currently – but for the fact that Amazon is not a hobbyist or manufacturer of a model aircraft.

One day, seeing Amazon Prime Air will be as normal as seeing mail trucks on the road today, resulting in enormous benefits for consumers across the nation. We respectfully submit this petition for exemption so that Prime Air can be ready to launch commercial operations as soon as eventually permitted by subsequent FAA action.

Information Supporting this Petition as Specified in 14 C.F.R. §11.81

(a) Mailing address and other contact information such as a fax number, telephone number, or e-mail address

Amazon.com
Legal Department
Re: Prime Air Exemption Petition
440 Terry Ave. North
Seattle, WA 98109
Fax: 206-266-7010
Email: prime-air-exemption@amazon.com

(b) The specific section or sections of 14 C.F.R. from which Amazon seeks an exemption

- 14 C.F.R. § 21.191(a) – *Experimental Certificates*
- 14 C.F.R. § 45.23(b) – *Display of marks; general*
- 14 C.F.R. § 91.9(b) – *Civil aircraft flight manual, marking, and placard requirements*
- 14 C.F.R. § 91.203(a) and (b) – *Civil Aircraft: Certifications Required*

We believe an exemption from the regulations noted above will be sufficient to conduct the R&D described in this exemption request. To the extent that FAA may deem it necessary, however, we also request an exemption from any regulations ancillary to the foregoing that may be needed to facilitate the desired operations.[1]

(c) The extent of relief Amazon seeks, and the reason Amazon seeks the relief

We seek an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 45 and 91 to the extent necessary to engage in private, non-commercial R&D operations of sUAS on our own property that would otherwise be expressly permitted if conducted by a hobbyist or a

[1] Given the nature of the specific relief sought by this exemption request under 14 C.F.R. §§ 21.191(a), 45.23(b), 91.9(b) and 91.203(a) and (b), and the particular contours of our desired testing operations and proposed safeguards, a request for relief from any associated or implementing requirements of several related provisions that may otherwise be applicable, such as 14 C.F.R. §§ 91.7(a) (civil aircraft airworthiness); 91.103(b) (pre-flight action); 91.109 (flight instruction); 91.119 (minimum safe altitudes); 91.121 (altimeter settings); 91.151(a) (fuel requirements in VFR conditions); 91.405(a) (maintenance required); 91.407(a)(1) (operation after maintenance, preventative maintenance, rebuilding, or alteration); 91.409(a)(2) (inspections); and 91.417(a) and (b) (maintenance records), should either be unnecessary as moot or deemed incorporated herein. Nevertheless, we seek an exemption from any such specific provisions to the extent FAA finds it necessary to grant this request.

manufacturer producing such sUAS.[2] We have detailed, below, a significant set of safeguards that will apply to these R&D operations. Operations under these safeguards will provide for a level of safety exceeding the level of safety required of similar sUAS operations that FAA authorizes currently and without requiring compliance with the regulations from which we seek an exemption. Moreover, our operations will not "create a hazard to users of the national airspace system or the public or pose a threat to national security"[3] and are thus consistent with the congressional mandate in Section 333 of the FAA Modernization and Reform Act of 2012, which gives FAA a mechanism to allow certain UAS to operate safely in the national airspace system.

We also intend to use one or more of the six FAA-selected test sites and seek a special airworthiness certificate (experimental category) for our sUAS. However, it would be impractical for Amazon to pursue either one of these avenues as our sole or even primary method of R&D testing at this time, and doing so would unnecessarily tax scarce FAA resources. For example, it would be an unreasonable burden on both the FAA and Amazon if we were required to apply for a special airworthiness certificate for every sUAS design or testing configuration while we are in R&D and conducting rapid prototyping.

(d) The reasons why granting Amazon's request would be in the public interest; that is, how it would benefit the public as a whole

As described above, Prime Air will be a new delivery system that is poised to offer enormous consumer benefits by delivering packages to customers in 30 minutes or less. Please see the introduction for details on how granting this request would benefit the public.

(e) 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 Amazon seeks the exemption

Our R&D operations will provide for a level of safety that far exceeds the level of safety required by FAA for hobbyists and manufacturers of model aircraft.[4] The following operating procedures will apply during the R&D testing conducted under this exemption request:

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[2] *See* Pub. L. No. 112-95, § 336, 126 Stat. 77-78.

[3] *See id.,* § 333, 126 Stat. 76.

[4] Because Amazon's desired testing operations could not possibly be conducted using conventional aircraft, the level of safety required of hobbyists and manufacturers of model aircraft is the appropriate comparison.

- The sUAS will (i) have a maximum weight of less than 55 pounds; (ii) be rotor-powered via a battery source; and (iii) be U.S.-registered and display marks in accordance with 14 C.F.R. Part 45, Subpart C.[5]

- Our sUAS R&D testing under this exemption will be conducted (i) within the visual line of sight of the operator and/or one or more observers; (ii) at less than 400 feet AGL; and (iii) within Class G airspace.

- The operations will be conducted in a confined area over isolated Amazon private property located a sufficient distance away from (i) any airport, heliport, seaplane base, spaceport or other location with aviation activities; (ii) any densely populated areas; and (iii) any military or U.S. government installations or airfields.[6]

- All operations will remain within the lateral and vertical boundaries of the operating area, taking into account all factors, including wind, gross weight and glide distances, that may affect the capability of the sUAS to remain within the airspace boundary; moreover, the integrity of the operating area will be reinforced by geo-fencing,[7] including the ceiling height of no more than 400 feet AGL.

- Our sUAS R&D testing under this exemption will be conducted (i) under the supervision of a designated pilot in command (PIC) who has final responsibility for the operation in accordance with 14 C.F.R. § 91.3 and either (A) holds a current FAA private pilot certificate issued under 14 C.F.R. Part 61, Subpart E, a higher FAA pilot certification, or a FAA-recognized equivalent[8] or (B) has completed FAA private pilot ground instruction and passed the FAA private pilot written

[5] To the extent that FAA determines that the Amazon sUAS operating under this exemption must bear an "experimental" marking, we seek an exemption from 14 C.F.R. § 45.23(b) to accommodate the required markings pursuant to 14 C.F.R. § 45.29(f).

[6] We will apply separately for the necessary certificates of waiver from the requirements of 14 C.F.R. §§ 91.113 and 91.119 and the associated airspace authorization. Specific details of the operating area, including latitude and longitude, and aeronautical charts and/or photographs, will be provided in conjunction with that application process.

[7] Geo-fencing is a feature in a software program that uses GPS or radio frequency triangulation to define geographical boundaries. A geo-fence is a virtual barrier – effectively an electronic box in which the sUAS will be confined.

[8] A private pilot certificate should be sufficient for the PIC to conduct these research and development sUAS flights. *See* 14 C.F.R. § 61.113(b).

examination or FAA-recognized equivalent; and (ii) using only operators that have completed training on the normal, abnormal, and emergency procedures in specific details and demonstrated proficiency with the sUAS being operated.

- No operator or observer will engage in, nor may an operator or observer permit, any activity during a critical phase of flight which could distract any operator or observer from the performance of his/her duties or interfere in any way with the proper conduct of his/her duties.

- Operators will maintain the sUAS system in a condition for safe operation, and conduct a pre-flight inspection prior to each flight so as to ensure that the sUAS, control station, data link equipment, payload, and support equipment are in a condition for safe operation and in a configuration appropriate for the purpose of the intended flight.

- The operators and observers will maintain two-way communications with each other during all operations; if unable to maintain two-way communications, or if any condition occurs that may otherwise cause the operation to be unsafe, the operator will immediately conclude the operation.

- Each sUAS will safely stop operating and return automatically to a specific location on Amazon's private property if the communications link is lost.

- For each sUAS, the observer will have the ability to press a physical button, that will be within his/her reach at all times, that reduces power to the vehicle so as to force a controlled landing; both the hardware and communication for this safety system will be physically separate from the sUAS flight control systems.

- Testing operations will be conducted on private property, and only Amazon employees, contract personnel, and invitees will be invited to the operations area; security measures will be put in place to deter unauthorized access.

- The aircraft documentation required by 14 C.F.R. §§ 91.9 and 91.203(b), as applicable, will be available to the PIC referred to above at any time Amazon's sUAS are operating.

We will effectively operate our own private model airplane field, but with additional safeguards that go far beyond those that FAA has long-held provide a sufficient level of safety for public model airplane fields – and only with sUAS. Indeed, the combination of the geo-fencing and lost-

link procedures described above will ensure the sUAS stays within the tightly defined operating area within our private property.

(f) A summary FAA can publish in the FEDERAL REGISTER, stating: (1) The rule from which you seek the exemption; and (2) A brief description of the nature of the exemption you seek

Petitioner: Amazon.com, Inc.

Sections of 14 C.F.R. Affected: §§ 21.191(a); 45.23(b); 91.9(b); and 91.203(a) and (b)

Description of Relief Sought: Petitioner seeks relief from the requirements of 14 C.F.R. §§ 21.191(a); 45.23(b); 91.9(b); and 91.203(a) and (b) to conduct private, non-commercial small unmanned aircraft systems (sUAS) operations on its own property subject to operating procedures that meet or exceed those that FAA requires for similar operations.

(g) Any additional information, views or arguments available to support your request

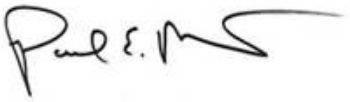
Please see the introduction to this exemption request.

(h) If you want to exercise the privileges of your exemption outside of the United States, the reason why you need to do so.

The research and development operations described in this exemption request will be conducted wholly within the United States.

Please do not hesitate to contact me via email at prime-air-exemption@amazon.com if you have any questions or concerns.

Respectfully submitted,



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