



U.S. Department
of Transportation

**Federal Aviation
Administration**

Aviation Safety

800 Independence Ave
Washington, DC 20591

Exemption No. 18601B
Regulatory Docket No. FAA-2019-0573

Mr. Sean Cassidy
Director, Safety, Flight Operations and Regulatory
Amazon Prime Air
440 Terry Ave. N
Seattle, WA 98109

CORRECTED COPY

Dear Mr. Cassidy:

This letter is to inform you that the Federal Aviation Administration (FAA) has partially granted Amazon Prime Air's petition to amend Exemption No. 18601. This letter transmits the FAA's decision, explains the FAA's basis, and provides the conditions and limitations of the exemption, including the date the exemption ends. The exemption is being reissued due to typographical errors in the analysis and in Condition and Limitation Nos. 4, 21, 23, and 54 of the original issuance of Exemption No. 18601B.

In the original issuance of this exemption, the FAA incorrectly described its denial of the petitioner's request to remove a requirement for the unmanned aircraft (UA) to maintain a 100 ft. lateral distance from both persons and structures (Condition and Limitation No. 16 of Exemption No. 18601, Condition and Limitation No. 21 in this exemption). The FAA intended to remove the restriction insofar as it applies to structures, and this has been clarified in this issuance on pages 23-24. That portion of Condition and Limitation No. 21 remains unchanged.

Condition and Limitation No. 4, which lists manuals that the petitioner is required to maintain, erroneously described the manual listed at subparagraph (d). Identification of the manual should have read "Hazardous Materials Operations Manual and Training Program, Will- or Will-Not Carry in accordance with the operator's OpSpec."¹ This wording is included in this reissued exemption.

¹ "OpSpec" refers to operations specification.

Condition and Limitation No. 21 of the exemption at subparagraph (a)(iii) prohibits the overflight by the petitioner's UA of schools. The FAA inadvertently omitted "is prohibited" from the condition and limitation. These words have been included in this reissued exemption.

In Condition and Limitation No. 23, the FAA inadvertently used the phrase "operator's personnel" in subparagraph (a), rather than the intended "persons." This error has been corrected. The same error was also reflected in the FAA's analysis on page 24, which has also been corrected. Additionally, in subparagraph (c) of Condition and Limitation No. 23, the FAA inadvertently omitted language that would permit persons to remain closer than 100 ft. from operations in takeoff, landing, and delivery areas if a closer distance was approved by the Administrator, consistent with existing language in Condition and Limitation No. 21. Condition and Limitation No. 23 has been corrected to align with Condition and Limitation No. 21, along with related analysis on page 24.

When the exemption was initially issued, the wording "unless otherwise approved by the Administrator" was omitted from Condition and Limitation No. 54. This wording has been included in this reissued exemption.

Background

By a letter dated November 29, 2021, you petitioned the FAA on behalf of Amazon Prime Air (Amazon) for an amendment to Exemption No. 18601, which was issued on August 27, 2020. On July 11, 2022, you petitioned the FAA for an extension of Exemption No. 18601 if the previously requested amendment was not completed prior to the expiration of Exemption No. 18601. Exemption No. 18601 provided relief to Amazon from §§ 61.3(a), 61.23(a)(2), 61.113(a), 91.119(b) and (c), 91.121, 91.151(a) and (b), 135.63(c) and (d), 135.65(d), 135.93, 135.95(a), 135.149(a), 135.161(a)(1) through (3), 135.203(a)(1) and (b), 135.209(a) and (b), 135.243(b)(1) through (3), 135.337(b)(1), 135.338(b)(1), 135.339(e)(3) and (4), and 135.340(e)(3) and (4) of Title 14, Code of Federal Regulations (CFR). Exemption No. 18601 allowed Amazon to conduct Part 135 air carrier operations for commercial package delivery using the Amazon Prime Air MK27 (MK27) unmanned aircraft system (UAS), weighing over 55 pounds (lbs.) but no more than 88 lbs., in accordance with specific conditions and limitations listed in the exemption. On September 27, 2022, the FAA published Exemption No. 18601A, which extended the exemption to November 10, 2022, in order to provide more time for the FAA to review the amended exemption.²

In the petition for amendment dated November 29, 2021, Amazon requested revisions to Condition and Limitation Nos. 1, 3, 7, 11, 16, 17, 41, 48, 51, and 54 to reflect changes in the

² This amendment, Exemption No. 18601B, addresses the changes to Exemption No. 18601 that Amazon requested on November 29, 2021. As this exemption was being prepared, Exemption No. 18601A was published to extend the expiration date of Exemption No. 18601. Other than the expiration date extension, there were no changes between Exemption Nos. 18601 and 18601A. As such, this exemption analysis will refer to Exemption No. 18601, as that was the exemption that Amazon referenced in its petition.

operation. In addition, Amazon requested revisions to the following conditions and limitations to reflect changes in the names and duties of personnel: Condition and Limitation Nos. 19, 20, 24, 32, 33, 36, 37(a), 37(d), 37(e), 37(f), 37(g), 37(h), 37(i), 38, 39, 40, 45, 46, 52, 53, 55, 56, 57, 58, 59, 61, 65, 66, 66(g), 67, 68, 69, 75, 76, and 77.

In addition to the information in the petition, Amazon also provided the FAA with proprietary information, including its maintenance, operational and training manuals, as well as a revised Concept of Operations (CONOPS) to support its requests (“supporting documents”), as listed in Appendix A. This additional information aided the FAA in its analysis and disposition of Amazon’s requested revisions.

The FAA has completed a comprehensive review of Amazon’s requests and supporting documents, together with Amazon’s prior Exemption No. 18601. The FAA has also completed a comprehensive review of other exemptions providing similar relief, with similar conditions and limitations, that the FAA has granted to other petitioners during the two years since Exemption No. 18601 was issued. Based upon this analysis, the FAA has granted some of Amazon’s requests and denied others, as is discussed in detail below. The FAA has also granted additional regulatory relief, discussed below, to ensure continued safe operations and to provide flexibility as Amazon’s operation evolves. Finally, the language of certain conditions and limitations have been revised for clarity.

Summary of the Petition and Supporting Information

The Petitioner supports its request with the following information:

In its request for amendment to Exemption No. 18601, the petitioner states that it has operated the MK27 UAS under its Part 135 air carrier certificate for over a year and has conducted research to improve its equipment and operations. The petitioner states that it is now ready to transition to an improved, second-generation UAS known as the MK27-2, which features enhanced perception and can maintain controlled flight after losing a propulsion unit. The MK27-2 also includes part upgrades intended to improve service reliability. The petitioner contends that the MK27-2 can be operated safely without many of the conditions and limitations that were established in Exemption No. 18601 to govern its operation using the MK27, and now asks that these conditions and limitations be amended to reflect the upgraded capabilities and enhanced safety of the MK27-2.

The petitioner emphasizes that its research and development, testing, and collaboration have been extensive and have focused on the following goals: to develop a system that safely and efficiently meets customer’ needs, to design its UA to be highly autonomous and independently safe, and to enable safe, automated integration into the National Airspace System (NAS). The petitioner states that, under its current exemption, it has conducted thousands of successful operations using the MK27. The petitioner argues that it has applied this experience to its efforts to develop upgrades and safety enhancements. The petitioner intends to expand its operations with its new aircraft, the MK27-2. The petitioner asserts that the enhanced capabilities of the

MK27-2 will not only allow for safe operations with a reduced number of crewmembers but will also permit the safe conduct of operations over people and the safe delivery of cargo to customer backyards. The petitioner contends that none of its proposed changes would affect the FAA's basis for the public interest and safety determinations made when granting Exemption No. 18601.

MK27-2 Enhancements

The petitioner describes the MK27-2 as a fixed-wing aircraft that is capable of vertical takeoff and landing (VTOL) and wing-borne flight. According to the petitioner, like the MK27, the MK27-2 is a battery powered, staggered tandem wing, hexagonal-shaped composite airframe with six motors. The MK27-2 climbs and descends vertically and then cruises on wing borne flight using control surfaces for additional roll, pitch, and yaw control. The petitioner states that, like the original MK27, the MK27-2 also has an onboard health monitoring system that returns the UA to its launch location or lands at a suitable location in the event of an off-nominal condition. The petitioner is currently pursuing type certification of the MK27-2.³

According to the petitioner, the MK27-2 features three key enhancements that have been validated through the petitioner's flight testing and simulation.

First, the petitioner argues that one key enhancement is the capability to maintain controlled flight along a pre-planned route and transition between horizontal and VTOL flight after losing a propulsion unit. The petitioner states that, if the MK27-2 experiences the loss of a propulsion unit, it will either return to the launch location or safely land, depending on when it experiences the loss of a propulsion unit and its health state at the time.

Second, the petitioner explains that the MK27-2 has an enhanced perception system that allows for detection of people or obstacles below the UA during delivery or landing. The petitioner states that, if the MK27-2 detects a person or obstacle in the delivery area or cannot ascertain a clear delivery area, it immediately aborts the delivery mission and returns home. If the MK27-2 is commanded to perform an urgent land, either by the pilot in command (PIC)⁴ or by the onboard health monitoring system, it navigates to an area along its pre-planned route that is free of structures and other obstacles and selects the best landing location, maximizing distance from humans and obstacles. The petitioner states that the upgraded perception system installed on the MK27-2 provides for safe delivery operations in closer proximity to structures and argues that this permits the MK27-2 to reach more customer locations "while ensuring that persons and structures are not at risk."

³ The FAA granted Exemption No. 19031 on March 3, 2022, (with a revision issued on July 6, 2022) to facilitate operations that are conducted for the purpose of showing compliance with the FAA's airworthiness regulations.

⁴ The petition and ancillary documents submitted by Amazon used the term operator in command (OIC) to refer to the pilot in command (PIC) of an operation. OIC is not a regulatory term used by the FAA. Therefore, this exemption refers to a PIC to ensure regulatory consistency and to avoid any confusion or ambiguity from incorporating a non-regulatory term to refer to a regulated person. Accordingly, in this exemption document, the term "PIC" is used.

Third, the petitioner asserts that it has incorporated part upgrades to improve the MK27-2's service reliability.

The petitioner claims that these three enhancements will allow the MK27-2 to operate without many of the restrictions imposed by the FAA upon the original MK27. The petitioner also asserts that the new capabilities of the MK27-2 negate the need for the original MK27's Flight Termination System (FTS).

The original MK27 was equipped with an independent FTS that enabled a Safety Officer (SO) to terminate a flight in the event of off-nominal behavior. In light of the MK27-2's enhanced perception system, the petitioner argues that the FTS is no longer needed because the MK27-2 can automatically enact the urgent land contingency if its health monitoring system detects an issue, or, if a propulsion unit is lost, maintain controlled flight and locate and land in a safe landing area. In addition, the petitioner states that during operations using the MK27-2, the PIC can also command the UA to land in the event of a departure from the planned route of flight or any off-nominal behavior. Therefore, based on the enhancements made in the MK27-2, the petitioner has removed the FTS.

Consolidation of Required Personnel Positions

The petitioner states that the MK27-2 enhancements described above will enable it to reduce required personnel for its operation to three positions: PIC, Visual Observer (VO), and Autonomous Vehicle Assistant (AVA). The petitioner proposes eliminating the Ground Station Operator (GSO) position, the Aircraft Observer (AO) position, and the Backyard Safety Officer (BYSO) position. The petitioner also proposes redefining the Safety Officer (SO) position to eliminate flight crew duties. Instead, the SO will support multiple flight operations and ensure that the petitioner's operational safety procedures are followed. Finally, the petitioner also wishes to change the name of its Flight Assistant (FA) position to Autonomous Vehicle Assistant (AVA). The duties of the position will remain the same. The petitioner's PIC and VO position names and duties will both remain unchanged.

The petitioner notes that, during operation of the MK27, the GSO relayed the UA's status to the PIC and executed commands at the PIC's direction. Now, while operating the MK27-2, the PIC will be able to observe the UA's health status and enter commands directly at the ground control station. This change has made the GSO position unnecessary. Operation of the MK27 relied on the AO to maintain visual contact of the MK27 whenever the UA was in forward flight, as was required by the FAA. The AO was responsible for visually monitoring the aircraft and immediately reporting any sign of abnormal aircraft behavior to the PIC for action. The petitioner asserts that the enhanced capabilities of the MK27-2's health monitoring system, which notifies the PIC of any off-nominal flight behavior or system malfunction have made the AO position no longer necessary. Finally, during operations with the MK27, the petitioner's BYSO was needed to activate the FTS or request that the PIC issue an "urgent land" command in the event an off-nominal situation would impact the UA's capability to complete its delivery and

return home. The petitioner argues that the improved perception system and safety features of the MK27-2 have now rendered the BYSO position redundant.

The operational impact of these planned personnel changes is summarized in the petition and elaborated in the petitioner's updated CONOPS. The petition describes the prior operation, in general terms, as having required two roles—the GSO and the PIC—to control the aircraft. The petitioner explains that the PIC communicated commands via hand-held radio from the launch location to the GSO at the operation console, and the GSO input these commands. In its new proposed CONOPS, the petitioner describes its updated processes and procedures having the PIC located at the control console instead of the launch pad and entering commands directly. The petitioner has provided its revised PIC training curriculum intended to ensure that its PICs will be adequately trained in all the flight functions required for the UA's flight operations.

The petitioner explains that operations of the MK27 required SOs at takeoff, landing, and delivery sites to observe the UA, scan for hazards on the ground, and to terminate flight of the MK27 when needed by activating the FTS. During operations of the MK27, the BYSO would maintain visual contact with the UA during the transition to descent and delivery at the delivery location. If there was a deviation from course or a departure from controlled flight, this BYSO would either command an urgent land through communication with the PIC or activate the FTS, if warranted, after ensuring that the area underneath the UA was clear. For operations of the MK27-2, the petitioner's new CONOPS reflects a continued role for the SOs to maintain the safety of the flight operations in an administrative capacity. As such, the petitioner states that SOs will no longer be assigned to specific locations. Reliance will be placed on the technical capabilities of the new MK27-2 to ensure safe descents and landings of the UA at delivery locations.

Taking into account these planned changes, the petitioner proposes to include the following personnel in operations under this amended exemption and summarizes its crewmember duty positions and functions as shown in Table 1.

Table 1 – Petitioner's Proposed Duty Positions, Functions, and Qualifications

Duty Position	Functions	Qualifications
PIC	The PIC has final responsibility and authority for the safe operation and flight of the aircraft in accordance with relevant regulations and company policies and procedures. Executes vehicle commands through the ground control station and monitors system health status information. Responsible for flight conduct and contingency management.	<ul style="list-style-type: none"> Successful completion of the petitioner's FAA-approved training program for PICs Remote Pilot Certificate with a small UAS rating issued in accordance with Part 107 ("RPC") Holds at least a third-class medical certificate.
AVA	Responsible for battery installation, pre- and post-flight inspection of the aircraft, and aircraft transportation. Also responsible for weighing the item for delivery, loading it into the UA, and calculating the gross takeoff weight and center of gravity.	<ul style="list-style-type: none"> Successful completion of the petitioner's FAA-approved training program for AVAs RPC Repairman-B

Duty Position	Functions	Qualifications
VO	Responsible for identifying and communicating any potential aircraft conflicts, weather, or ground hazards to the PIC.	<ul style="list-style-type: none"> Successful completion of the petitioner's FAA-approved training program for VOs RPC
SO	Performs safety policy and promotion, safety assurance, data collection, safety meetings.	<ul style="list-style-type: none"> Completion of operator's training program

Requested Revisions to Conditions and Limitations

To meet its needs for the planned operations incorporating MK27-2 enhancements and with the restructured personnel positions, duties, and responsibilities described above, the petitioner requests the following substantive changes to the conditions and limitations established in Exemption No. 18601.

Condition and Limitation No. 7 stated that Exemption 18601 is limited to a “will-not carry” hazardous materials program, and that a change to a “will carry” hazardous material program would require a new FAA evaluation and an amendment to that exemption. Petitioner states that Condition and Limitation No. 7 is redundant of the terms set forth in its air carrier certificate that are contained in its operations specifications (OpSpec). According to the petitioner, its OpSpec prohibit the acceptance, handling, and transportation of hazardous materials. The petitioner states that if they wanted to transport hazardous materials, they would need to obtain FAA approval of their hazardous material manual and training program and receive an updated OpSpec. Due to the redundancy, petitioner requests that Condition and Limitation No. 7 be deleted.

Condition and Limitation No. 11 required, in part, a minimum safe altitude of 180 ft. AGL during cruise. Petitioner explains that a prescriptive altitude is unnecessary because the MK27-2 can ascend and descend during cruise to track terrain variations and that flights will be pre-planned to ensure ground-based obstacles are avoided. Petitioner states that it will review the FAA’s Daily Digital Obstacle File and NOTAMs when planning routes to capture any new potential ground hazards. According to petitioner, this route planning and the MK27-2’s enhanced features render a prescriptive generic minimum altitude unnecessary for safe operations. Given these enhancements, petitioner requests revision of Condition and Limitation No. 11 to remove the prescriptive minimum cruise altitude and read as follows: “Flight operations must be conducted at an altitude that would not create a hazard to persons or property on the ground. Flight operations must not exceed 400 ft. AGL.”

Condition and Limitation No. 16 required petitioner to meet the following:

- a. All operations must fly over airport property and contiguous parcels for which Amazon has pre-arranged exclusive use or access control.
- b. Operations over or within 250 ft. laterally of moving vehicles are prohibited.
- c. Sustained flight within 250 ft. laterally of roadways is prohibited.
- d. Operations over human beings and structures are prohibited. Additionally, the UA must remain at least 100 ft. laterally from any person or structure during all phases of

- flight.
- e. Transitions over roadways are prohibited except as provided in the FAA-approved Amazon Prime Air MK27, Concept of Operations.
 - f. Operations are permitted only in sparsely populated areas.

Petitioner states that the provisions of Condition and Limitation No. 16 are unnecessary given the MK27-2 enhancements. Specifically, petitioner claims that the MK27-2 is designed to safely transit over people, roads, and structures to deliver packages in customer backyards. Petitioner argues that Condition and Limitation No. 16.a is unnecessary because the enhancements allow it to operate over all rural areas, regardless of whether they have pre-arranged exclusive use or access control. Petitioner further argues that subsections b through f of Condition and Limitation No. 16 should be deleted because they are repetitive of the operational limitations contained in Condition and Limitation No. 22 in Exemption No. 18602. Based on this, petitioner requests Condition and Limitation No. 16 be deleted from this exemption. Petitioner also requests that these limitations be amended, and that the new limitations should exist only in Exemption No. 18602.

Condition and Limitation No. 17 required the designation of safe emergency landing area(s) and prescribed the requirements for such landing area(s). According to petitioner, the MK27-2's ability to navigate to an area that is free of structures and obstacles and to find a safe landing area in real time during an off-nominal situation removes the need for emergency landing areas. Petitioner also asserts that emergency landing areas are unnecessary because the delivery missions fly pre-planned routes over sufficient areas that have no permanent obstacles. The petitioner states that those routes are validated to be within the MK27-2's capabilities through simulation. Given these enhancements, petitioner states that predetermined emergency landing areas should not be required and requests that Condition and Limitation No. 17 be removed.

Condition and Limitation No. 41 set forth a lateral distance minimum of 100 ft. from sparsely populated terrain and human-made obstructions but permitted operations closer than this minimum in certain situations (i.e., take-off, landing and delivery). Petitioner states that obstruction clearance requirements should not be prescribed and requests that Condition and Limitation No. 41 be removed. Similar to its previous assertions, petitioner claims that the MK27-2's enhancements allow it to safely conduct transient flight over people and structures, and that this condition and limitation should be removed to reflect those capabilities. Petitioner further states that its delivery operations will be conducted closer than 100 ft. laterally to structures in order to reach customer's backyards and that the MK27-2's "onboard health monitoring and perception systems will ensure that there is no risk to the safety of humans or structures."

Condition and Limitation No. 48 set forth the pilot certification requirements for petitioner's PICs, GSOs, check pilots, and flight instructors. Petitioner states that, because the MK27-2 is autonomous and flies a pre-planned route, there are limited opportunities for command inputs, and that the pilotage skills utilized by a part 61 pilot to operate an aircraft are not performed when operating a UA. According to petitioner, the highly autonomous nature of the MK27-2

means that the operations can be safely conducted by persons who hold a remote pilot certificate issued in accordance with 14 CFR part 107 and who have received platform specific training based on part 61 licensing requirements. According to petitioner, the training provided will be robust and platform specific and will be given to its PICs in accordance with the approved MX27 CX-2 training curriculum. Petitioner further indicates that all PICs will have their part 107 certificate and a government-issued photo ID in their possession during operations and will make it available to the Administrator and any law enforcement upon request. Based on the above, petitioner requests that the FAA revise Condition and Limitation No. 48 to remove the requirement that a person acting as a PIC, check operator, or flight instructor hold a pilot certificate issued in accordance with 14 CFR Part 61. The petitioner proposes the following wording for Condition and Limitation No. 48: “Each PIC, check operator, and flight instructor must hold a remote pilot certificate issued in accordance with 14 CFR Part 107 that remains current in accordance with 14 CFR § 107.65. The PIC must have the remote pilot certificate and a valid government issued photo ID in their possession and make them available to the Administrator, or any law enforcement official, upon request.”

Condition and Limitation Nos. 51 and 54 collectively require check pilots, flight instructors, PICs, GSOs and SOs to hold at least a second-class medical certificate when serving as a required crew member. Petitioner asserts that a third-class medical certificate is sufficient, given the scope of the listed roles, to ensure that the PIC, check operators, and flight instructors can complete their duties without impacting safety. Specifically, petitioner asserts that the requirements of a second-class and third-class medical certificate differ only in the eye standards and that even individuals who do not meet those requirements can still be issued second- or third-class medical certificates. Petitioner states that it believes all other eligibility requirements of these medical certificates are identical. According to petitioner, the MK27-2 PICs do not engage in any direct manipulation of the UA’s flight path and the MK27-2 is designed to operate autonomously and complete its mission without any human intervention. Based on this, petitioner asserts that a second-class medical certificate would not provide any additional assurances that the individual does not have a medical condition that could affect the safety of operations above the assurances provided by a third-class medical certificate. Therefore, according to petitioner, no incremental safety benefit is realized by holding a second-class certificate. Petitioner further supports its request by stating that the FAA does not require a medical certificate of any kind for light sport aircraft or a current medical certificate for pilots of aircraft up to 6000 lbs. operating in accordance with BasicMed. Petitioner argues that requiring a second-class medical certificate for their UA operation is unwarranted due to the low risk and is inconsistent with the FAA’s position that larger aircraft carrying passengers may operate without a current medical certificate. The petitioner offers the following amended wording for these conditions and limitations:

Condition and Limitation No. 51: “Each check operator and flight instructor must hold at least a third-class medical certificate when serving as a required crewmember. A copy of this certificate must be kept in the Operator’s records.”

Condition and Limitation No. 54: “Each OIC is required to hold a third-class medical certificate in accordance with 14 CFR § 61.23(a)(2). The petitioner must retain a copy of this certificate in the Operators’ records. Additionally, OICs are prohibited from conducting flight operations during medical deficiency in accordance with 14 CFR § 61.53(a).”

Additional Modifications to Incorporate MK27-2 Crew Positions

In addition to the substantive revisions to conditions and limitations requested in the petition, the petitioner also requests changes to conditions and limitations to reflect its new position names and the planned assignment of duties and responsibilities to personnel. The petitioner considers the enhanced capabilities of the aircraft and operating procedures warrant these changes and reduce redundancy. Changes include removal of the AO and BYSO, updates to functions of the SO, changing the title of the FA to AVA, and reassignment of GSO functions to the OIC. Specifically, according to the petition, the AO was an additional observer used to report to the PIC any off-nominal behavior, and this position is being removed because the MK27-2’s capabilities render it unnecessary. Similarly, the BYSO was present to activate the FTS or request the PIC to urgent land. According to petitioner, the MK27-2’s improved perception system and safety features have made this position redundant, so it is being eliminated. The SO functions are being updated to reflect that the position is no longer “required crew” and that the SO now will support multiple flight operations and ensure operational safety procedures are followed. Petitioner states that it is eliminating the GSO position as the PIC will be able to perform those functions rendering the position unnecessary. The change of title from FA to AVA is a non-substantive change. These requests are listed at Appendix B.

Federal Register Notice

A summary of the petition was published in the Federal Register on March 2, 2022 (87 FR 11804). The FAA received and considered comments from three aviation organizations—the Small UAV Coalition (the Coalition), which generally supported the petition, and Airlines for America (A4A) and the National Agricultural Aviation Association (NAAA), which expressed concerns about the petition.

General Comment in Support of the Petition

Among the comments received, the Coalition supported the petitioner’s request for the removal of prescriptive minimum cruise altitude, predetermined emergency landing areas, obstruction, and clearance requirements based on the petitioner’s aircraft’s improved capabilities. The Coalition also expressed support of more performance-based requirements rather than the prescriptive conditions of Exemption No. 18601. The Coalition further expressed support for revising the conditions and limitations pertaining to pilot and medical certification requirements for drone pilots. The Coalition stated that it has long argued that Part 61 certification requirements are not necessary for UAS pilots if those pilots hold an RPC with small UAS rating and the pilot completes company and UAS-specific training.

General Comments Opposing the Petition

Commenters expressed concern that the petition lacked the necessary data to support its request. A4A commented that the petition lacks information, data, and analysis from the petitioner to support removing current conditions and limitations that the FAA previously deemed appropriate to ensure an equivalent level of safety. A4A further commented that the petitioner offers nothing other than its own belief that the MK27-2's improvements render conditions and limitations associated with a safety perimeter, designated landing areas, and prescriptive minimum safe altitudes unnecessary. A4A states that these omissions effectively undermine the public comment process and prevent interested stakeholders from better understanding the request, supporting the request, or being able to identify concerns that would be submitted to the FAA. Similarly, the NAAA commented that the documentation provided by the petitioner does not provide sufficient explanation of the MK27-2 enhancements. A4A recommends that the petitioner share collected data with the public, or if not, at least with the FAA at a minimum.

Response

The FAA notes that the petitioner is currently pursuing type certification of its MK27-2 aircraft. Until the completion of the type certification process, the MK27-2 aircraft is being operated under a 49 U.S.C. § 44807 exemption to allow its use in Part 135 operations. The 49 U.S.C. § 44807 exemption process requires submission of detailed documentation of the aircraft's operational capabilities. For an amendment to its § 44807 exemption for its new version of the aircraft, on July 26-29, 2022 the petitioner conducted an Operational Suitability Demonstration (OSD) of the aircraft, which the FAA observed. Although this OSD was not conducted for this operational exemption, nevertheless, proprietary data obtained from the OSD, along with the aircraft's operations, training, and maintenance manuals, were evaluated and used to support the FAA's analysis of the petitioner's requests. As discussed below, these considerations are reflected in the changes made in this exemption related to relief previously granted in Exemption No. 18601 or to the conditions and limitations that were established in that document for the petitioner's operation under Part 135.

For this exemption, the FAA reviewed all of the materials submitted by the petitioner, including results of the OSD performed in July under the observation of FAA personnel, and other proprietary data. Based upon this review, the FAA is setting appropriate conditions and limitations to minimize risk and maintain an equivalent level of safety. The exemption requires compliance with certain terms, conditions, and limitations that address the safety concerns of the proposed operation. The agency has determined the level of risk is acceptable and that carrying out such operations in accordance with the terms, conditions, and limitations of this exemption would achieve an equivalent level of safety to that provided and intended by the rules that would otherwise apply to the proposed operation.

Specific Comments in Opposition

Pilot Certificate Requirements (14 CFR Part 61)

A4A and NAAA both oppose the removal of the requirement to hold a part 61 pilot certificate in addition to a remote pilot certificate issued under 14 CFR part 107 from Exemption No. 18601's Condition and Limitation No. 48. Specifically, NAAA states that, while the operation of unmanned aircraft is different from manned aircraft, knowledge of airspace and traffic management is vitally important. NAAA states that it is unaware of any training and testing of unmanned operators in these areas crucial to ensuring safe airspace that would result in the same level of knowledge and skills as a commercial pilot's license. Similarly, A4A asserts that eliminating the requirement for a pilot certificate in addition to a remote pilot certificate fails to recognize the commercial aspect of unmanned aircraft operations and fails to provide the background knowledge of the overlying airspace and associated requirements.

Response

The FAA has considered A4A and NAAA's comments regarding the need for a part 61 pilot certificate, knowledge of the overlying airspace, and training/testing in these areas of knowledge. While the FAA agrees that knowledge of the operating environment is important, it disagrees that a pilot certificate issued under 14 CFR part 61 is necessary to ensure the safety of the proposed operations. As discussed in further detail below, the FAA has determined that requiring each PIC, check pilot, and flight instructor to hold a part 107 remote pilot certificate and maintain the currency in accordance with § 107.65, in combination with the revised conditions and limitations imposed by this exemption would not adversely affect safety.

Medical Certificate Requirements (14 CFR 61.23(a)(2))

NAAA opposes petitioner's request for relief from the requirement stated in 14 CFR 61.23(a)(2)(ii) that a person hold at least a second-class medical certificate when exercising the privileges of a commercial pilot certificate. NAAA believes that all operators of an aircraft, whether located in the aircraft or remotely, should be held to a high medical standard. NAAA asserts that unmanned aircraft operator incapacitation affects the cargo being carried and the safety of people and property on the ground and in the air. With respect to both manned and unmanned aircraft, NAAA asserts that high levels of automation should not preclude the need for medically fit operators.

Response

The FAA considered NAAA's comment in determining whether to grant relief to petitioner from the requirement for a second-class medical certificate for its pilots exercising the privileges of a commercial pilot certificate. While the FAA previously determined that requiring a second-class medical certificate would provide reasonable assurance that the PIC would not have any physical or mental condition that would interfere with the safe operation of the UAS, as discussed below, the FAA has conducted additional safety analysis with respect to the medical certificate

requirements for commercial UAS operations. Based on that analysis, the FAA has determined that use of pilots holding the minimum of a valid third-class medical certificate will not adversely affect the safety of the petitioner's operation.

Minimum Safe Altitude Limits (14 CFR § 91.119)

With respect to Exemption No. 18601, both A4A and NAAA are specifically concerned with the removal of Condition and Limitation No. 11. A4A asserts that removing Condition and Limitation No. 11, which establishes a minimum safe altitude limit, assumes that all potential obstacles will be captured in the FAA's Daily Digital Obstacle File and NOTAMs, when that is not the case. NAAA's opposes the relief petitioner requested for relief from § 91.119, Minimum Safe Altitudes, stating that it is not aware of any mitigating procedures, airworthiness requirements, or operations procedures that would allow this to safely occur.

Response

The FAA has considered A4A and NAAA's comments. The FAA acknowledges A4A's concern regarding the FAA Daily Digital Obstacle File and NOTAMs not being an absolute source for ground obstacles. The Daily Digital Obstacle File contains all known obstacles of interest to aviation users in the United States. While a review of these data sources may not identify each and every obstacle that may exist, they are an additional source of information proposed to be used by petitioner for the pre-planned and evaluated route that has been prepared and simulated. The petitioner's reviewing of these sources daily, given its route planning capabilities and the enhancements of the MK27-2 (including its health monitoring capabilities and its demonstrated ability to continue flight after loss of a propulsive unit), mitigate risk associated with removing the prescriptive minimum cruise altitude required in Condition and Limitation No. 11 of Exemption No. 18601. An equivalent level of safety is further achieved by petitioner's compliance with the conditions and limitations of this exemption. Specifically, Condition and Limitation No. 25 of this exemption requires completion of a ground risk assessment to be submitted for review by the FAA for acceptance for all operations areas and prior to conducting operations in new areas. The ground risk assessment is terrain and man-made obstacle analysis. As further discussed in the section of this exemption titled 14 CFR § 91.119 Minimum safe altitudes: General, the FAA has therefore determined that removing the prescriptive minimum cruise altitude would not adversely affect safety.

Airworthiness Requirement (14 CFR 91.7(a))

NAAA commented that it opposes relief to 14 CFR 91.7(a) because all aircraft operated in the NAS should be held to high airworthiness standards not just to manned aircraft and its pilots, but also to people on the ground.

Response

Relief from § 91.7(a) is outside the scope of this exemption amendment. The FAA previously addressed NAAA's comment when it granted petitioner relief from 14 CFR 91.7(a) in Exemption No. 18602, which authorized the petitioner to safely operate the MK27 in the national airspace system in accordance with 49 U.S.C. 44807. The petition requesting amendment of this exemption also requested amendment of Exemption No. 18602, which addresses comments related to relief from § 91.7(a) within its scope.

Requirement to Avoid Conflict with Manned Aircraft (14 CFR § 91.113)

NAAA also opposes relief from 14 CFR § 91.113 Right of Way Rules. NAAA states that vigilance must be maintained by each person operating an aircraft so as to see and avoid other aircraft and that this must be maintained conventionally or with a demonstrated alternative means of compliance. NAAA indicates that it is unaware if the petitioner provided this equivalent level of safety, but that petitioner should be required to give way to manned aircraft as required in part 107.37. Additionally, NAAA comments that while package delivery is likely to occur most frequently in urban areas, applications of pest control products do occur in urban areas for disease control of health threatening mosquitos and applications to control other insect pests that affect urban vegetation. NAAA states that it also important to anticipate that these package delivery operations are likely to extend beyond urban areas into agricultural areas. These types of aerial applications are likely to occur below 400 feet—the same operational environment as delivery drones.

Response

The FAA understands and acknowledges NAAA's concerns. The FAA has previously addressed these concerns in Exemption No. 18601 in its response to public comments concerning conflict with manned aircraft. Additionally, in Exemption 18601, the FAA stated that petitioner did not require relief from 14 CFR 91.113(b)-(f) because that provision was subject to waiver under § 91.905. An accompanying Certificate of Waiver and Authorization (COA) was issued to petitioner which set forth requirements for alerting other uses of the NAS to the UAS activities being conducted and set the requirements for safety necessary in airspace. Petitioner's operations are required to comply both with the terms of the COA and this exemption. Although Exemption No. 18601 did not include an explicit requirement to give way to manned aircraft in its conditions and limitations, the FAA has determined that such a condition and limitation is needed, and it has been included in exemptions that followed.⁵ The FAA has added Condition and Limitation No. 58 to this exemption requiring the UA remain clear of and give way to any manned aircraft at all times.

⁵ Exemption Nos. 18163D (Condition and Limitation No. 62), 19111 (Condition and Limitation No. 55) and 18338C (Condition and Limitation No. 53).

Requirements Related to Altimeter Settings (14 CFR § 91.121)

NAAA expresses concern about providing relief from 14 CFR § 91.121: Altimeter Settings. NAAA believes the unmanned aircraft's pilot must have a reliable means of determining the actual altitude of the aircraft to prevent exceeding the authorized flight altitude envelope. NAAA believes that UAV pilots must provide a reliable means of determining the altitude of a UAV equivalent to that obtained from an altimeter.

Response

The FAA previously granted relief from the requirements of 14 CFR 91.121 in the original grant of this exemption, Exemption No. 18601. This petition for amendment does not request amendments to relief previously granted from § 91.121 in Exemption No. 18601, and thus the comment is outside the scope of this amendment request. However, the FAA notes that it has previously addressed comments concerning altimeter requirements when it granted relief to § 91.121 the original grant of this exemption (Exemption No. 18601). In that exemption, the FAA determined from its analysis that relief from § 91.121 was appropriate and would not adversely affect safety.

Fuel Requirements for Flight in VFR Conditions (14 CFR § 91.151)

NAAA also expresses concern about providing relief from 14 CFR § 91.151: Fuel Requirements for Flight in VFR Conditions. NAAA believes the intent of this regulation is to prevent a pilot of a manned aircraft from commencing a flight without properly planning the flight as required by § 91.103. NAAA explains that the 30-minute VFR fuel reserve for airplanes during the day or 20-minutes in a rotorcraft is specified to allow a margin of safety, and thinks that similar consideration should be given to unmanned aircraft flights to allow for unexpected circumstances such as needing to stay airborne longer due to an emergency. NAAA believes that the FAA needs to establish a standard flight time the UAS needs to have in its power reserve to safely land and enforce that flight time as a requirement for any petitions granted.

Response

The FAA granted relief from the requirements of 14 CFR 91.151 in the original grant of this exemption, Exemption No. 18601. This petition for amendment does not request amendments to relief previously granted from § 91.151 in Exemption No. 18601, and thus NAAA's comment is outside the scope of this amendment request. However, the FAA notes that it has previously addressed NAAA's comments concerning fuel requirements when it granted the original grant of this exemption (Exemption No. 18601). In that exemption, the FAA determined that granting relief from § 91.151, subject to the conditions and limitations set forth in the exemption, would not adversely affect safety.

FAA's Analysis

Petitioner's Requested Changes

The FAA considered the petitioner's requests for revision of Exemption No. 18601 in three groups. First, certain revisions to conditions and limitations that the petitioner requested could be addressed in relation to regulatory relief that was previously granted. These requests are listed in Table 2 and are discussed in this section below in turn. Second, revisions to conditions and limitations that the petitioner requested did not pertain to specific relief and were addressed more generally; these requests are listed in Table 3 and are discussed separately in the section of this document titled Petitioner Requested Changes to Other Conditions and Limitations. Both tables include additional changes that the FAA initiated, as designated in the "FAA Initiated" column. These changes are discussed in the section of this document titled FAA-Initiated Changes and Additions. Finally, the petitioner's requested modifications to certain conditions and limitations to reflect changes in the structure of its operation using the new MK27-2, which, as noted above, are listed in Appendix B. These requests were accepted insofar as they were considered administrative in nature.

Table 2 – Summary of Changes Related to Regulatory Relief

Request to:	18601 Condition and Limitation	14 CFR Reference	Section or Paragraph Title	Requested by Petitioner	FAA Initiated	Decision
Revise	No. 54	61.23(a)(2)(ii)	Medical certificates: Requirement and duration.	X		Revised
Revise	No. 51	61.23(a)(2)(ii)	Medical certificates: Requirement and duration.	X		Revised
Delete	No. 41	91.119	Minimum safe altitudes: General.	X		Deleted
Revise	No. 11	91.119	Minimum safe altitudes: General.	X		Revised
Delete	No. 16	91.119	Minimum safe altitudes: General.	X		Revised in Part
Delete	No. 17	91.119	Minimum safe altitudes: General.	X		Not Deleted
Revise	No. 48	135.243(b)(1) and (2)	Pilot in command qualifications.	X		Revised
Revise	No. 48	135.337(b)(1)	Qualifications: Check airmen (aircraft) and check airmen (simulator).	X		Revised

Request to:	18601 Condition and Limitation	14 CFR Reference	Section or Paragraph Title	Requested by Petitioner	FAA Initiated	Decision
Revise	No. 48	135.338(b)(1)	Qualifications: Flight instructors (aircraft) and flight instructors (simulator).	X		Revised
		91.109(a)	Flight instruction; Simulated instrument flight and certain flight tests		X	Revised
		135.65(a) and (d)	Reporting mechanical irregularities		X	Granted
		135.79(a)(1), (2), and (3)	Flight locating requirements		X	Granted
		135.143(a)	General requirements		X	Granted
		135.205	VFR: Visibility requirements		X	Granted

Table 3 – Summary of Changes to Other Conditions and Limitations

Deletion, Revision or Addition of Condition and Limitation	Requested by Petitioner	FAA Initiated	Decision
Revise Condition and Limitation No. 1 (18601)	X		Revised
Revise Condition and Limitation No. 3 (18601)	X		Revised
Delete Condition and Limitation No. 7 (18601)	X		Deleted

In addition to the changes shown in Table 2 and Table 3, the FAA reorganized the conditions and limitations into seven sections, which is consistent with other current exemptions. For this reason, the numbering of many conditions and limitations in this exemption has significantly changed. In the discussion that follows, the conditions and limitations in this document are referenced using their new numbers, and any discussion of conditions and limitations that were published in Exemption No. 18601 is clearly designated as such and the prior numbers are used. A crosswalk is provided at Appendix C to aid in navigation from the old to the new numbering.

This exemption also includes certain additional conditions and limitations addressing operational ratios, communications during operations, and various operational requirements have been included in this exemption to bring it into alignment with other current exemptions. The

conditions and limitations are addressed in the section titled Conditions and Limitations Added to this Exemption.

The FAA also revised certain conditions and limitation in this exemption to consolidate, restructure, standardize with other exemptions, or introduce stylistic improvement. Conditions and limitations most greatly affected by these revisions, and which would have the greatest impact on the petitioner's operations, are identified in the section of this document titled Revisions to Conditions and Limitations.

The specific grants and denials in this exemption are related directly to the petitioner's operation and may not be the same for another petitioner. The FAA's determination to grant or deny relief under this exemption, or make changes to specific conditions and limitations, is also subject to change, based on future data. In many of these cases, once the FAA has gathered relevant data from the petitioner, it is plausible that a determination could be changed, or that a different petitioner with different data would have its request adjudicated differently, as is the case with any exemption request.

14 CFR Part 61 – Subpart F – Commercial Pilots

14 CFR § 61.23(a)(2)(ii) Medical certificates: Requirement and duration

Section 61.23 addresses requirements for medical certificates and their duration. Subsection 61.23(a)(2)(ii) prescribes, in pertinent part, that a person must hold at least a second-class medical certificate when exercising the privileges of a commercial pilot.

The petitioner requests modification to Condition and Limitation No. 54 of Exemption No. 18601 to permit its PICs to hold a third-class medical certificate when serving as a required crewmember.⁶ The petitioner argues that, in many ways, the eligibility requirements for the second-class and third-class medical certificates are similar. The petitioner contends that, aside from a vision standard, all other requirements (ear, nose, throat, and equilibrium; mental; neurological; cardiovascular; and general medical condition) are identical in both second and third-class medical evaluations. The petitioner contends that reduction of the medical certificate requirement would have no impact on the safety of the operation.

The FAA reviewed the petitioner's request for relief and considered the public comments discussed above. In issuing the petitioner's prior exemptions, the FAA considered the responsibilities of the PIC to ensure the safety of the operation. Specifically, the PIC's responsibility for ensuring that the UA is operated at an altitude that would not cause a hazard to persons or property on the ground, to execute vehicle commands through the ground control station, to monitor system health status information and environmental information, and to inform the crew of any off-nominal conditions. The FAA also considered the fact that the

⁶ Amazon also requests revision of Condition and Limitation No. 51 of Exemption No. 18601 related to medical certificate requirements for its check airmen and flight instructors. This request is discussed below together with requests related to §§ 135.337 and 135.338.

petitioner's planned flights were of short range and duration. Considering this information, the FAA previously determined that requiring a second-class medical certificate would provide reasonable assurance that the PIC would not have any physical or mental condition that would interfere with the safe operation of the UAS. In considering the petitioner's request that its PICs be permitted to hold third-class medical certificates, the FAA has evaluated the differences between the two certificates. The FAA noted the petitioner's assertions that its PICs would be able to conduct their duties with only a third-class medical certificate without impacting the safety of the operation.

The FAA also acknowledges that, as the petitioner stated, aside from the vision standard, all other eligibility requirements (ear, nose, throat, and equilibrium; mental; neurological; cardiovascular; and general medical condition) are similar in both second- and third-class medical standards. Specifically, aside from vision standards, part 67 Subpart C - Second-Class Airman Medical Certificate and Subpart D - Third-Class Airman Medical Certificate standards are identical. Color (distinction) testing requirements are identical for both classes of medical certificate; however, if an individual does not pass this test, that individual may receive a limitation on their medical certificate stating that the certificate is not valid for night flying or color signal control. Removing this limitation for a third-class medical certificate is less rigorous than for the second-class certificate. This limitation does not directly relate to the petitioner's pilots because they will conduct their duties on the ground, in an office environment and while monitoring computer screens in their immediate vicinity, and the environment remains the same regardless of if the aircraft is being flown during the day or at night and color signal control is not applicable. The FAA did consider other effects color distinction could have on the petitioner's operation and reviewed the system the PICs monitor and considered if the PIC would be able to read, interpret or act on information they were monitoring with color distinction limitations. In this review the FAA determined that the petitioner's ground control station monitor screen alerts the PIC of an off-nominal condition/issue by displaying a flashing caution/warning box and text displayed in a text box identifying the off-nominal condition/issue in addition to changes in color and finds, due to the redundancy of this system, color distinction limitations would not affect the PICs ability to use the system. Additionally, the FAA considered that the UA health monitoring system is highly automated and responds to an off-nominal condition/issue and that the indications on the monitor/display are primarily for PIC awareness for which no action is required, which is significantly different from manned commercial operations that require a second-class medical certificate. Based on this review, the FAA finds that elevated vision standards in the second-class medical are not necessary to maintain an acceptable level of safety in the petitioner's operation.

The FAA also considered the fact that second-class and third-class medical certificates differ in expiry. Second-class medical certificates for commercial pilots expire on the last day of the 12th month after the month of the date of examination shown on the medical certificate. Third-class medical certificates expire on the last day of the 60th month after the month of the date of examination shown on the medical certificate, or, for persons over the age of 40, on the last day of the 24th month after the month of the date of examination shown on the medical certificate.

The FAA has determined that, because of the high level of automation in the petitioner's UAS, a reduction in the frequency of the examinations from 12 months to every 24 or 60 months would not be detrimental to the PIC role to maintain operational safety. The FAA notes that, as with all persons exercising airman certificates, the petitioner's PICs are prohibited from participating in the operations if they are not fit for duty. Section § 61.53 establishes that, if a person who knows or should know that they would be unable to meet the requirements for their medical certificate due to a medical condition or use of medications or treatment, they may not act as a pilot in command or flight crewmember.

For these reasons, the FAA finds that the use of pilots holding the minimum of a valid third-class medical certificate will not adversely affect the safety of the petitioner's operation. Therefore, the FAA grants the petitioner's request to change the requirement for a second-class medical certificate stated in Condition and Limitation No. 51 of Exemption No. 18601 to a requirement for a third-class medical certificate. The new condition and limitation is No. 83 in this exemption.

14 CFR Part 91 – Subpart B – Flight Rules

14 CFR § 91.119 Minimum safe altitudes: General

Section 91.119 addresses minimum safe altitudes. Specifically, 14 CFR § 91.119(b) prescribes that, except when necessary for takeoff or landing, no person may operate an aircraft over any congested area of a city, town, or settlement, or over any open air assembly of persons, at an altitude below 1,000 ft. above the highest obstacle within a horizontal radius of 2,000 ft. of the aircraft. Section 91.119(c) states that, when over other than congested areas, the altitude may not be below 500 ft. above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 ft. to any person, vessel, vehicle, or structure.

In Exemption No. 18601, the FAA granted relief granted to § 91.119(b) and (c) to permit the aircraft to operate at altitudes lower than those described at § 91.119(b) and (c), based on the information provided by the petitioner and the MK27's range of potential cruise altitudes. However, the FAA also included three conditions and limitations in the exemption in order to ensure an equivalent level of safety. In Condition and Limitation No. 11 of that exemption, the FAA implemented a minimum cruise altitude of 180 ft. to increase the likelihood of safe flight termination of flight in the event of a loss of control. Second, Condition and Limitation No. 16 of that exemption established limits to the areas of operation by specifying that the property or continuous parcels to be overflowed had to be under the exclusive use of the Operator or under the Operator's control. Condition and Limitation No. 16 also established lateral limits for proximity to people, structures, moving vehicles, and roadways, prohibited operations over people and structures, and limited operations to sparsely populated areas. Third, Condition and Limitation No. 41 limited clearance of all sparsely populated terrain and all man-made obstructions to not less than 100 ft. laterally until the UA has slowed to less than 20 knots and was within 250 ft. laterally of a takeoff, landing, or delivery point.

The petitioner has requested either amendments or deletion of Condition and Limitation Nos. 11, 16, and 41. This analysis will address each request in turn. In general, the FAA reviewed the petitioner's requests for changes to these conditions and limitations and considered aircraft enhancements, as well as the petitioner's pre-planning of flights. The FAA also considered the MK27-2's enhanced health monitoring capabilities, which enable the aircraft to detect a malfunction of a motor or an electronic speed controller malfunction. The petitioner demonstrated to the FAA during operational suitability testing that the MK27-2 can continue controlled flight after the loss of a propulsive unit and transmit the anomaly to the ground control station for PIC notification and action when needed.

Condition and Limitation No. 11

The petitioner requests the revision of Condition and Limitation No. 11 to remove the minimum safe cruise altitude for the aircraft. The petitioner argues that the MK27-2's enhancements will allow it to safely conduct transient flight over people and structures. The petitioner states that the MK27-2's "onboard health monitoring and perception systems will ensure there is no risk to the safety of humans or structures." Additionally, the petitioner states that a specific minimum safe cruise altitude is no longer needed because the new MK27-2 can ascend and descend during cruise to track terrain variations and because flights will be pre-planned to ensure the drone avoids ground-based obstacles. The petitioner intends to review the FAA's Daily Digital Obstacle File and NOTAMs to ensure its route planning captures any new potential ground hazards. The petitioner asserts that its route planning process and the MK27-2's enhanced features render a prescriptive generic minimum altitude unnecessary for safe operations.

The FAA grants the petitioner's request to remove the prescriptive altitude requirement that was required by Condition and Limitation No. 11 in Exemption No. 18601. The FAA determined that the prescriptive minimum altitude requirement is no longer required because of the MK27-2's capability to continue controlled flight after the abnormal conditions described in the previous paragraph. These capabilities were demonstrated to the FAA in both cruise and transition phases of flight. The FAA has determined removal of the minimum altitude requirement that was established by Condition and Limitation No. 11 of the prior exemption will have no adverse safety impact. The remaining provision of Condition and Limitation No. 11 related to maximum altitude has been incorporated into the new Condition and Limitation No. 56 of this exemption.

Condition and Limitation No. 16

The petitioner also requests that Condition and Limitation No. 16 of Exemption No. 18601 be deleted, arguing that the operation limitations in Condition and Limitation No. 16(a) are no longer needed. The petitioner asserts that the MK27-2 is designed to safely transit over people, roads, and structures to deliver packages to customers' backyards. The petitioner argues that the design of the MK27-2 renders it unnecessary for the petitioner's operations be conducted over airport property and contiguous parcels for which the petitioner has pre-arranged exclusive use or access control. The petitioner also states that the MK27-2's enhancements allow it to operate safely over all rural areas. In addition, the petitioner argues that their route planning and

validation procedures, along with the MK27-2's enhancements, allow the UA to safely conduct transient flights over people, roads and structures. For these reasons, the petitioner argues that its operation need not be limited to rural areas. The petitioner also states that the deletion of Condition and Limitation No. 16 would eliminate redundancy related to the remaining provisions required by Exemption No. 18602, which grants the petitioner relief under 49 U.S.C. § 44807.

The FAA is denying the petitioner's request to remove Condition and Limitation No. 16 in its entirety. The limitations established in Condition and Limitation No. 16 are clearly intended to ensure the safety of the petitioner's cargo transport operation conducted under Part 135. Similar provisions have been established for other operators, e.g., Exemption No. 18339C and Exemption No. 19111. The petitioner's request to remove Condition and Limitation No. 16 from this exemption is therefore denied.

However, the FAA does agree that certain provisions of Condition and Limitation No. 16 of Exemption No. 18601 are no longer needed. Having evaluated the MK27-2's enhancements, its demonstrated ability to maintain control following the loss of a propulsive unit in both the cruise and transition phases of flight, and the petitioner's route planning and validation processes, the FAA finds that these safety features reduce the need to limit the petitioner's overflights. As such, the FAA is removing the requirement for the petitioner to only overfly airport property and contiguous parcels that it uses exclusively or over which it maintains access control. In addition, to the extent that the petitioner has demonstrated the MK27-2's capabilities, the FAA finds that its safety features lessen the likelihood that an uncontrolled condition would result from a motor or propulsive unit failure. For this reason, the FAA will no longer require that petitioner's flights be conducted only over sparsely populated areas.

Additionally, the FAA is also removing the requirement for the petitioner's UA to maintain at least 100 ft. laterally from structures. Overflight of structures can also be permitted given the improvements made in the MK27-2 and given a structure provides protection to persons from serious injury.

Due to reorganization of the conditions and limitations, Condition and Limitation No. 16 has been renumbered Condition and Limitation No. 21 in this document. Additionally, the FAA notes that the same condition and limitations related to overflight and standoff areas were contained in Condition and Limitation No. 22 of Exemption No. 18602. To eliminate redundancy they have been removed from the companion exemption No. 18602B and will reside only in Condition and Limitation No. 21 of this document.

The FAA has also included in Condition and Limitation No. 21 the ability for the operator to present additional mitigations to the FAA and the FAA to have flexibility to approve these operations.

Condition and Limitation No. 17

In Exemption No. 18601, Condition and Limitation No. 17 required that the certificate holder designate safe emergency landing area(s), no less than 100 ft. in diameter, which the UA could reach in the event it was unable to complete its intended flight. These landing areas had to be known in advance to the PIC and GSO operating aircraft and had to be 250 ft. from structures, vehicles, people, and roads. Emergency landings also could not cause undue hazard to persons or property on the surface.

The petitioner requests that the FAA remove Condition and Limitation No. 17, arguing that predetermined emergency landing areas should not be required. The petitioner argues that the MK27-2's ability during an off-nominal situation to navigate to an area free of structures and obstacles and find a safe landing area in real time obviates the need for a pre-designated emergency landing area. The petitioner points out that their delivery missions follow pre-planned routes that fly over sufficient areas free of obstacles. Using simulation prior to flight, these routes are also validated to be within the MK27-2's capabilities.

The FAA reviewed the petitioner's request for removal of Condition and Limitation No. 17 and found that the petitioner has not provided all testing data necessary to show that removal of Condition and Limitation No. 17 is warranted. Additionally, type certification of the MK27-2 is still on-going, and full durability and reliability parameters for the MK27-2 have not yet been established. Therefore, based on information currently available to the FAA, and in order to ensure safe emergency landing areas are available for MK27-2 operations, the FAA declines to delete Condition and Limitation No. 17. However, the FAA has determined it is appropriate to provide some flexibility to the operator and will permit the operator to present additional mitigations to the FAA for consideration and approval.

Additionally, the FAA notes that the same conditions and limitations related to emergency landing areas were contained in Condition and Limitation No. 21 of Exemption No. 18602. To eliminate this redundancy, they have been removed from the companion exemption No. 18602B and will reside only in Condition and limitation No. 22 of this document.

Due to reorganization of the conditions and limitations, Condition and Limitation No. 17 of Exemption No. 18601 is now Condition and Limitation No. 22 in the present exemption.

Condition and Limitation No. 41

Additionally, the petitioner requests removal of Condition and Limitation No. 41 in order to allow the MK27-2 to overfly people and structures. The petitioner considers removal of Condition and Limitation No. 41 necessary because it plans for the MK27-2 to conduct delivery operations closer than 100 feet laterally to structures in order to reach customer backyards.

When reviewing Condition and Limitation No. 41 in the prior exemption, the FAA noted that it required the petitioner to clear sparsely populated terrain and man-made obstructions "by not less

than 100 ft. laterally until the UA has slowed to less than 20 knots and was within 250 ft. laterally of a takeoff, landing, or delivery point" (emphasis added). However, that requirement was erroneously in conflict with Condition and Limitation No. 22 of Exemption No. 18602, which required the MK27 to remain at least 100 ft. laterally from any person or structure during all phases of flights, including takeoff, landing, and delivery. In order to resolve this conflict, the FAA is removing Condition and Limitation No. 41 from this exemption.

Although, as discussed above, the FAA is also removing the requirement for the petitioner's UA to maintain at least 100 ft. laterally from structures, the FAA is not granting the petitioner's request for removal of its prohibition on operations within 100 ft. laterally of persons. That requirement has been incorporated into Condition and Limitation No. 21 of this exemption and applies to all phases of flight. However, the FAA did include the possibility for additional flexibility regarding certain provisions of Condition and Limitation No. 21, including the ability to operate within 100 feet of people if approved by the Administrator.

In addition to these requirements, and to maintain an equivalent level of safety for the petitioner's delivery customers, and consistent with Condition and Limitation No. 21 of this exemption, the FAA will also require the petitioner to notify its delivery customers to remain clear of the MK27-2 UA by a distance of at least 100 ft. unless otherwise approved by the Administrator. Due to the restructuring of the conditions and limitations in this exemption, this requirement is now included in Condition and Limitation No. 54 of this exemption.

The FAA also includes in this exemption a condition and limitation which requires the petitioner to obtain consent from customers and the petitioner's personnel, which the FAA analyzed in previous exemptions (e.g., Exemption No. 18163) and finds applicable to this operation. This condition and limitation will ensure that the people involved in the operation are aware of the risks of participation. The petitioner must ensure all persons engaging closely with the UA remain at a safe distance during operations and are aware of potential risks. Condition and Limitation No. 10 requires the petitioner to receive consent that indicates participants are aware of the potential risks of UA operations and these individuals provide consent to participate in the operation, notwithstanding those risks.

Finally, to ensure the safety of the operation to individuals in the vicinity of the petitioner's takeoff, landing, and delivery areas, and consistent with the Condition and Limitation No. 21, the FAA will also require the petitioner to ensure that access to these locations is limited to persons participating in the operation. In addition, all persons, including the petitioner's personnel, will be required to remain at a distance of at least 100 ft. from these areas unless otherwise approved by the Administrator. Due to the restructuring of the conditions and limitations in this exemption, this requirement is now included in Condition and Limitation No. 23 of this exemption.

14 CFR Part 135 - Subpart E - Flight Crewmember Requirements

14 CFR §§ 135.243(b)(1) and 135.243(b)(2) -- Pilot in command qualifications

Section 135.243 addresses pilot-in-command qualifications. Section 135.243(b)(1) prescribes that no certificate holder may use a person, nor may any person serve, as PIC of an aircraft under VFR unless that person holds at least a commercial pilot certificate with appropriate category and class ratings, and, if required, an appropriate type rating for that aircraft. Subsection 135.243(b)(2) prescribes that that person must have at least 500 hours of flight time as a pilot, including at least 100 hours of cross-country flight time, at least 25 hours of which were at night.

In Exemption No. 18601, Condition and Limitation No. 48 was established to state, in relief to 14 CFR § 135.243(b)(1), that each PIC, GSO, check pilot, and flight instructor must hold a private pilot certificate issued under Part 61, as well as an RPC issued in accordance with Part 107 that remains current in accordance with § 107.65.

The petitioner now requests that Condition and Limitation No. 48 be revised to remove the requirement that a person acting as PIC, check pilot, and flight instructor hold a private pilot certificate issued under Part 61. In evaluating the petitioner's request and taking into account the comments received, as discussed above, the FAA considered the applicable airman qualification sections 135.243(b)(1), 135.243(b)(2), 135.337(b)(1), and 135.338(b)(1), and the relief previously given to the petitioner in the applicable these sections of Exemption No. 18601.

14 CFR § 135.243(b)(1) – Pilot-in-Command Qualifications

Exemption No. 18601 provides the petitioner relief from the requirements for its PICs, under VFR conditions, to hold a commercial pilot certificate with category, class, and type ratings. Instead, the petitioner's PICs, check pilots, and instructors are required to hold both a Part 61 private pilot certificate and an RPC issued in accordance with Part 107. As set forth in the summary of the petition, the petitioner requests removal of the Part 61 private pilot certificate requirement based on the highly autonomous nature of the MK27-2 operations and the petitioner's revised training program, which provides platform-specific training based on Part 61 certification requirements.

In Exemption Nos. 18163A (Wing), 18339B (UPS Flight Forward), and 19111 (Zipline International), the FAA granted relief from the Part 61 pilot certificate requirement and permitted the petitioners' PICs to hold an RPC issued in accordance with Part 107 with an FAA-issued pilot authorization after the PICs successfully completed their operator's FAA-approved training and checking program. The additional pilot authorization was necessary because the FAA concluded that, although the RPC issued in accordance with Part 107 is relevant as a practical matter to the pilot duties in the petitioner's Part 135 UAS operation, the RPC does not itself contain pilot privileges for operations outside of Part 107. As a result, the FAA issues a letter of authorization to the holder of an RPC in this instance authorizing the pilot to serve as a PIC in Part 135 operations. In addition, to overcome the absence of Part 61 pilot practical experience,

the FAA imposed additional requirements on PICs, including supervised operating experience with a check pilot and an increased line check interval of every three calendar months.

In the prior exemption, the FAA found that requiring the PIC to hold an RPC issued in accordance with Part 107 will ensure the PIC has knowledge of the operating environment in which the petitioner's Part 135 operations will be conducted. In Exemption No. 18601, Condition and Limitation No. 52, the FAA also required the PIC to complete the petitioner's FAA approved training program and checking program and to receive a specific, FAA-issued pilot authorization. The FAA also determined that because the petitioner's PICs held a Part 61 pilot certificate and had a certain amount of flight time and practical experience in the NAS, the FAA did not require additional oversight in the form of supervised operating experience or increased line checks for the petitioner's PICs.⁷

In reviewing the petitioner's request for its pilots to hold only an RPC issued in accordance with Part 107, the FAA evaluated on-going FAA surveillance data from Part 135 UA operations conducted with pilots holding Part 107 certificates, which suggests that the additional requirements of supervised operating experience with a check pilot and the increased line check frequency of every three calendar months⁸ provides adequate training and practical experience to support relief from the Part 61 private pilot certificate requirement.

The FAA is therefore modifying the relief to §§ 135.243(b)(2), 135.337(b)(1), and 135.338(b)(1) previously given in Exemption No. 18601 by removing the requirement of the Part 61 private pilot certificate previously found in Condition and Limitation No. 48. The PIC will no longer be required to hold both a Part 61 private pilot certificate and an RPC issued under Part 107. Instead, the PIC will be required to hold at minimum, an RPC issued under Part 107, a letter of authorization, and satisfactorily complete the petitioner's FAA-approved air carrier training program that provides operation and UAS specific training. This requirement is stated in Condition and Limitation No. 82. This is consistent with earlier exemptions (Exemption Nos. 18163A, 18339B, and 19111).

With the increase of UAS operations in the airspace under 400 ft. AGL and the unique operating requirements for those operations as compared to Part 91 operations, the FAA finds that requiring the PIC to hold an RPC issued in accordance with Part 107 will ensure the PIC has knowledge of the operating environment in which the petitioner's Part 135 operations will be conducted. The FAA acknowledges that Part 107 operations are limited to aircraft under 55 pounds and that the petitioner's aircraft has a maximum takeoff weight of over 55 pounds. However, the approved air carrier training program will ensure the PIC obtains extensive ground training, robust flight training specific to the MK27-2 aircraft to be operated under this

⁷ In Exemption No. 18601, the FAA erred by including Condition and Limitation No. 56, which required supervised operating experience for PICs and GSOs.

⁸ The FAA notes that, in Exemption No. 18163D (Wing), the FAA increased the duration of line checks from every three months to every six months based on the successful results of the petitioner's three-month line checks and the FAA's observation of the outcomes of the training program. The FAA would consider granting the same relief for petitioner after it has demonstrated consistent positive outcomes with pilots who do not hold part 61 certificates.

exemption, in addition to more frequent recurrent training, and checking. Also, as discussed in the analysis of section 91.119 above, the limitations restricting flight over moving vehicles, roadways, and people ensures that the operations of petitioner's aircraft will not pose undue hazard to persons or property.

In granting the request to remove the private pilot certificate requirement of Condition and Limitation No. 48 of Exemption No. 18601 for the petitioner's PICs, as discussed above, the FAA will also require that the PICs undergo supervised operating experience and increased line checks and log their flight information as described in Condition and Limitation Nos. 87 and 88.

14 CFR §§ 135.337(b)(1) – Qualifications: Check airmen (aircraft) and check airmen (simulator) and 135.338(b)(1) Qualifications: Flight instructors (aircraft) and flight instructors (simulator)

Sections 135.337(b)(1) and 135.338(b)(1) state that no certificate holder may use a person, nor may any person serve as a check airmen or flight instructor of an aircraft, respectively, in a training program established under subpart H of Part 135 unless, with respect to the aircraft type involved, that person holds the airman certificates and ratings required to serve as PIC in operations under Part 135. As discussed, 14 CFR § 135.243(b)(1) requires the PIC of an aircraft, under VFR conditions, to hold at least a commercial pilot certificate with the appropriate category and class ratings and, if required, an appropriate type rating for that aircraft. In addition, § 135.337(b)(5) requires that a person serving as a check pilot hold at least a third-class medical certificate unless serving as a required crewmember, in which case that person must hold a first-class or second-class medical certificate as appropriate. Section 135.338(b)(5) requires that no person may serve as a flight instructor (aircraft) in a training program established under this subpart unless, with respect to the type, class, or category aircraft involved, that person holds at least a third-class medical certificate.

The petitioner has previously been granted relief from the commercial pilot certificate requirement for flight instructors and check pilots, in Exemption No. 18601, and instead these personnel were required to hold a private pilot certificate and RPC. The petitioner now requests relief from holding the private pilot certificate asserting that the request is consistent with the relief for PICs, pursuant to § 135.243(b)(1) and (2), as well as previous grants of exemption. The petitioner also requests revision to Condition and Limitation No. 51 of Exemption No. 18601, which requires each check pilot and instructor hold at least a second-class medical certificate when serving as a required crewmember. The requested change would permit the petitioner's check pilots and instructors to hold third-class medical certificates.

First, the FAA reviewed the petitioner's request for relief from 14 CFR §§ 135.337(b)(1) and 135.338(b)(1) and, for the reasons discussed above related to airman certificate requirements for the petitioner's PICs, the FAA is granting the petitioner relief from these sections. As such, the petitioner's check pilots and instructors must hold a valid RPC issued in accordance with Part 107 and remain current in accordance with § 107.65. They will not be required to hold a private pilot certificate. This determination is consistent with the FAA's grants of relief in several recent

exemptions—Exemption Nos. 18163A (Wing), 18339B (UPS Flight Forward), and 19111 (Zipline International), and will have no adverse impact on safety.

The petitioner is subject to Condition and Limitation No. 82, which establishes a requirement to hold an RPC applies not only for PICs but also for VOs and AVAs, as well as check pilots and instructors. Condition and Limitation No. 82 also requires each PIC, VO, AVA, check pilot, and instructor to maintain their RPC, a government-issued photo ID, and a copy of their pilot authorization in their possession when serving as a required crewmember in the petitioner's operations, and to make such documents available upon request from the Administrator.

The FAA also addressed the petitioner's request for its flight instructors and check pilots to be permitted to hold a third-class medical certificate. In the evaluation of this request the FAA found that the conditions imposed upon the petitioner in Condition and Limitation No. 51 were as, or more restrictive than the regulatory requirements set forth in 14 CFR §§ 135.337(b)(5) and 135.338(b)(5). The FAA finds no compelling reason to hold the petitioner to a higher standard than persons serving as check pilots or instructors in human-piloted operations. Accordingly, the FAA grants the petitioner's request to modify Condition and Limitation No. 51. Due to reorganization of the conditions and limitations, this requirement is now set forth as Condition and Limitation No. 76.

Petitioner Requested Changes to Other Conditions and Limitations

Condition and Limitation Nos. 1 and 3

In Exemption No. 18601, both Condition and Limitation Nos. 1 and 3 limited the petitioner to operate specifically the MK27 UAS in accordance with Exemption No. 18602. Specifically, Condition and Limitation No. 1 stated that operations authorized by this grant of exemption are limited to those that occur with the petitioner's MK27 UAS, subject to Exemption No. 18602. Condition and Limitation No. 3 stated that all operations conducted in accordance with this exemption must also be conducted in accordance with Exemption No. 18602, until the MK27 aircraft receives an FAA airworthiness certificate.

The petitioner requests that references to aircraft in Condition and Limitation Nos. 1 and 3 be changed to include any of the petitioner's drone systems listed in the latest amendment to Exemption No. 18602, and not specifically the MK27 or any other specific aircraft.

The FAA has determined that this exemption will only apply to the MK27-2. The petitioner has made multiple changes from the MK-27 to the MK27-2 that affect personnel and performance in ways that have a significant impact on the operation. The petitioner may only operate the MK27-2 in accordance with this exemption. Any request for use of new aircraft will require a revision to this exemption.

Therefore, the provisions of Condition and Limitation Nos. 1 and 3 have been revised to reflect the applicability of this exemption exclusively to the MK27-2. Additionally, to align with other

recently issued exemptions, the provisions have been combined into a single Condition and Limitation No. 1.

Condition and Limitation No. 7

In Exemption No. 18601, Condition and Limitation No. 7 only allowed for a “will-not carry” hazardous materials program, with a change to a “will-carry” hazardous materials program requiring a new evaluation by the FAA and an amendment to the exemption. The petitioner seeks the removal of Condition and Limitation No. 7. The petitioner argues that it must already comply with the terms of its air carrier certificate, that are set forth in its OpSpec which currently contains an authorization prohibiting the acceptance, handling, and transportation of hazardous materials. The FAA agrees that Condition and Limitation No. 7 is redundant to the petitioner’s existing regulatory obligations. The FAA grants the petitioner’s request to remove this condition and limitation.

To transport hazardous materials in the future, the petitioner must submit a will-carry hazardous materials manual and training program to the FAA and receive approval of the manual from its Principal Operations Inspector (POI). The petitioner must also request updated OpSpec A055, and receive approval from the POI. Any future request to pursue a “will-carry” hazardous materials program may be considered once an application is submitted to the FAA in a form acceptable to the Administrator and will require the issuance of OpSpec A055. An amendment to this exemption may also be necessary, depending on the specific circumstances and CONOPS submitted in support of the proposed “will-carry” program. The FAA will make that determination after consideration of the specific concept of operations, as reflected in Condition and Limitation No. 5 of this exemption.

Petitioner Requested Changes Related to MK27-2 Crewmember Positions

The petitioner requested several amendments to and removal of certain conditions and limitations to align the language in the conditions and limitations with changes to its operational positions. The petitioner provided with its request, revised operations and training manuals which support the proposed operation and personnel changes. The FAA evaluated these changes and determined the following:

Formerly, the AO position was required to monitor the original MK27 in cruise flight and report to the PIC any observed off-nominal behavior. As discussed previously in this exemption, the improved health monitoring system of the MK27-2 can detect off-nominal behavior and appropriately notify the PIC. Therefore, the AO position is no longer required.

The FAA also evaluated PIC duties resulting from the combining of the GSO and PIC roles and found that the combination reduced complexity and the possibility of miscommunication by removing the information relay segment of PIC to GSO. The FAA also found that in totality, the combined PIC duties align with PICs of other UAS operators.

Therefore, the FAA has granted this request, as explained below. Conditions and limitation that were removed are identified by their number in Exemption No. 18601. Conditions and limitations that were amended are initially identified by their number in Exemption No. 18601, with the corresponding number for this exemption then provided. Appendix C provides a crosswalk that may be used to locate any conditions and limitation that remain this document and reflect the changes made.

First, the AO and GSO positions are no longer required for the petitioner's operation, and the SO position will serve in a non-operational safety role. Therefore, references to the AO, GSO, and SO positions were removed from the following conditions and limitations of Exemption No. 18601: 19, 20, 24, 32, 33, 37, 38, 40, 46, 48, 52, 53, 54, 55, 56, 57, 58, 59, 65, 66, 68, 75, 76, and 77. In addition, the following conditions and limitations were removed that pertained only to the AO, GSO, or SO, or were removed for other reasons: 39 (condition and limitation was SO-specific) and 45 (condition and limitation was AO-specific). Also, Condition and Limitation No. 36 was removed in this exemption because the FAA determined it unnecessary to state that the operator is required to use its personnel to perform the functions stated in the in the operator's FAA-approved manuals.

Second, the petitioner's FA position has been renamed AVA. The following conditions and limitations of Exemption No. 18601 were revised to reflect the name change: 37, 53, 55, 57, 58, 59, 67, 69, 75, 76, and 77.

FAA-Initiated Changes and Additions

Substantive Changes to Regulatory Relief

Although the petitioner has not requested regulatory relief from the following regulations, after further analysis, the FAA finds that the petitioner requires additional regulatory relief to conduct its operation. Accordingly, the FAA is amending this exemption.

14 CFR § 61.3(a) - Requirement for Certificates, Ratings, and Authorizations

Section 61.3(a) prescribes that no person may serve as a required pilot flight crewmember unless that person has in their possession appropriate pilot certificates or authorizations. As discussed previously in this document, the petitioner requests that its PICs, check operators and flight instructors not be required to hold a Part 61 private pilot certificate contained in Condition and Limitation No. 48 of Exemption No. 18601, but instead be required to hold a remote pilot certificate issued in accordance with 14 CFR Part 107. Although not specifically requested, the FAA finds it necessary to grant petitioner relief from § 61.3 for these positions, because as previously discussed in the analysis of the §§ 135.243, 135.337(b)(1), and 135.338(b)(1), the FAA is not requiring the petitioner's PIC, check pilots or flight instructors to hold an airman certificate issued under Part 61.

14 CFR § 91.109(a) – Flight instruction; Simulated instrument flight and certain flight tests

Section 91.109(a) provides that no person may operate a civil aircraft (except a manned free balloon or an unmanned aircraft) that is being used for flight instruction unless that aircraft has fully functioning dual controls. However, this requirement to have dual physical flight controls is impractical for unmanned aircraft that are operated from a ground control station. The petitioner's ground control station allows for unobstructed access to the aircraft controls from the side and rear of the control station seat. The FAA has determined that it would be impractical to require compliance with 14 CFR § 91.109(a) when a level of safety equivalent to that provided by the regulation can be achieved. The lack of physical barriers and access to the aircraft controls provides for a seamless and timely transfer of controls during training and therefore provides an equivalent level of safety. The FAA has concluded that an equivalent level of safety can be achieved with the instructor sitting or standing next to the control station and the trainee, where the instructor can quickly and safely assume control of the unmanned aircraft.

Accordingly, relief is granted to 14 CFR § 91.109(a) in accordance with condition and limitations to the extent necessary to allow the petitioner to conduct training with the MK27 without fully functioning dual controls.

14 CFR § 91.119 – Minimum Safe Altitudes: General

The FAA addressed the need for special requirements for management of associated elements (AE) in Exemption No. 18163D and subsequent exemptions. Accordingly, in light of the FAA's review of this exemption, the FAA re-evaluated the petitioner's relief from § 91.119 and determined additional conditions and limitations are necessary. Some AE, such as control station equipment and off-board fleet-management software, raise special challenges because they may be used to operate multiple UA and do not lend themselves to management under each specific aircraft type design, either from a configuration management or a recordkeeping standpoint. Operators also require flexibility in how they safely configure, manage, and maintain AE used in the operations, such as control stations, displays and pilot interface equipment, monitors, keyboards, and computer mouse equipment, all of which are ground based and are best considered as part of the Operator's system.

Although the FAA does not directly impose airworthiness design criteria for AE as part of the type certification of the aircraft, AE must be evaluated and approved by the Administrator. The aircraft is designed to monitor and transmit all information required for continued safe flight and operation. The pilot interface equipment must be able to display this information to the pilot in order for the pilot to control and monitor the UA during its operation. Without this information displayed to the pilot, the pilot would not be able to determine if the aircraft is being operated safely as intended. The FAA has included several conditions and limitations in this exemption that are intended to ensure safe management and use of AE in the petitioner's operation. The new conditions and limitations related to AE are as follows: Condition and Limitation Nos. 29, 30, 31, 34, 35, 36, 37, 38, 39, and 40. For a detailed explanation of each of these conditions and limitations, please reference the analysis section in Exemption No. 18163D.

The FAA recognizes that a period of transition is necessary to implement these various amendments to current procedures. Therefore, in Condition and Limitation No. 40 gives the petitioner 120 calendar days from the effective date of this exemption to comply with the substantive provisions of the conditions and limitations 34, 35, 36, 37, and 39. The operator must submit documentation necessary to show compliance with these conditions and limitations to the FAA no later than 90 days from the effective date of this exemption for FAA review.

14 CFR § 135.21(f) – Manual requirements

Section 135.21(f) requires the carrying of appropriate parts of the manual on each aircraft when away from the principal operations base. The appropriate parts of the manual must be available for use by ground or flight personnel.

In Exemption No. 18339C (issued to UPS Flight Forward), the FAA found that relief was necessary to because the UA was not capable of carrying any personnel aboard the aircraft, which negated the need for manuals to be onboard the aircraft. The FAA also found an equivalent level of safety would be met as long as the petitioner continued to ensure the appropriate portions of the manual were readily available for use by ground personnel and the PIC when at his or her duty station.

Consistent with our analysis in Exemption No. 18339C, the FAA also grants relief to this petitioner from the requirements of 14 CFR § 135.21(f). In granting this relief, the FAA also maintains Condition and Limitation No. 15 in this exemption, which requires the operator to provide manuals to personnel during the performance of their duties.

14 CFR § 135.63(c) – Recordkeeping requirements

The FAA originally granted relief from this section in Exemption No. 18601 and revises what is C&L 12 in this document because the condition and limitation previously included prescriptive recordkeeping requirements tied to the information required by subparagraphs (c)(1)-(8); however, those subparagraphs impose requirements intended to apply to multi-engine aircraft of far greater weight than this UA. Accordingly, the FAA is revising this Condition and Limitation to include less prescriptive requirements. The petitioner's UA are loaded according to the loading procedures detailed in the supporting documentation, ensuring that the center of gravity of the loaded aircraft is within the manufacturer's approved limits. In addition, the petitioner's UA uses a distributed, multi-rotor propulsion system that maintains center of gravity (CG) regardless of the position of the payload inside the delivery compartment. The risk reductions provided by the lower weight of UA and distributed propulsion (having different considerations than traditional multi-engine arrangements) satisfy the safety requirements for such systems. By implementing maximum weight limitations on the UA, the petitioner is able to ensure that the UA is insensitive to the weight distribution of those loads. The requirements and restrictions for weight limits, processes, and system verifications can be found in the supporting documentation.

The payload is the only variable that can be added to the aircraft that can change the total weight of the aircraft. The Unmanned Aircraft Flight Manual (UFM) includes instructions on how to properly load the aircraft. The maximum allowable takeoff weight and payload weight are listed in the UFM as fixed values. The payload is carried securely inside the UA delivery compartment, minimizing the effect on the UA Center of Gravity. The maximum allowable takeoff weight cannot be exceeded, even with a maximum total payload being carried, as long as the UFM limitations are followed. The petitioner states all payload data is recorded in the flight data log prior to each takeoff and maintained electronically for at least 30 days. A flight data report can be issued upon request, containing all the information required per paragraphs § 135.63(c)(1) through (8) of this section which would be applicable to UAS operations. Accordingly, the FAA continues to grant relief from this provision, subject to compliance with revised Condition and Limitation No. 12.

14 CFR § 135.65(a) and (d) – Reporting mechanical irregularities

Section 135.65(a) states that each certificate holder shall provide an aircraft maintenance log to be carried on board each aircraft for recording or deferring mechanical irregularities and their correction. Additionally, 14 CFR § 135.65(d) states that each certificate holder shall establish a procedure for keeping copies of the aircraft maintenance log in the aircraft for access by appropriate personnel and shall include that procedure in the manual required by § 135.21.

Due to the size and characteristics of small UAs, it is impractical for operators to comply with § 135.6(a) and (d). The FAA has previously exempted operators from these and similar rules related to the carriage of records and manuals aboard aircraft.

The FAA finds an equivalent level of safety can be met as long as the petitioner ensures the appropriate portions of the aircraft maintenance log are readily available for use by ground personnel and the PIC, and as long as the operator has procedures requiring the aircraft maintenance log to be readily available when the pilot is at his or her duty station. This petitioner's General Maintenance Manual in Section 4 provides procedures ensuring that aircraft maintenance logs are available to the appropriate personnel. Accordingly, relief is granted to this petitioner § 135.65(a) and (d) in accordance with Condition and Limitation No. 5 of this exemption, which ensures that all documents necessary for safe flight are available to the PIC when the aircraft is in operation.

14 CFR § 135.79(a)(1) – Flight locating requirements

Section 135.79(a)(1) requires that each certificate holder must have procedures established for locating each flight for which an FAA flight plan is not filed, for the purposes of reestablishing communication with the aircraft or enabling search and rescue operations. It enables the certificate holder to know when an aircraft does not arrive as planned and has a reasonable expectation of where the aircraft is located so it can be recovered.

The FAA finds that the ability to locate an aircraft that is conducting Part 135 operations is required, regardless of whether that aircraft has a person onboard. For UA, this is especially important because the only way the certificate holder remains aware of the position and status of its aircraft is through flight locating.

The MK27-2 will be operated at low altitudes of less than 400 ft. AGL, and will have a short operational range. The FAA has determined that using the certificate holder's FAA-accepted flight locating procedures to locate its aircraft operating on short range flights would provide an equivalent level of safety as compared to relying on the information required to be included in a VFR flight plan. The petitioner's PIC has a display that provides indications of the UA position, speed, altitude, direction of flight, communication status, and flight path. This allows the PIC to track the MK27-2's progress and provides the location of the aircraft at all times, which increases the probability of successful aircraft recovery.

The FAA has also previously granted relief from this regulation in Exemption No. 18163. The FAA is granting relief from § 135.79(a)(1) to the extent necessary to allow this petitioner to operate the MK27-2 in on-demand air carrier operations without procedures to maintain at least the information would be included in a VFR flight plan. Instead, the petitioner will be required to adhere to Condition and Limitation No. 61 of this exemption, which requires monitoring of the aircraft at all times when airborne and ensures that situational awareness and tracking of flight location are maintained in the absence of procedures to re-establish communication or establish search and rescue operations. The FAA also adds an additional requirement on the petitioner in a revision to Condition and Limitation No. 45 of this exemption (previously Condition and Limitation No. 21 in Exemption No. 18601) which also requires the operator to have contingency plans acceptable to the FAA in the event battery depletion greater than expected occurs.

14 CFR § 135.79(a)(2) – Flight locating requirements

Section 135.79(a)(2) requires the timely notification of an FAA facility or search and rescue facility if an aircraft is overdue or missing.

Generally, UA follow predetermined flight paths, and their current position is provided to the PIC on their display. UA also have a limited range that is close to their base of operation, which is the only place where the UA normally would perform take-off and landings. This means that the operator is closest to, and has the most accurate information about, the last known position of an overdue or missing aircraft. The FAA notes that with the active monitoring of the position of the UA on a display that is available to the PIC, the operator receives continuous feedback on the location of their aircraft. When an aircraft lands at a location other than at the distribution center, the PIC is alerted of its status. The PIC can then initiate the certificate holder's search and recovery procedures for that aircraft.

The FAA has determined that the procedures for live tracking of the UA will provide the operator with accurate information for them to perform their initial aircraft search and recovery

procedures without having to provide notification to the FAA facility. The FAA believes that if the operator's initial search does not locate the aircraft, then notification of an FAA facility must be completed.

The FAA has previously granted relief from this regulation in Exemption No. 18163. The same relief from 14 CFR § 135.79(a)(2) is granted to this petitioner to the extent necessary for its use of the MK27-2 in on-demand air carrier operations. Condition and Limitation No. 7 of this exemption requires the operator to have procedures in its manual for locating missing or overdue aircraft prior to its timely notification to an FAA facility.

14 CFR § 135.79(a)(3) – Flight locating requirements

Section 135.79(a)(3) requires the operator to have procedures that provide the location, date, and estimated time for reestablishing communications if the flight will operate in an area where communications cannot be maintained.

Generally, UA do not have voice communication equipment installed, so communication with UA is not possible. Instead, control of the UA is generally maintained remotely from the PIC's location via datalink. This datalink provides the PIC a continuous position display of the UA by means of the pilot interface. Route planning by the operator ensures that adequate C2 coverage, including this datalink, is available to support the flight operation, and precludes the initiation of operations in area where communications could not be maintained or would need to be reestablished.

The FAA has previously granted relief from this § 135.79(a)(3) (Exemption No. 18163 and Exemption No. 19508). The FAA has determined that it is also appropriate to grant relief from § 135.79(a)(3) to this petitioner, so long as Condition and Limitation No. 24, which requires that operations are only conducted in areas where a C2 analysis has been performed and that the operator has a monitoring plan to ensure connectivity is maintained, is met.

14 CFR § 135.143(a) – General requirements

Section 135.143(a) states that no person may operate an aircraft under commercial operations unless that aircraft and its equipment meet the applicable regulations of this chapter.

The FAA determined that, because Amazon's UA currently holds an exemption from the requirement for an airworthiness certificate under 49 U.S.C. § 44807, its aircraft does not meet the requirements of this chapter, so as an administrative matter, relief from this provision is necessary. However, compliance with the conditions and limitations of this exemption ensures that the FAA's provision of relief from this provision does not cause an adverse effect on safety. Accordingly, the FAA is providing relief from this provision to the extent Amazon requires such relief to operate in accordance with this exemption.

14 CFR § 135.205 - VFR: Visibility requirements.

Section 135.205 states in pertinent part that no person may operate an airplane under VFR in uncontrolled airspace when the ceiling is less than 1,000 feet unless flight visibility is at least 2 miles.

The FAA has determined that it is not possible for a UAS operator to determine flight visibility, which is defined in 14 CFR § 1.1 as “the average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.” Instead, Amazon relies on use of ground visibility in its UAS operations. Ground visibility is defined in § 1.1 as the “prevailing horizontal visibility near the earth's surface as reported by the United States National Weather Service or an accredited observer.” Accordingly, relief from this provision is only granted to the extent that Amazon may substitute ground visibility for flight visibility when making a visibility determination.

The FAA has reviewed the petitioner’s procedures for determining visibility minimums from weather sources authorized in its OpSpec and has concluded that Amazon’s current procedures, along with its compliance with Condition and Limitation No. 56 of this exemption, will maintain an equivalent level of safety using visibility measured from the ground. Accordingly, the FAA is granting relief from 14 CFR § 135.205(a). Condition and Limitation No. 56 establishes a maximum altitude requirement for the operation to not exceed 400 ft. AGL, states required minimum distances from clouds, and establishes a visibility requirement of at least 2 statute miles or higher if require in a specific airspace.

Nonsubstantive Changes to Regulatory Relief

14 CFR § 135.95 – General Requirements

Section 135.95(a) states that no certificate holder may use the services of any person as an airman unless the person performing those services holds an appropriate and current airman certificate and is qualified, under this chapter, for the operation for which the person is to be used. In Exemption No. 18601, the FAA provided analysis supporting its grant of relief to § 135.95(a); however, the granting paragraph stated that relief was granted to § 135.95. This error is corrected in this exemption to clarify that the relief granted is specifically to § 135.95(a).

Conditions and Limitations Added to this Exemption

Operational Ratios

As the petitioner intends to increase size and complexity of its future operations, the FAA is proactively addressing conditions and limitations related to operational ratios. These include the UA-to-PIC ratio, PIC-to-VO ratio, VO-to-PIC ratio, Operations Base-to-PIC, and PIC-to-flight instructor. These conditions and limitations provide for approval of changes in ratios once

requested by the operator. Exemption No. 18601 did not envision operations where one PIC operated more than one aircraft at a time. Although Amazon is not yet requesting operations where one PIC controls more than one aircraft, this requirement was added to provide flexibility if the operator receives approval to conduct these types of operations. The FAA made this determination because operations are initially observed at a 1:1 ratio. If an operator requests and receives approval to increase this limit, this condition and limitation will allow flexibility to approve those operations. UA operations can have one PIC and multiple VOs, or multiple PICs and one VO. Each PIC and VO will have been evaluated and authorized at a demonstrated ratio. This will be documented on their respective LOAs. For example, two PICs working with one VO is a PIC-to-VO ratio of 2:1, and two VOs working with one PIC is a VO-to-PIC ratio of 2:1.

The FAA will conduct a safety evaluation for each ratio change at the time of request. Conditions and limitations that establish these operational ratios are as follows: Nos. 49, 50, 51, 66, 68, 70, and 70.

Similarly, the FAA also considered that each of the petitioner's crewmember positions carry unique roles and responsibilities as described in the GOM. As such, in Condition and Limitation No. 66, the FAA will require that no person serve in more than one crewmember role or other operational role concurrently.

Communications During Operations

The FAA included two conditions and limitations in this exemption to provide for improved communication practices supporting the flight operation. First, Condition and Limitation No. 62 ensures that all available means of communication are used to ensure the effectiveness of communications for the safety of the flight operation. Second, Condition and Limitation No. 66 prohibits non-essential communications during flight operations.

Condition and Limitation No. 33 was also updated to account for authorized communication devices that may or may not be part of a ground control station.

Operational Requirements

The FAA has included additional conditions and limitations related to specific operational requirements to ensure the safety of the UA operation. These conditions and limitations have been included in other recent exemptions (Exemption Nos. 18163D, 18338C, and 19111), and include following: Nos. 78, 79, and 80 (all related to crew duty period); 43, 48 (both related to preflight); 23, 24, 27 ("land now"⁹); 28 (related to maintenance); and 58, 59, and 60 (flight operations).

The FAA also included two additional conditions and limitations in this exemption to ensure the effectiveness of its oversight of the petitioner's operations. First, the FAA added Condition and

⁹ "Land now" refers the capability to perform urgent lands as described by the petitioner. "Land now" is the FAA term for this capability.

Limitation No. 2 to ensure that this exemption will be used only for operations under parts 61, 91, and 135. Second, the FAA included Condition and Limitation No. 11 in this exemption to ensure that, if the operator chooses to pursue operations in a remote location, the FAA will be able to perform the necessary oversight of these operations to ensure compliance with the requirements of this exemption.

For complete analysis of these conditions and limitations, please reference the noted exemptions.

Conditions and Limitations Formerly in Exemption No. 18602

As discussed in the applicable sections above, Condition and Limitation Nos. 21 and 22 of Exemption No. 18602 were removed from that document as amended and are now incorporated into Condition and Limitation Nos. 21 and 22 of this document, Exemption No. 18601B.

To further reduce instances of redundancy and ensure these conditions and limitations remain when the operator achieves type certification for their aircraft, the following conditions and limitations previously found in Exemption No. 18602 have also been removed. The provisions associated with those conditions and limitations will now reside in this document, Exemption No. 18601B.

Exemption No. 18602 Condition and Limitation No. 12

Condition and Limitation No. 12 of Exemption No. 18602, required that prior to flight, the PIC ensure that the pilot interface, and all systems designed to warn the PIC that the UA has violated the volume of airspace surrounding the UA's flight path, are functioning properly. These provisions have been removed from Exemption No. 18602 and now reside in Condition and Limitation Nos. 24, 29, and 61 of this document. These conditions and limitations require that a data communications assessment be completed, that the pilot interface displays all information necessary for safe operation, and that the PIC continuously monitor the pilot interface for the aircraft's location, respectively. These conditions and limitations are discussed further in the sections related to associated elements and § 135.79(a)(1)-(3) above.

Exemption No. 18602 Condition and Limitation No. 13

Condition and Limitation No. 13 of Exemption No. 18602 ensured no operations are conducted without verifying that the intended flight path is available and free and clear of conflicts. This provision was incorporated because terrain, man-made obstacles, and people on the ground can create unique hazards for each area under operational consideration. These provisions have been removed from Exemption No. 18602 and is now Condition and Limitation 25 of this document. Condition and Limitation No. 25 requires that the petitioner perform an assessment to ensure that risks associated with those hazards have been mitigated as low as reasonably practicable under normal or abnormal conditions. This ground risk assessment must be submitted to the FAA for review and acceptance.

Exemption No. 18602 Condition and Limitation No. 16

Condition and Limitation No. 16 of Exemption No. 18602 required that the pilot interface display altitude, position, direction of flight information, and flight mode. This information must be available at all times to the PIC during flight operations. This provision has been removed from Exemption No. 18602 and is now Condition and Limitation No. 29 of this document. It is discussed further in the section related to associated elements.

Exemption No. 18602 Condition and Limitation No. 24

Condition and Limitation No. 24 of Exemption No. 18602 prohibited the petitioner's UA from being operated from any moving vehicle or aircraft. The purpose of this Condition and Limitation is to ensure that operations conducted under this exemption are occurring at known locations that have been appropriately evaluated and allow access for FAA surveillance. This provision has been removed from Exemption No. 18602 and is now Condition and Limitation No. 59 of this document.

Revisions to Conditions and Limitations

Consolidation of Conditions and Limitations

In its analysis of the petitioner's requests, and in furtherance of its efforts to consolidate conditions and limitations in its exemptions for use of UA for commercial package delivery, the FAA determined that certain conditions and limitations that were included in Exemption No. 18601 could be combined. These consolidations reduce the number of related conditions and limitations with similar content, and ensure that the requirements stated in the conditions and limitations are presented in the clearest possible way.

The following conditions and limitations that were published in Exemption No. 18601 are therefore combined in this exemption for the reasons stated below:

Condition and Limitation Nos. 12, 13, and 15 in Exemption No. 18601 were combined to create the new Condition and Limitation No. 42 in this document. The aircraft's barometric calibration system is required to be operative for flight operations and accurate to a value as determined acceptable to the Administrator and as stated in the UFM. References to the aircraft's calibration system have been removed.

Condition and Limitation Nos. 2 and 60 in Exemption No. 18601 were combined to create the new Condition and Limitation No. 5 in this document. The new consolidated condition and limitation identifies circumstances when validation testing or an amendment to the exemption may be required, and indicates that the operator should contact the FAA certificate management team with proposed changes.

Condition and Limitation Nos. 61 and 71 in Exemption No. 18601 were combined to create the new Condition and Limitation No. 85 in this document.

Condition and Limitation Nos. 48, 52, 53, and 59 in Exemption No. 18601 were combined to create the new Condition and Limitation No. 82 in this document. References to personnel that are no longer used in the operation have been removed, and other adjustments have been made to align with the requirement for the petitioner's personnel to hold a remote pilot certificate as requested by the petitioner and established by this exemption.

Condition and Limitation Nos. 10 and 68 in Exemption No. 18601 were combined to create the new Condition and Limitation No. 66 in this document. By stating that "no person may serve in more than one operational role concurrently," Condition and Limitation No. 66 in this exemption ensures that each crewmember will be dedicated to their assigned role during each operation and provides clarity about what role a person is acting in at any time.

Condition and Limitation No. 43 in Exemption No. 18601 and Condition and Limitation No. 13 of Exemption 18602, as discussed above, were merged into the new Condition and Limitation No. 25 in this document.

Restructuring for Training Related to Roles

In Exemption No. 18601, Condition and Limitation Nos. 55 and 57 addressed requirements related to recurrent oral and flight testing for PICs, GSOs, SOs, VOs, AOs, and FAs as established by § 135.301. Condition and Limitation No. 57 also addressed recurrent training requirements for PICs. In granting the petitioner's request to revise these conditions and limitations to reflect its new position name and roles (discussed above), the FAA also divided these two conditions and limitations in this exemption as follows: Condition and Limitation No. 84 includes 6 month recurrent training for PICs; Condition and Limitation No. 85 includes initial and recurrent testing for PICs; Condition and Limitation No. 89 addresses VO training and checking; and Condition and Limitation No. 90 addresses AVA training and checking. Prior to operations, the petitioner must revise its training and checking program to ensure that the items contained in the conditions and limitations above that are not currently addressed in that program are added. Any training program revisions will require submission to the FAA for review and approval.

Revisions for Standardization with Other Exemptions

In its analysis of the petitioner's requests, and in furtherance of its efforts to standardize conditions and limitations in its exemptions for use of UA for commercial package delivery, the FAA determined that certain conditions and limitations that were included in Exemption No. 18601 could be aligned more closely to those in other more recent exemptions. This standardization ensures that, whenever possible, the requirements imposed this petitioner have the same content and wording as those imposed on other like operators. However, the FAA views these changes as non-substantive.

The following conditions and limitations that were published in Exemption No. 18601 were therefore revised in this exemption for the reasons stated: 9, 10, 31, 44, 61, 70, and 73.

Revisions for Clarity

In its analysis of the petitioner's requests, and in furtherance of its efforts to provide clarity in the conditions and limitations in its exemptions, the FAA has determined that certain conditions and limitations in Exemption No. 18601 could be improved by revisions in wording, structure, or style. These revisions ensure that, to the greatest extent possible, there are no misunderstandings as to the intent and purpose of each condition and limitation. Additionally, in some cases, the revisions are intended to align the conditions and limitations with standard terminology and usage.

The following conditions and limitations that were published in Exemption No. 18601 are therefore revised in this exemption for the reasons stated: 2, 4, 18, 23, 26, 42, 47, 74, and 75.

In addition, the FAA also revised Condition and Limitation No. 5 of Exemption No. 18601 to produce Condition and Limitation No. 8 of this exemption and clarify that no revisions or updates are made to manuals which the FAA relied when granting this exemption absent a petition to amend.

Finally, the FAA also clarified Condition and Limitation No. 27 of Exemption No. 18601 in Condition and Limitation No. 13 of this exemption that PIC holds the final authority for safety of flight and decision making regarding the weight of the aircraft.

Removal of Conditions and Limitations

In its analysis of the petitioner's requests, and in furtherance of its efforts to standardize conditions and limitations in its exemptions for use of UA for commercial package delivery, the FAA decided to remove certain conditions and limitations in Exemption No. 18601. These removals reduce redundancy and ensure that this petitioner is not subject to requirements not imposed on similar operators.

The following conditions and limitations that were published in Exemption No. 18601 are therefore removed from this exemption for the reasons stated: Condition and Limitation Nos. 6, 7, 14, 18, 30, 36, 39, 41, 45, 49, and 50.

Public Interest

The FAA finds that the justification for granting Exemption No. 18601A, as amended, remains valid with respect to this exemption and is in the public interest.

The petitioner asserts that granting the petition serves the public interest in multiple ways through continued service for residents to obtain essential goods on-demand and enabling businesses to continue operations during times of restriction. Additionally, the petitioner states

they have demonstrated UAS services can help to improve safety, connectivity, and sustainability in the transportation of small goods.

As described in earlier versions of this exemption, the 2018 FAA Reauthorization Act (Public Law 115-254) requires the FAA to “update existing regulations to authorize the carriage of property by operators of small unmanned aircraft systems for compensation or hire within the United States” within a year of the date of enactment. (Sec. 348; 49 U.S.C. § 44808). Sec. 44808 also authorizes the FAA to consider petitions for relief from current processes while the FAA updates its regulations. Although the petitioner’s UAS is not, by definition, a small UAS, data and insights gained from its operation will aid in the development of a regulatory framework for similar operations for UAS of all sizes, including small UAS. The petitioner has also expressed its commitment to support of this effort and stated that granting its petition would continue to help in the development of a future national aviation regulatory framework.

The FAA’s Decision

In consideration of the foregoing, 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 Services dba Amazon Prime Air is granted an exemption from 14 CFR §§ 61.3(a), 61.23(a)(2), 61.113(a), 91.109(a), 91.119(b), 91.119(c), 91.121, 91.151(a) and (b), 135.63(c), 135.63(d), 135.65(a), 135.65(d), 135.79(a)(1), 135.79(a)(2), 135.79(a)(3), 135.93, 135.95(a), 135.143(a), 135.149(a), 135.161(a)(1) through 135.161(a)(3), 135.203(a)(1), 135.203(a)(b), 135.25, 135.209(a), 135.209(b), 135.243(b)(1) through 135.243(b)(3), 135.337(b)(1), 135.338(b)(1), 135.339(e)(3), 135.339(e)(4), 135.340(e)(3), and 135.340(e)(4), to the extent necessary to allow Amazon to conduct Part 135 air carrier operations for commercial package delivery subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Amazon Prime Air is hereafter referred to as “the operator.”

I. General

1. Operations authorized by this grant of exemption are limited to the MK27-2 listed in Operations Specifications A003 (OpSpec). Proposed operations of any aircraft other than the MK27-2 requires a new petition or a petition to amend this exemption.
2. Exemptions granted from regulations contained in Parts 61, 91 and 135 may be utilized only in conjunction with an air carrier certificate issued by the Administrator, and as authorized by OpSpec A001.
3. UA operating under this exemption that do not have a standard airworthiness certificate, shall be maintained under a continuous airworthiness maintenance program (CAMP) as outlined in 14 CFR §§ 135.411(a)(2) and rules 135.415,

135.417, and 135.423 through 135.443, or an Approved Aircraft Inspection Program (AAIP) under 135.411(a)(1).

4. For part 135 operations, the operator must maintain and adhere to the following manuals and checklists, at the latest revision level, approved or accepted by the FAA:
 - a. General Operations Manual (GOM)
 - b. General Maintenance Manual (GMM)
 - c. Training Program Manual
 - d. Hazardous Materials Operations Manual and Training Program, Will- or Will-Not Carry in accordance with the operator's OpSpec.
 - e. Operations checklists for each unmanned aircraft listed in the operator's OpSpec A-003.
5. Proposed changes to the kind of operation involved, the number or type UA used, or the area of operations must be submitted to the FAA certificate management team (CMT) for approval. The CMT will determine whether validation testing or an amendment to the exemption is required.
6. All documents used by the operator to ensure the safe operation and flight of the UA, including this exemption and any 49 U.S.C. § 44807 exemption that the Operator holds, as well as any documents required under 14 CFR §§ 91.9, 91.203, and 135.65 must be available to the PIC any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.
7. The operator's manual must include procedures for the retrieval of missing or overdue aircraft. After conducting an initial search, if unable to locate a missing or overdue aircraft, the manual must have procedures for the timely notification of an FAA facility.
8. If a discrepancy exists between the conditions and limitations in this exemption, the procedures outlined in the operator's Part 135 manuals, the Unmanned Aircraft Flight Manual (UFM), the Unmanned Aircraft Maintenance Manual (UMM) or any provisions issued under a waiver to any Part 91 requirement, the Operator must comply with the most restrictive provision. The Operator shall not make any updates or revisions to the above manuals that would affect the basis upon which the FAA granted this exemption, unless in accordance with a petition to amend this exemption.
9. This exemption is not valid for operations conducted outside of the United States.
10. Persons participating in the operation of the UAS, including all operator personnel and the customer retrieving the package, must provide consent to the operator in a form and manner acceptable to the Administrator that indicates they are aware of the potential risks of UA operations and provide consent to participate in the operation, notwithstanding those risks. Record of each such consent must be available for

review upon request by the FAA for three years from the date of termination of employment or removal of consent.

11. Remote pilot duty stations must be physically located within the United States and the locations must be provided to the FAA prior to operations at any new location.
12. The operator must maintain a record of the total payload carried on each flight. This record must be kept for at least 30 days and be made available to the FAA upon request.
13. The operator must have procedures in its GOM for the loading of its aircraft. Those procedures must ensure that the PIC has the necessary information to ensure that the maximum take-off weight (MTOW) and the maximum total payload are not exceeded for each flight.
14. The operator must provide copies of its current aircraft loading procedures to all persons responsible for the loading of its aircraft.
15. The operator must ensure that ground personnel, PICs, and other flight crewmembers have access to the portions of the manual system that pertain to their duties and responsibilities during the performance of their duties.
16. The operator's check pilots must review operational and training data quarterly to identify any lessons learned or areas of improvement that can be incorporated into the approved training program.
17. The operator must collect performance data from its training program and line checks and make that data available to the Administrator upon request. The data collected must include:
 - a. Identification by subject area or training module how often additional training or retraining of each crewmember was given;
 - b. Identification of any areas of retraining given to each crewmember during a satisfactory checking event; and
 - c. Records indicating any unsatisfactory tests and checking events and the reason for the unsatisfactory performance by each crewmember.
18. The operator is responsible for maintaining the following data and providing the data to the FAA upon request:
 - a. Date, name, and certificate number of the designated PIC responsible for each flight;
 - b. Date, name, and certificate numbers of all other personnel required for each flight;
 - c. Duration of each flight;

- d. The length of the rest period prior to each duty period for each of the required personnel;
 - e. Total hours on duty per calendar day for each of the required personnel;
 - f. Total duty time the designated PIC spent operating more than one aircraft, at the same time per calendar day, if authorized;
 - g. Total duty time the designated PIC spent operating the maximum authorized number of aircraft, at one time per calendar day, if authorized; and
 - h. Total number of “Urgent Land” commands per calendar day distinguishing between aircraft, personnel-initiated, and reason.
 - i. Total number of rejected loads per calendar day
 - j. Any occurrence of failure to clear obstructions
 - k. Data informing the accuracy of the altimetry system and the reference data (concerning terrain and obstacles)
 - l. The remaining battery charge if an “Urgent Land” is initiated.
19. The operator must submit a monthly report of all flights conducted that month, and send the report to the responsible Flight Standards office by the 10th day of the following month. The report must include the following:
- a. The number of Part 135 flights that were initiated;
 - b. The number of Part 135 flights that had any interventions, incidents, or accidents;
 - c. For flights that involved any interventions, incidents, or accidents, the Operator must provide the following information:
 - i. The causal factors for each event;
 - ii. The names of required personnel, their respective roles, and their locations;
 - d. If the operator has initiated any corrective actions to any previous interventions, incidents, or accidents, the specifics of such actions.
20. For flights that involved any interventions, incidents, or accidents, the operator must:
- a. Send an initial report to the responsible Flight Standards office within 24 hours of the event. The initial report should provide the following information:
 - i. A description of the event, including operational and environmental factors;
 - ii. A description of the initial, known contributing factors for the event;
 - iii. The names of the crewmembers involved in the operation and their respective roles; and
 - b. Send a final report of the intervention, incident, or accident upon completion of the investigation.

II. Area of Operations

21. Flight operations must be conducted to minimize risk.
- a. The following mitigations are required to reduce ground risk:

- i. Operations over people are prohibited, unless otherwise approved by the Administrator;
 - ii. Overflight of power plants is prohibited;
 - iii. Overflight of schools during times of operation (e.g., elementary, middle, high, preschool and daycare facilities) is prohibited;
 - iv. Operations over or within 250 ft. laterally of moving vehicles are prohibited, unless otherwise approved by the Administrator.
 - v. Overflight of any area deemed high risk by the Operator during the flight route design process are prohibited; and
 - vi. Sustained flight within 250 ft. laterally of roadways is prohibited, and transitions over roadways is prohibited, unless otherwise approved by the Administrator;
 - vii. The UA must remain at least 100 ft. laterally from any person during all phases of flight, unless otherwise approved by the Administrator.
- b. The following mitigations are required to reduce risk to other users of the airspace:
 - i. The UA must remain clear of known areas with increased aviation activity (e.g., ultralight areas, aerobatic boxes, active military training routes, or other areas with a high volume of low altitude traffic); and
 - ii. The UA may not operate within 3 miles of any public use runway or other landing area except as described in the Operator's GOM and only when such operations are necessary.
22. The operator must designate safe emergency landing areas that the UA can reach if it is unable to complete the intended flight and identify such emergency landing areas to the PIC operating the aircraft. The emergency landing areas must:
- a. Be known in advance to the PIC operating the aircraft;
 - b. Provide for a landing without undue hazard to persons or property on the ground;
 - c. Be co-located with a VO, or otherwise monitored and controlled by the operator's personnel, or controlled, fenced, or otherwise secured in an area with the landowner awareness, or as approved by the Administrator;
 - d. Be areas with a low likelihood of exposed persons, such as forested areas providing significant sheltering, farmland, or prairies; and
 - e. Avoid prohibited structures and roads identified by the operator that pose a risk to persons and property.
 - f. Be no less than 100 ft. in diameter, unless otherwise approved by the Administrator.
 - g. Be 250 ft. laterally from structures, vehicles, people, and roads, unless otherwise approved by the Administrator.
23. To ensure the safety of the operation, the operator must adhere to the following regarding takeoff, landing, and delivery areas:

- a. The areas must be limited to locations with access restricted to only persons participating in the operation;
 - b. The area must be free of any obstructions that could pose a hazard;
 - c. All persons must remain at least 100 ft. from all operations in takeoff, landing, and delivery areas, unless otherwise approved by the Administrator.
24. For all current operations areas and prior to conducting operations in a new area, the operator must complete a communication service assessment and submit it to the Administrator for acceptance. The assessment must, at a minimum, include:
- a. A C2 analysis for all areas of operations to include coverage and availability;
 - b. A monitoring plan that ensures connectivity is maintained and availability issues addressed; and
 - c. C2 lost link procedures, including an analysis of those procedures.
25. For all current operations areas, and prior to conducting operations in a new area, the operator must complete a ground risk assessment and submit it to the FAA for acceptance. The assessment must, at a minimum, include all of the following:
- a. Consideration of the provisions of Condition and Limitation Nos. 22, 23, and 24.
 - b. Pedestrian and moving vehicle analysis that will consider possible flight paths with the least presence of people and moving vehicles, during the planned time of operation.
 - c. Terrain and Man-made Obstacle Analysis. For all terrain and man-made obstacles that the Operator intends to overfly, the maximum height of such obstructions must be verified by the Operator or a third party, utilizing methods acceptable to the Administrator.
 - d. Known weather hazards in the area.
 - e. Consideration of the implications of an unintended release of the types and quantities of hazardous materials authorized to be transported by the Operator's Dangerous Goods Procedures Manual and OpSpec A055.
26. The operator must have plans for the use of required personnel for the operations that will be conducted. The plans should address the responsibilities of each role as described in the GOM, and ensure sufficient coverage for each area of operations. If VOs are used, the VO plan must specifically provide for the following:
- a. Sufficient VOs are used to identify any non-participating aircraft prior to their entry into the planned operational area. Sufficient VOs is defined as the minimum number of VOs required to continuously observe at least a 2 statute mile radius of airspace surrounding the UA in flight; and
 - b. VOs are physically located such that the remote PIC receives sufficient notice to ensure the UA remains well clear of all other aircraft, obstacles, and unforecasted weather.

III. Unmanned Aircraft System

27. The UA must have a flight control system with “land now” capability.
28. The operator may not perform maintenance, preventive maintenance, or alterations for another operator until the aircraft has obtained a standard airworthiness certificate, at which time 14 CFR § 43.3(f) or will apply.
29. The pilot interface must display all available information required for continued safe flight and operation.
30. The pilot interface must provide the capability for the PIC to communicate effectively with all required personnel in their operational area. In addition, the pilot interface map must support the simultaneous monitoring and tracking of all aircraft under that PIC’s control during operations.
31. The pilot interface must provide access to meteorological information. The device providing meteorological information and its installation must be acceptable to the Administrator, and the information be readily available to the PIC while at the normal duty station.
32. Any required communication device must have an adequately sized, uninterruptable power supply or battery so that it remains continuously powered while the PIC is conducting UA operations that could require its use.
33. Communications capability must be sufficient for the PIC to communicate effectively during operations with required personnel, as well as outside entities as needed. The following are also required:
 - a. Required personnel must be provided with enough devices for effective communications;
 - b. All devices must provide for real-time communications; and
 - c. A secondary method of communication must be available and acceptable to the FAA.
34. The operator must maintain a configuration control document acceptable to the FAA that lists each associated element required to operate the UA in normal, abnormal, and emergency operations which must include, but is not limited to, ground station hardware, ground station software, ground station peripherals, offboard software, launch and recovery systems, launch pad, base stations, targets, GPS source provider, data links to include data link providers, handheld communication devices or systems.
 - a. The associated elements list must identify the specific elements or minimum specifications for the elements necessary for operation of the UA.

- b. The operator must determine through an evaluation and/or demonstration if the UA and/or associated elements identified in the configuration control document are suitable for operations.
 - c. The configuration control document must reflect the latest UAS configuration.
 - d. The operator must retain all records related to the configuration control document for the duration of the exemption and provide those records to the FAA upon request.
35. The operator must document and adhere to policies and procedures for maintenance that assure all associated elements of the UAS are capable of meeting the AE's intended function prior to and during each operation.
36. The operator must describe in its manual system any training and qualification requirements necessary for personnel who maintain each of the AE.
37. Changes to AE will be managed using an FAA accepted process. This process must detail how the operator will identify changes to AE that appreciably affects the reliability, operational characteristics, or other characteristics affecting the safe operation of the UA. All such changes require approval by the FAA. Any change to AE that has no appreciable effect on the UA may be implemented by the Operator using the FAA accepted process.
38. Any maintenance, alterations, or system changes of any AE that could appreciably affect the operation or flight characteristics (e.g., replacement of a flight critical component) of the UA must be validated by a functional test prior to conducting further operations. If a functional test includes a functional test flight, the flight must be performed 500 ft. from non-participating people. The operator must document the satisfactory completion of a functional test.
39. The operator must implement an AE error reporting, evaluation and mitigation program. The operator must evaluate any failures, anomalies, or other in-service problems to ensure that they do not represent a system deficiency that could cause an unsafe condition or result in a subsequent noncompliance with regulations or conditions and limitations. If a failure, anomaly or in-service problem may result in subsequent noncompliance, the operator must correct the issue to prevent that non-compliance and must report the issue and correction to the FAA via the UAS Service Difficulty Reporting system (UAS SDR system).
40. The operator has 120 days from the effective date of this exemption to comply with Conditions and Limitations Nos. 34, 35, 36, 37, and 39. The operator must submit any documentation necessary to show compliance with these conditions and limitations to the FAA no later than 90 days from the effective date of this exemption for FAA review.

IV. Preflight

41. The operator must use actual weights for determining the weight of cargo loaded onto its aircraft or another method authorized by the Administrator.
42. The aircraft's barometric calibration system must be operative for flight operations and accurate to a value as determined acceptable to the Administrator and memorialized in the UFM. The operator must have procedures and checklists available:
 - a. For the responsible person to ensure the barometric calibration system is operative for flight, per approved procedures during pre-flight inspection; and
 - b. For loss of barometric pressure calibration or input.
43. Prior to each flight, the PIC must ensure the C2 available complies with the Operator's C2 requirements.
44. Prior to each flight, the PIC must ensure a preflight inspection was completed and determine that the UA is in a condition for safe operation. The preflight inspection must account for potential discrepancies, e.g., inoperable components, items, or equipment.
45. The PIC is prohibited from beginning a flight unless, considering wind and forecast weather conditions:
 - a. There is enough available power for the UA to conduct the intended operation and to operate after that with at least:
 - i. A minimum power reserve ensuring a remaining charge sufficient to facilitate a descent and landing without undue hazard to persons or property on the surface; or
 - ii. The UA manufacturer's stated minimum power reserve; whichever is greater; and
 - b. The operator has contingency plans acceptable to the FAA in the case of battery depletion greater than anticipated.
46. Prior to each flight, the operator must consult advisory and warning publications or programs for any GPS availability or quality issues and confirm that GPS is expected to be available throughout the intended operation with acceptable performance. Additionally, the operator must consider the effect of degraded GPS inputs induced by adjacent structures and implement appropriate mitigations.
47. Prior to beginning flight operations, the PIC must verify that there are sufficient personnel available as required by the operator's personnel plan, and:
 - a. Ensure that all required personnel have been briefed on the following:
 - i. Designated positions, physical locations, responsibilities, and crew resource management;

- ii. Planned flight operating area;
 - iii. Takeoff and landing areas;
 - iv. Ground risks;
 - v. Alternate landing sites;
 - vi. Verification of geo-fence boundaries;
 - vii. Verification of flight profile and course; and
 - viii. Procedures for avoidance of other aircraft.
- b. Be familiar with all the content from the briefing.
48. The PIC must verify that the control station is configured to control the intended UA before flight.
- ## V. Flight Operations
49. The operator may only conduct operations at a UA-to-PIC ratio of 1:1 unless otherwise authorized by the FAA. The operator must successfully complete validation testing conducted by the FAA for an increase in the UA-to-PIC ratio.
50. The operator may only conduct operations at an Operations Base-to-PIC ratio of 1:1 unless otherwise authorized by the FAA. The operator must successfully complete validation testing conducted by the FAA for an increase in the Operations Base-to-PIC ratio.
51. The operator may only conduct operations at a VO-to-PIC ratio of 1:1 unless otherwise authorized by the FAA. If the FAA determines validation testing is necessary, the operator must successfully complete validation testing conducted by the FAA.
52. The operator may only conduct operations at a PIC-to-VO ratio of 1:1 unless otherwise authorized by the Administrator. If the FAA determines validation testing is necessary, the Operator must successfully complete validation testing conducted by the FAA.
53. The operator must:
- a. Ensure the aircraft is operated at a suitable altitude that would not cause a hazard to persons or property on the surface; and
 - b. Consider all equipment tolerances when determining such altitudes.
54. The operator must provide notification to each delivery customer instructing the customer to remain clear of the UA during delivery by a distance of at least 100 ft. to minimize the risk of injury, unless otherwise approved by the Administrator.
55. Flights under special visual flight rules (SVFR) are not authorized.

56. For all operations:
 - a. The altitude of the aircraft must not exceed 400 ft. above ground level (AGL);
 - b. The aircraft must maintain at least 500 ft. below and 2000 ft. horizontally from any cloud; and
 - c. The visibility must be at least 2 statute miles, or higher, if required in specific airspace.
57. For all operations, the UA must have an anti-collision light(s) as an additional means for collision mitigation that:
 - a. Are operable and on for all flight operations, except when the PIC determines that, because of operating conditions, it would be in the interest of safety to turn the light(s) off; and
 - b. Are visible from 3 statute miles for civil twilight and night operations, if authorized.
58. The UA must remain clear of and give way to any manned aircraft at all times.
59. The PIC may not operate the UA from any moving vehicle or aircraft.
60. The PIC must abort the flight operation if unpredicted circumstances or emergencies that could potentially degrade the safety of persons or property arise. The PIC must terminate flight operations without causing undue hazard to persons or property in the air or on the ground.
61. The PIC must monitor the pilot interface to track each flight's location and maintain situational awareness of each aircraft under that PIC's control.
62. The PIC must use all available means to maintain effective communications with all required personnel in the PIC's operational area as needed to ensure the safety of the operation.
63. Non-essential communications during flight operations are prohibited.
64. If communications are lost between the PIC and other required personnel, all UA must remain clear of, or vacate, any affected sectors, loading areas, takeoff areas, landing areas, or delivery areas, until communications are restored.
65. VOs must continuously scan their area(s) of responsibility and immediately notify the PICs whose areas of operations are affected whenever they observe:
 - a. A new obstruction not plotted on the obstruction map or obstruction database,
 - b. The erection of an obstruction that begins during the course of a shift,
 - c. Any other obstruction, hazard, or non-participating conflicting air traffic that may pose a risk to the operation,
 - d. Any open-air assemblies of people, or

- e. Any weather condition that causes the VO to be unable to view the assigned airspace, new or existing obstructions, hazards, or the UA.

VI. Required Personnel

- 66. No person may serve in more than one operational role concurrently.
- 67. No person may act as a PIC or other required personnel, or serve as an instructor, check pilot, or direct participant in the operator's Part 135 operation if that person knows or has reason to know that the person has a physical or mental condition that would interfere with the safe operation of the aircraft.
- 68. No PIC may conduct operations at a UA-to-PIC ratio greater than that authorized by the FAA for that individual PIC.
- 69. No PIC may conduct operations at an Operations Base-to-PIC ratio greater than that authorized by the FAA for that individual PIC.
- 70. No PIC may conduct operations at a VO-to-PIC ratio greater than that authorized by the FAA for that individual PIC.
- 71. No VO may perform required personnel duties at a PIC-to-VO ratio greater than that authorized by the FAA for that individual VO.

VII. Training, Certification and Duty

- 72. The operator is responsible for ensuring all persons responsible for the loading of its aircraft have been trained on the Operator's loading procedures.
- 73. The operator must provide training on this exemption and any related exemptions, waivers, or authorizations that the Operator may hold, to all persons whose duties and responsibilities are impacted by these documents.
- 74. Flight instructors and check pilots must remain in the immediate vicinity of any person being trained or checked.
- 75. The approved ratio of PIC-to-flight instructors must be listed in the approved training program. The Administrator may authorize an increase in the PIC-to-flight instructor ratio for the operator after validation testing.
- 76. Each check pilot and flight instructor must hold at least a third-class medical certificate when serving as a required crewmember. A copy of this certificate must be kept in the pilot's records.
- 77. A check pilot may not evaluate more than one applicant at a time.

78. Required personnel are limited to a maximum 14-hour duty day, and to a maximum 50-hour duty week.
79. Required personnel must take a minimum 10-hour continuous rest period within the 24 hours prior to reporting for duty.
80. Required personnel must receive a minimum of one day of continuous rest, free of all responsibility for work or duty on behalf of the operator, per week, each week in which the operator schedules them for duty.
81. Required personnel on duty must be fit for duty when any UA are in flight, but may go off duty for reasons, including, but not limited to, biological necessity, nourishment, hydration, or illness, in which case:
 - a. For a PIC, all UA being operated in the PIC's sector must return to the Operations Base in accordance with the procedures specified in the Operator's GOM.
 - b. For other required personnel, all UA must remain clear of, or vacate, any affected sectors, loading areas, takeoff areas, landing areas, or delivery areas, until that person has returned or been replaced in accordance with the procedures specified in the Operator's GOM.
82. Each PIC, check pilot, instructor, VO, and AVA must hold a remote pilot certificate issued in accordance with 14 CFR Part 107 and remain current in accordance with 14 CFR § 107.65. Each VO must also hold an FAA-issued pilot authorization and comply with the conditions and limitations therein to serve as a VO. Each PIC must also hold an FAA-issued pilot authorization and comply with the conditions and limitations therein to serve as a PIC. PICs and VOs are issued the authorization following satisfactory completion of the operator's approved training and checking program. Each PIC, VO, AVA, flight instructor, and check pilot serving as a required crewmember in the operations must have the remote pilot certificate, a government-issued photo ID and a copy of the pilot authorization in the pilot's possession and make such documents available upon request from the Administrator. The Operator must keep in its records a copy of the any pilot certificates and pilot authorizations that each person holds in accordance with 14 CFR § 135.63(a)(4)(ii).
83. Each PIC is required to hold at least a third-class medical certificate. A copy of this certificate must be kept in the pilot's records.
84. Each PIC must complete the recurrent training required by 14 CFR § 135.343 every six calendar months.
85. Each PIC must complete initial and recurrent pilot testing and a line check in accordance with 14 CFR §§ 135.293 and 135.299, respectively. The following requirements apply:

- a. For the purposes of meeting 14 CFR § 135.299(a)(3), the representative airport for takeoffs and landings is the authorized location(s) identified in the operations specifications;
 - b. The 14 CFR §§ 135.293 and 135.299 evaluation must include operations and scenarios with the maximum number of UA-to-PIC ratio, VO-to-PIC ratio and Operations Base-to-PIC ratio sought, for the individual pilot, in accordance with the approved training program;
 - c. The evaluations must be completed as follows:
 - i. Pilots must successfully complete a line check that otherwise meets the requirements of 14 CFR § 135.299, except they must be accomplished every three calendar months;
 - ii. The provisions for a grace month in 14 CFR § 135.301 also apply to the above requirements;
 - d. Completion of these evaluations must be documented in the pilot's records, as well as pilot performance on the evaluations and reasons for any unsatisfactory performance.
86. Completion of the checking requirements required by 14 CFR §§ 135.293 and 135.299 does not satisfy recent experience requirements of 14 CFR §§ 61.56(d)(1) and 107.65(c).
87. PICs must complete supervised operating experience with a check pilot on the specific route to be flown or a route that is representative in distance and airspace complexity, prior to serving as a PIC in Part 135 operations.
88. The operator's PICs are required to log flight information in accordance with his or her pilot authorization. Each pilot must make the log available to the Administrator upon request.
89. VOs must be trained in accordance with the FAA-approved training and checking program, including evaluation by an approved check pilot or a designated FAA Operations Aviation Safety Inspector. For the evaluation, the grace month provision stated in 14 CFR § 135.301 applies. The Operator must document the completion of these requirements in each of the VO's records. The evaluation must include the following areas:
- a. Duties and responsibilities as defined in the GOM to include normal and abnormal procedures;
 - b. Use of checklists;
 - c. Communication and coordination procedures (i.e., crew resource management) with the PIC and other operations personnel as described in the GOM and the UFM;
 - d. General meteorology focused on cloud types and associated weather conditions that may be hazardous to the aircraft;

- e. Use of scanning techniques and the ability to identify and report to the pilot(s) any airspace hazards, aircraft distance from clouds, and any other reportable information as described in the GOM;
 - f. Knowledge of the operational environment (e.g., airports, active helipads/routes, hospitals) and the ability to maintain situational awareness for the operation; and
 - g. If the VO is qualified to a VO role for the Operator outside of Part 135, knowledge of operational differences between the Part 135 operations and any other authorized operations that pertains to his or her responsibilities.
 - h. Operations and scenarios with the maximum PIC-to-VO ratio sought for the individual VO, in accordance with the approved training program.
90. AVAs must be trained in accordance with the FAA-approved training program, evaluated by an approved check pilot or a designated FAA Operations Aviation Safety Inspector. For the evaluation, the grace month provision stated in 14 CFR § 135.301 applies. The Operator must document the completion of these requirements in each of the AVA's records. The evaluation must include the following areas:
- a. Duties and responsibilities as defined in the General Operations Manual to include normal and abnormal procedures.
 - b. Aircraft preflight and post flight procedures and use of checklists.
 - c. Aircraft loading procedures.
 - d. Weight and balance calculations.
 - e. Aircraft ground support.
 - f. Communication and coordination procedures (i.e., crew resource management) with the pilot and other operations personnel as described in the General Operations Manual and the Flight Manual.
 - g. If the AVA is qualified to serve in this role for Amazon outside of Part 135, knowledge of operational differences between the Part 135 operation and any other authorized Amazon operations as it pertains to his or her responsibilities.
91. Each VO must be able to see all potential hazards with vision that is unaided by any device other than corrective lenses or eyeglasses.

Failure to comply with any of the conditions and limitations of this grant of exemption renders this entire exemption void.

The Effect of the FAA's Decision

The FAA's decision amends Exemption No. 18601A to 18601B and changes the termination date to November 30, 2024, unless sooner superseded or rescinded.

To request an extension or amendment to this exemption, please submit your request by using the Docket No. FAA-2019-0573 (<http://www.regulations.gov>). In addition, you should submit your request for extension or amendment no later than 120 days prior to the expiration listed above, or the date you need the amendment, respectively.

Any extension or amendment request must meet the requirements of 14 CFR § 11.81.

Sincerely,

WESLEY L MOOTY 
Digitally signed by
WESLEY L MOOTY
Date: 2023.01.05
06:06:23 -09'00'

Wesley L. Mooty
Acting Deputy Executive Director, Flight Standards Service

Appendix A

Exemption No. 18601B: Supplemental Documents Considered

In addition to the petition for relief, the FAA considered the following supplemental documents submitted by the petitioner in its analysis for issuance of Exemption No. 18601B:

Supplemental documents	Description
Amazon Prime Air General Maintenance Manual (GMM)	This document describes Amazon Prime Air's Continuous Airworthiness and Maintenance Program (CAMP) and defines mechanisms for Amazon Prime Air's aircraft to comply with FAA regulatory requirements. The GMM establishes the policies and procedures that Amazon Prime Air will use to operate a maintenance program and maintain its aircraft.
Amazon Prime Air General Operations Manual (GOM) – Delivery Operations	This document describes the organization of Amazon Prime Air's operations to deliver packages to customer using a drone.
Flight Operations Training Manual (FOTM)	The FOTM provides guidance for managing the Amazon Prime Air Flight Operations Training program.
MK27-2 Concept of Operations	The CONOPS includes detailed information describing the Amazon MK27-2 mission and execution.
Amazon Prime Air Maintenance Operations Training Manual (MOTM)	This document provides guidance for managing the Maintenance Training program and applies to Amazon Prime Air Maintenance support as defined in the GMM. The MOTM clarifies maintenance policies and the responsibilities of members of the Maintenance team.
Amazon Prime Air Delivery Operations Standard Operating Procedures	This document serves as Amazon's Part 135 Delivery Operations SOP provides flight crews with the specific processes, procedures, and techniques necessary for compliance with the Amazon Prime Air GOM flight operation.

Supplemental documents	Description
Amazon Prime Air Associated Elements Maintenance Manual (AEMM)	This document sets forth Amazon's processes and procedures to manage AE.
MK27-2 44807 Configuration Document	This document identifies the major components installed in the MK27-2 drone including part numbers and modification levels as applicable.
Amazon Prime Air Drone Flight Manual MK-27-2	This document is the authoritative source of information necessary for safe operations of the MK27-2 Drone. It includes the necessary operating limitations, procedures, performance, and systems information that flight crew personnel need to safely operate the aircraft.

Appendix B

Petitioner's Requested Revisions to Exemption No. 18601 to Incorporate MK27-2 Crew Positions

Exemption No. 18601 Condition and Limitation	Change Requested
Condition and Limitation No. 19	Remove references to GSOs and reassign all functions previously assigned to the GSO to the OIC
Condition and Limitation No. 20	Remove references to GSOs, SOs, and AOs
Condition and Limitation No. 24	Remove references to GSOs and SOs
Condition and Limitation No. 32	Remove reference to GSOs
Condition and Limitation No. 33	Remove reference to GSOs
Condition and Limitation No. 36	Remove reference to AOs and SOs
Condition and Limitation No. 37a	Rename FAs to AVAs
Condition and Limitation No. 37d	Remove because no AOs will be used
Condition and Limitation No. 37e	Remove because no AOs will be used
Condition and Limitation No. 37f	Remove reference to GSO and revise to reflect updated functions of SOs in alignment with the GOM
Condition and Limitation No. 37g	Remove and revise to reflect updated functions of SOs in alignment with the GOM
Condition and Limitation No. 37h	Remove because no GSOs will be used
Condition and Limitation No. 37i	Remove references to GSOs and AOs, and rename FAs to AVAs
Condition and Limitation No. 38	Remove reference to AOs and SOs
Condition and Limitation No. 39	Remove references to the GSOs and AOs. Remove SO and revise description of the SO's duties to reflect changes to functions resulting from removal of the FTS
Condition and Limitation No. 40	Remove references to GSOs, SOs, and AOs
Condition and Limitation No. 45	Remove because no AOs will be used
Condition and Limitation No. 46	Remove references to GSOs, SOs, and AOs
Condition and Limitation No. 48	Remove references to GSOs
Condition and Limitation No. 52	Remove references to GSOs
Condition and Limitation No. 53	Remove references to AOs and SOs, rename FAs to AVAs
Condition and Limitation No. 54	Remove references to GSO and SO
Condition and Limitation No. 55	Remove references to GSOs, SOs, and AOs, and rename FAs to AVAs
Condition and Limitation No. 56	Remove references to GSOs
Condition and Limitation No. 57	Remove references to GSOs, AOs, and SOs; rename FAs to AVAs
Condition and Limitation No. 58	Remove references to GSOs, AOs, and SOs; rename FAs to AVAs
Condition and Limitation No. 59	Remove references to GSOs, AOs, and SOs; rename FAs to AVAs
Condition and Limitation No. 61	Remove references to GSOs
Condition and Limitation No. 65	Remove references to AOs
Condition and Limitation No. 66	Remove references to AOs and SOs
Condition and Limitation No. 66g	Remove references to AOs and SOs

Exemption No. 18601 Condition and Limitation	Change Requested
Condition and Limitation No. 67	Rename FAs to AVAs
Condition and Limitation No. 68	Remove reference to GSOs
Condition and Limitation No. 69	Rename FAs to AVAs
Condition and Limitation No. 75	Remove references to GSOs, SOs, AOs, and rename FAs to AVAs
Condition and Limitation No. 76	Remove references to GSOs, SOs, and AOs; and rename FAs to AVAs
Condition and Limitation No. 77	Remove references to GSOs, SOs, and AOs; rename FAs to AVAs

Appendix C

18601-to-18601B Crosswalk

Condition and Limitation No. in 18601	Condition and Limitation No. in 18601B
1	1
2	5
3	Deleted - Included Condition and Limitation No. 1.
4	6
5	8
6	Deleted
7	Deleted
8	9
9	55
10	66
11	56
12	42
13	41
14	Deleted
15	42
16	21
17	22
18	57
19	29 and 61
20	61
21	45
22	7
23	44
24	Deleted
25	54
26	12
27	13
28	14
29	41
30	Deleted
31	46
32	33
33	32

Condition and Limitation No. in 18601	Condition and Limitation No. in 18601B
34	31
35	15
36	Deleted
37	47
38	65
39	Deleted
40	81
41	Deleted
42	53
43	25
44	26
45	Deleted
46	81
47	73
48	82
49	Deleted
50	Deleted
51	76
52	82
53	82
54	83
55	85, 89, and 90
56	87
57	84, 85, 89, and 90
58	67
59	82
60	5
61	85
62	86
63	17
64	16
65	91
66	89
67	90
68	66
69	72

Condition and Limitation No. in 18601	Condition and Limitation No. in 18601B
70	49
71	85
72	74
73	75
74	77
75	18
76	19
77	20