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

Subject: Amendment to Exemption 18163 to maintain and progress toward more economically viable operations

References:

1. FAA Exemption No. 18163A, dated October 11, 2019; Regulatory Docket No. FAA-2018-0835
2. Wing petition for exemption dated August 31, 2018; Regulatory Docket No. FAA-2018-0835
3. FAA Policy "Type Certification of Certain Unmanned Aircraft Systems", Vol. 85, No. 182 Federal Register, dated September 18, 2020.

To Whom It May Concern:

Pursuant to 14 C.F.R. Part 11, Wing Aviation LLC ("Wing") applies for an amendment to exemption 18163 regarding Federal Aviation Regulations ("FARs") in order to expand its UAS delivery services under 14 CFR Part 135 ("Part 135"). The proposed amendments are supported by 17 continuous months of safe Air Carrier operations in the United States. They will enable Wing to serve a greater number of households, and will help to advance the Federal Aviation Administration's (FAA) goal of enabling operations that are "repeatable, scalable and economically viable".

Wing is seeking amendment to the conditions and limitations in Exemption 18163. Wing is not seeking new regulatory relief to existing regulations.

<u>Amendment requested:</u>	
Regulation	No additional
<u>Modification requested:</u>	
Condition & Limitations	10, 67, 91, 95 (relating to training & remote operations) 1, 2, 4, 12.b, 15, 18, 61, 103a, (administrative updates)

I. Background

Wing aims to offer drone delivery as a safer, faster, and cleaner alternative to delivery by road. Today, our communities rely on delivery for everyday basics like food, medication, and household supplies. Likewise, delivery is a lifeline for local businesses. As part of a multimodal transport system, drone delivery can help to better connect our communities, support our local businesses, and offer a sustainable and contactless alternative to transport by road.[1]

Since completing full Air Carrier certification in October 2019, Wing has safely provided ongoing direct-to-home and on-demand delivery service to residents in Christiansburg, VA. During COVID-19, our service has helped residents to obtain essential goods; enabled local businesses to continue operating through restrictions; and demonstrated how UAS can help to improve safety and sustainability in transportation. For example, we continue to deliver a range of goods to meet the needs of local families, from Walgreens health products to school library books.[2] A Virginian business delivered 25 percent of its total sales via Wing during the early phase of the pandemic. Globally, use of our service grew 500 percent in 2020.

To date, Wing has completed several thousand deliveries directly to customers' homes across Christiansburg. Over these thousands of deliveries, there have been **zero accidents, incidents, or other significant events affecting the safety of Wing's operations**. Based on these results and experiences, Wing is now seeking to expand and improve upon these operations to serve additional communities. The requests described below will not increase the risk of Wing's operations as evidenced by tests, demonstrations, and operational experience.

Wing has successfully employed these methods including distributed aircraft arrangements, remote operations, and use of the aircraft intended for Type Certification in our commercial operations in Australia where we have conducted tens of thousands of deliveries to thousands of customers over the past year. Wing now seeks to bring these same operational efficiencies into its US commercial operations.

II. Discussion

A. Challenges

Recently, Wing has made substantial investments designed to increase both the safety and capacity of our US-based UAS operations. Enhancements in operational guidance, procedures, training and standardization are currently underway across Wing's fleet of operations. In order to realize the highest gains in safety and progress toward economic viability, it is necessary to consolidate our remote pilot operations from localized operating facilities ("nests") to regional operations facilities that are capable of safely controlling a larger number of aircraft simultaneously. Moving to this regional facility concept allows Wing to more effectively implement improvements to key safety programs, particularly operator training and standardization, system upgrades, and expansion of capacity to accommodate growth.

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[1] Virginia Tech, *Measuring the Effects of Drone Delivery in the United States*, 2020.
[2] *New York Times*, 'Kept out of the library, a school district tries summer reading by drone', 2020.

Also, Wing has garnered extensive experience in UAS operations at our locations in Australia and our US center in Christiansburg, VA with an impeccable safety record. That experience and demonstrated excellence in safe operations are clear justification that our operations are ready to safely and fully align with the governing Part 135 regulation that necessitates line checks of our operations staff every 12 months. Wing thus seeks relief from the FAA's interim restriction of operator line checks every 3 months.

Additionally, the COVID-19 pandemic has made the challenges of on-site staffing and in-person oversight particularly challenging through 2020-2021. Person to person contact should be minimized where possible, and travel is highly constrained. These conditions make it difficult for Wing to maintain or expand operations.

Like many companies, Wing is utilizing remote methods of coordination, collaboration, and oversight in its ancillary business activities. Born of necessity during COVID, many of these remote practices can be safely applied to our UAS operations in order to maintain and expand our service more safely. However, amendments are necessary to enable Wing to apply these improved practices to our operations.

B. Amendments

Wing seeks to amend exemption 18163 as necessary to allow for the following operational improvements. These practices are supported by lessons learned through 17 months of safe Air Carrier operations in the United States and through testing & demonstrations in support of Type Certification.

1. Remote PIC operations

Objective. Wing intends to locate regional PICs in a central hub, where the PIC for a given operating area may be located away from the operating area. This will improve service reliability with improved personnel coverage for breaks and unplanned absences.

Justification. The PIC would maintain the same awareness of the operating area and the same level of coordination with local ground personnel. Local ground personnel remain responsible for direct preflight checks of the aircraft, responding to ground conditions, and aircraft retrieval, positioning & storage. Primary crew communications and backup methods such as cellular communications are already employed in Wing's current operations and are unaffected by distance. The Wing system already relies on internet-based tools and remote servers to enable communication between the Wing Unmanned Aircraft ("UA") and the PIC. There are no technical limitations requiring the PIC to be co-located with the UA or the operating area. As there are no technical differences between Wing's currently employed systems (including UA control links, operations servers, crew communication methods), the remaining differences are limited to human factors elements involving crew communications and awareness of local environmental conditions. Wing proposes to adapt certain Crew Resource Management

practices, including enhancements to pre-operational personnel communications (e.g. daily pre-flight briefing methods), to reflect these arrangements.

See Training Manual and Checklist for additional details.

Reference Exemption 18163 Conditions & Limitations: 10.

2. Distributed operations

Objective. Wing's extensive experience in delivery operations has demonstrated that a flexible siting approach best serves the needs of our customers, partners and the community. Accordingly, Wing intends to stage UA at multiple sites throughout the operating area rather than centralizing all UA in a single ground operating site. This will improve service coverage across the community; help to connect residents with a wider range of local businesses, and reduce the operational footprint of individual nests.

Justification. Wing's flight operations tools already allow for a single PIC to control many UA regardless of their "nest" of origin. The PIC's primary duty is to oversee an operating area rather than monitoring individual aircraft. During these distributed nest operations, the PIC's level of aircraft control and awareness of the operating area remain unchanged, without modifying safety procedures.

See General Operations Manual, Training Manual, and Checklist for additional details.

Reference Exemption 18163 Conditions & Limitations: 91.

3. Line check interval

Objective. Exemption 18163 prescribes a three-month interval for line checks, with alternating checks performed by FAA personnel. These checks have proven burdensome upon the FAA and Wing, with specific challenges in scheduling and resourcing from both organizations, particularly during ongoing travel restrictions. However, Wing has developed and validated more robust and stringent methods of assessment, oversight, and monitoring to ensure the same level of safety and proficiency. Under temporary FAA approval, Wing has demonstrated successful line checks at 6-month intervals, and seeks to fully align the prescribed intervals with the governing Part 135 regulation that necessitates line checks of our operations staff every 12 months.

Justification. For traditional aircraft and operators, line checks are set at a 12 month interval. The FAA set an initial 3 month interval for Wing's operations as experience was gained. After well over a year of operations and several series of line checks, Wing and the FAA have gained this experience and can move forward to more traditional checking intervals. The results of each of Wing's existing line checks have been successful; none have revealed safety concerns. Wing is proposing to adopt a performance-based approach to oversight, or else to align the time interval with existing requirements for commercial operations. During 2020 Wing, along with

many other operators, were granted temporary relief and performed checks at an extended (in this case 6 month) interval. These checks continued to be successful and provide additional support for adjusting the current 3 month intervals.

See Training Manual for additional details.

Reference Exemption 18163 Conditions & Limitations: 67, 95.

4. Administrative updates

Wing intends to make use of a Type Certificated aircraft in its expanded operations that will have completed the FAA's process for demonstrating the durability and reliability of aircraft using a standardized aircraft Type Certification process (reference 3). The intended type-certificated aircraft version is a derivative of the current version that has been shown to be reliable in commercial operations and is highly similar in its operational characteristics. However, there are several changes required to identify and allow this alternative aircraft version in the exemption. These changes could be to either be less prescriptive in make/model/series designations to allow other certificated versions or replace references to reflect compatible aircraft version(s).

The following Conditions and Limitations in the exemption repeat specific references to make/model/series-specific information that are already contained in the FAA approved manuals and operations specifications for air carriers, including Wing. We would suggest making these references less specific in the exemption itself, in favor of controlling these aspects within the normal air carrier certification process.

Reference Exemption 18163 Conditions & Limitations: 1, 2, 4iv, 12.b, 15, 18, 61, 103.a.

C. Requested modifications

Regulation and/or Exemption	C&L	Modification Requested
18163A	10	Update as necessary to permit more remotely piloted operations. Suggested additional text: - PICs must be located in the country of operations.
18163A 135.293 135.299	67	Update condition and limitation to reflect training, checking, and currency program updates allowing for improved experience-supported intervals.
18163A	91	Update as necessary to reflect distributing aircraft throughout an operating area.
18163A	95	Clarify "immediate vicinity" relates to UA flight events to allow for methods described in the training program.
18163A	1, 2, 4iv,	Administrative update for less specific make/model/series information to allow for

	12.b, 15, 18, 61, 103.a	various operationally-equivalent Type Certificated variants.

Wing is also submitting the following proprietary documents in support of this Petition for Exemption amendment:

- 100280 Wing Concept of Operations
- 102698 General Operations Manual
- 102697 Training Program and Curriculum Manual
- 102267 Operational Checklist

These documents are being submitted on a confidential basis under separate cover pursuant to 14 C.F.R. §11.35(b), as the documents contain confidential commercial and proprietary information that Wing has not and will not share with others. The information contained in this material is not generally available to the public and is protected from release under the Freedom of Information Act, 5 U.S.C. § 552 et seq.

IV. Public interest

Wing provides a valuable delivery service that has helped to support American communities through the COVID-19 pandemic. Our service has helped residents to obtain essential goods on-demand; enabled local businesses to continue operating through restrictions; and demonstrated how UAS can help to improve safety, connectivity, and sustainability in the transportation of small goods.

Virginia Tech has released a report[3] studying the economic impact of drone delivery across the United States. The university modeled the effects of drone delivery on three metropolitan areas within five years of launch, representing a cross-section of U.S. cities: Christiansburg in Virginia, Austin in Texas and Columbus in Ohio. The study found that by adopting drone delivery at scale, a single major metropolitan area could experience significant social, economic, and mobility benefits. For example, in a single US metropolitan area, drone delivery could help to:

- avoid up to 294 million miles per year in avoidable road use;
- avoid up to 580 road accidents per year;
- reduce up to 113,900 tons of CO2 emissions per year;
- save residents up to 56 hours per year in avoidable travel;
- improve pharmaceutical access for 22,000 people who cannot adhere to prescription medication due to transportation challenges.

[3] Virginia Tech, *Measuring the Effects of Drone Delivery in the United States*, 2020.

Realizing the benefits of UAS delivery depends on safe, responsible, and scalable operations. Wing has demonstrated safe operations through 17 months of continuous service, and extensive testing. Wing continues to demonstrate our commitment to responsible flying, including through an extensive community engagement program.[4]

However, if UAS delivery is to remain a useful resource, industry and the FAA must continue to adapt to enable scalable and sustainable operations while meeting the same high level of safety. The challenges identified above are likely to impede scalable operations. Wing analysis suggests that existing requirements will make it infeasible to expand a light-footprint, distributed operation across a community. The proposed amendments will help ensure that more American households can experience the benefits of UAS technology, and they are supported by extensive real-world performance and safety data.

Further, the proposed amendments will advance the objectives of the FAA's BEYOND program of enabling operations that are "repeatable, scalable and economically viable with a specific emphasis on… small package delivery". In addition, they will help to realize major objectives of the former Integration Pilot Program that remain in the public interest, including to "open the skies for the delivery of… commercial packages" and to "help in the development of a future national aviation regulatory framework that can fuel American leadership in unmanned aviation".

We respectfully request timely evaluation of this amendment request.

Sincerely,

Chris Jackman

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[4] Wing and Mid-Atlantic Aviation Partnership, *Community Engagement: Best Practices for Drone Operators*, 2020.