Exemption No. 18674

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
DES MOINES, WASHINGTON 98198

In the matter of the petition of **Airbus S.A.S** for an exemption from §§ 25.813(e), 121.310(f)(5), and 121.310(f)(6) of title 14, Code of Federal Regulations	**Regulatory Docket No. FAA-2020-0776**

GRANT OF EXEMPTION

By petition letter ref. no. SA25M20003955, dated August 6, 2020, Ms. Marie-Laure Moulard, Certification Manager—Cabin Safety, Airbus S.A.S (Airbus), 2, rond-point Emile Dewoitine, F-31700 Blagnac, petitioned the Federal Aviation Administration (FAA) for an exemption from the requirements of §§ 25.813(e), 121.310(f)(5), and 121.310(f)(6) of title 14, Code of Federal Regulations (14 CFR). This exemption, if granted, would allow the installation of mini-suite seating in Airbus Model A321neo Airbus Cabin Flex (ACF) airplanes.

The petitioner requests relief from the following regulation:

> **Section 25.813(e) –** No door may be installed between any passenger seat that is occupiable for takeoff and landing and any passenger emergency exit, such that the door crosses any egress path (including aisles, crossaisles and passageways)
>
> **Section 121.310 (f)(5) and (6) –**
>
> (f) Emergency exit access. Access to emergency exits must be provided as follows for each passenger-carrying transport category airplane:
>
> (5) No door may be installed in any partition between passenger compartments.
>
> (6) No person may operate an airplane manufactured after November 27, 2006, that incorporates a door installed between any passenger seat occupiable for takeoff and

landing and any passenger emergency exit, such that the door crosses any egress path (including aisles, crossaisles and passageways).

The petitioner supports their request with the following information:

This section quotes the relevant information from the petitioner's request with minor edits for clarity. The complete petition is available at the Department of Transportation's Federal Docket Management System, on the Internet at http://regulations.gov, in Docket No. FAA-2020-0776.

Identification of issue:

Part 25 prohibits the installation of doors ''between passenger compartments" since Amendment 15. The separation of cabin classes by doors was common at the time. Amendment 25–116, effective November 26, 2004, changed that requirement for interior doors such that no interior door can be installed between any passengers seat (occupiable for taxi, takeoff, and landing) and any exit on Part 25 airplanes. Although the requirements of § 25.813(e) at Amdt. 116 are not applicable to A321neo ACF, § 121.310(f) (6) renders these new standards applicable to all other transport category airplanes that are manufactured after November 27, 2006. These requirements prohibit an interior door between any passenger seat (occupiable for taxi, takeoff, and landing) and are more severe in recognition of the risk that passengers may become trapped behind such doors in an emergency evacuation. Ref: NRPM 96-9 –

"… this door could be detrimental in evacuation of passengers, who tended not to recognize that there was an exit beyond the door, even if it were the closest available. However, the current regulation is worded such that doors may be installed between passengers and exits provided there are not passengers on both sides of the door. For example, a door could be installed across the main passenger aisle at the end of a cabin. The current regulations only require that the door be open for takeoff and landing. It is now considered undesirable to permit the installation of a door between any passenger and an exit. Should such a door (either through omission or mechanical failure) become jammed in the event of an emergency evacuation, persons could be prevented or delayed in evacuating which could result in fatalities or injuries that would not otherwise have occurred. The hazards associated with a jammed door are still present whether or not passengers are on both sides of the door, and the recognition factor has not been mitigated. Either could result in the same consequences—failure of some passengers to evacuate the airplane. …"

The goal is to prevent the occurrence of passengers being trapped in an area of the cabin or being delayed for evacuating the aircraft further to the jamming of a door. It is arguable whether the sliding doors installed on the mini-suites really constitutes "door" in the sense of the rule. But, certain design precautions are taken on the A321neo ACF to provide to the mini-suites installations an acceptable level of safety and to eliminate the risk for the occupants.

It is to be noted that the FAA allows the installation of interior doors on executive aircraft interiors (Ref. SFAR 109 §10). These doors are generally separating cabin zones thus

creating isolated compartments, but are acceptable providing that the conditions of SFAR 109 are respected. Airbus already installed mini-suites on A321, A340-500, A350 and A380 for common carriage in Europe (EASA Special Conditions). Boeing has the same kind of suites on their B777 and 787. The design of the mini-suites, which will be installed on A321neo ACF, is in line with the previously certified ones. They are not creating a completely isolated compartment for the occupants, as the sliding doors have a partial height. This ensures that the seated passengers know what is happening in the cabin while seated in the mini-suites, and cabin attendants can observe the mini-suites while performing their duties. In addition, design precautions and adequate procedures are taken to ensure that the occupants of the mini-suite can operate and exit the mini-suites safely in all conditions (see below supporting argument).

Requested regulatory relief:

The main objective of this request for exemption is to permit the installation of respectively 16 and 24 mini-suites in the Business Class of the two A321neo ACF cabins. The doors that are provided on the mini-suites require that Airbus receive the requested exemption from §§ 25.813(e), 121.310(f)(5), and 121.310(f)(6).

Supporting Arguments:

The design precautions implemented on these mini-suites are in line with the ones certified on previous mini-suite installations. They consist in:

1. Only single occupancy of the Mini-suite is allowed during taxi, take-off, and landing.

2. Mini-suite entrance can only provide access to the specific mini-suite.

3. Mini-suites cannot provide an egress path for evacuation other than the path out of the mini-suite for its single occupant.

4. Installation of the mini-suites does not introduce any additional obstructions or diversions to evacuating passengers, even from other parts of the cabin.

5. The design of the doors and surrounding “furniture” above the cabin floor in the aisles is such that each passenger’s actions and behavior can be readily observed by cabin crew members with stature as low as the 5th percentile female, when walking along the aisle.

6. The mini-suite doors are open during taxi, take-off, and landing

7. The hold-open retention mechanism for mini-suites doors holds the doors open under § 25 561(b), emergency landing conditions.

8. There is a secondary, backup hold-open retention mechanism for the mini-suite doors that can be used to “lock” the doors in the open position if there is an electrical or mechanical failure of the primary retention mechanism. The

secondary retention mechanism holds the doors open under § 25.561(b), emergency landing conditions.

9. There is a mean by which cabin crew can readily check that all mini-suite doors are open during taxi, take-off, and landing.

10. There is a mean by which cabin crew can prevent the seated mini-suite occupant from operating the doors. This means is envisaged to be used particularly to secure the suite during taxi, take-off, and landing phases of the flight.

11. Appropriate placards, or other equivalent means, are provided to ensure the mini-suite occupants know that the doors must be in the open position for taxi, take-off, and landing.

12. Training and operating-instruction materials regarding the proper configuration of the mini-suite doors for taxi, take-off, and landing are provided to the operator for incorporation into their cabin crew training programs and associated operational manuals.

13. The mini-suites have an Emergency Passage Feature (EPF) to allow for evacuation of the mini-suite occupant in the event the door closes and becomes jammed during an emergency landing. This EPF can be through frangibility or a removable emergency panel, or equivalent (such as dual sliding doors). The EPF can be easily broken or removed by the occupant of the mini-suite when the door becomes jammed. Trapping of any occupant is not acceptable and in no case will the occupant using the EPF need to rely on another occupant to assist in passage.

14. The height of the mini-suite walls and doors are such that a 95th percentile male can fit between them and the airplanes interior furnishing.

15. No mechanism to latch the doors together in the closed position is allowed.

16. The mini-suite doors are operable from the inside or outside with 25 pounds force or less regardless of power failure conditions.

17. If the mini-suites doors are electrically powered, the doors remain “locked” in the open position after power loss to the mini-suites.

18. Mini-suite installation maintains the main, cross aisles, and passage ways.

19. Mini-suite doors do not impede main aisle or cross aisle egress paths in the open, closed, or translating position.

20. The mini-suite doors are able to be opened with a crowded aisle.

Note: An additional flight attendant—above the minimum required by §121.391—is provided to ensure that the mini-suites are in the correct position for taxi, take-off, and landing, except if it can be demonstrated by an actual evaluation that the installation of

mini-suites does not significantly increase the workload of the minimum required cabin crew. In addition, Airbus emphasizes that the compliance to § 25.785 (h)(1), direct view, will be analyzed to ensure that the installation of these mini-suites does not impair the compliance to this requirement.

Public interest

Operators want to provide the traveling public with a very high level of comfort and the possibility to install mini-suites in their aircraft is achieving that goal. The ability to install and certify mini-suites in the business class improves the operator's marketability, and lead to increase their sales. Mini-suites installed on commercial aircraft are requested by an increased number of aircraft operators and many of those already have other aircraft with mini-suites embodied in their fleet. These customers want to ensure a consistent cabin operation and passenger experience across their fleet, and will continue to require inclusion of mini-suites in their fleet. By doing this, the public will benefit from the lower cost of travel when the operators increase their revenue and then reduce their operating costs leading a majority of the flying public to benefit from lower ticket prices.

As mentioned, the possibility to have common operating procedures across the fleet is keeping the operating costs down. In addition, it prevents the potential for human error that may be introduced when procedures vary substantially for similar products. For the reasons above mentioned, it is Airbus' opinion that the overall level of safety is improved and this is in the public's best interest.

In summary, the grant of that exemption will expand Airline sales, which benefits the economic health of the United States. This serves the public interest by serving economic interests of the United States.

Request for waiver of publication

The A321neo ACF configuration with mini-suites is intended to be placed in service at the beginning of 2021; exemptions have already been granted by other manufacturers on similar designs, and Airbus requests of FAA that the public comment period be kept as short as permissible.

Federal Register publication

The FAA has determined that good cause exists for waiving the requirement for *Federal Register* publication for public comment because the request is identical in all material respects to previously granted exemptions, and the exemption, if granted, would not set a precedent.

The FAA's analysis is as follows:

The FAA considers the petitioner's proposal to be in the public interest for the reasons stated by the petitioner and for the reasons discussed herein. An increasing number of operators worldwide

are requesting mini-suite installations on commercial airplanes These operators have a desire to provide the traveling public with a high level of comfort and care, and the ability to install mini-suites with doors is an integral part of that goal.

Following accident experience in the 1960s, the FAA amended 14 CFR part 25, in amendment 25-15, to prohibit the installation of doors "between passenger compartments." At the time of the amendment, it was common practice to divide the first-class and tourist-class cabins with a solid door. It was determined in the course of accident investigations that this door could be detrimental in the evacuation of passengers. The resulting regulatory change was intended specifically to prevent this occurrence.

Until recently, part 25 allowed the installation of doors between an emergency exit and the passenger compartment. Amendment 25-116 to part 25 prohibits interior doors between the exit and the passenger compartment. In addition, 14 CFR 121.310(f)(6), amendment 121-306, prohibits these doors in airplanes manufactured after November 27, 2006, operated under part 121. Amendments 25-116 and 121-306, titled "Miscellaneous Cabin Safety Changes," were published in the *Federal Register* on October 27, 2004 (69 FR 62788).

For many years the FAA has been granting exemptions for the installation of doors between passenger compartments for non-commercially operated transport category airplanes. These exemptions include limitations that the airplanes are not operated for hire or offered for common carriage. This limitation does not preclude the operator from receiving remuneration to the extent consistent with 14 CFR parts 125 and 91, subpart F. Also, these exemptions include the following conditions:

1. Each door between passenger compartments must be frangible or there must be another means of allowing passage of a range of occupants (5^{th}-percentile female to 95^{th}-percentile male) in the event the door becomes jammed.

2. Doors must be in the open position during taxi, takeoff, and landing.

3. Appropriate procedures must be established to signal the flightcrew that a door between passenger compartments is closed and to prohibit takeoff or landing when a door between passenger compartments is not in the proper position.

4. Doors between passenger compartments must have dual means to retain them in the open position and must be capable of withstanding the inertia loads specified in § 25.561.

Additionally, prior to the adoption of amendment 25-116, the FAA had granted several equivalent-level-of-safety findings for small transport airplanes (e.g., Cessna, Dassault Aviation) with typically 19 or fewer passenger seats, where the lavatory is occupied for taxi, takeoff, and landing. These findings were limited to one additional passenger, to the total passenger seating configuration, because these sizes of airplanes have only a single lavatory. Since adoption of amendment 25-116, such installations must be justified in a petition for exemption.

The use of doors on mini-suites differs in several ways from previous applications where doors have been limited to private-use (not for hire, not for common carriage) airplanes. First, the installation of mini-suites necessarily reduces the passenger capacity of the airplane, which has

the effect of increasing the overall evacuation capability of the airplane. Second, only one occupant is allowed behind each mini-suite door, and no other passenger is affected by a closed door. By limiting the mini-suite to one occupant, and by restricting the egress routes to permit only one way in and out of the mini-suite, the potential for confusion or inadvertent blockage of the evacuation route for any individual is reduced. Lastly, the occupant of the mini-suite can control the position of the door, thus is not dependent on the actions of another passenger to maintain egress capability (required crewmember actions notwithstanding).

For previous approvals of mini-suites, the FAA required an additional crewmember whose primary duty was to ensure that the mini-suite doors were positioned correctly for taxi, takeoff, and landing. As previously noted, the petitioner proposes to provide for an additional crewmember except if it can be demonstrated by evaluation that the installation of mini-suites does not significantly increase the workload of the minimum required cabin crew. The FAA does not agree with the petitioner's proposal because the workload that will be required to ensure the proposed 16 or 24 suite doors are in the correct position for taxi, take-off, and landing is considered significant and would not necessitate an additional evaluation. The total quantity of mini-suites increases both the probability that a door will be in the closed position in an emergency, and crew workload to ensure otherwise. As a general guideline, the FAA considers that an additional flight attendant per passenger zone of installed mini-suites is necessary. Because this is a critical safety element to reduce the likelihood that a door could be left closed for takeoff and landing, the FAA will require an additional crewmember in order to grant this exemption.

The preamble to amendment 25-116 cited safety risks that justified the prohibition against interior doors:

> It was determined in the course of accident investigations that this door could be detrimental in evacuation of passengers, who tended not to recognize that there was an exit beyond the door, even if it were the closest available…. Should such a door (either through omission or mechanical failure) become jammed in the event of an emergency evacuation, persons could be prevented or delayed in evacuating which could result in fatalities or injuries that would not otherwise have occurred. The hazards associated with a jammed door are still present whether or not passengers are on both sides of the door, and the recognition factor has not been mitigated. Either could result in the same consequences—failure of some passengers to evacuate the airplane.

To prevent these cited safety risks and provide a level of safety at least equal to that provided by the rule, the conditions and limitations on this exemption will ensure the following:

- The doors to the mini-suites will remain in the open position during taxi, takeoff, and landing; can be opened easily, if necessary; and will not interfere with evacuation of any other occupant.

- The mini-suite doors or walls are low enough that a 5th-percentile female and a 95th-percentile male will be able to exit the mini-suite in the event both doors are closed and not openable.

- Failure modes associated with powered doors are correctly accounted for.

- Operational procedures are adequate, including training and information associated with the mini-suites, placards, and the duties of flight attendants.

The mini-suite door does not obscure the occupant's view of the airplane emergency exits, so that safety risk is not a factor in these mini-suites. Under the conditions and limitations on this exemption, there is no need to limit the exemption to private use.

Although the exemption itself does not specify a method of compliance with the various limitations, it is likely some of the limitations will require testing with naïve subjects. For example, the ability of a person to use the emergency egress features, or whether use of those features could impact other persons' egress, may require testing.

After the events of September 11, 2001, the Transportation Security Administration (TSA) required the removal of certain curtains that separate the different parts of the passenger cabins because of security concerns. However, the TSA has allowed curtains that separate the galley area from the passenger area. One of the reasons they allow these curtains is that crewmembers, not passengers, occupy the galley area. The FAA has coordinated with the TSA on the installation of doors for this type of mini-suite; however, the TSA is responsible for final acceptance of airplanes used by operators who are subject to security-program requirements (e.g., 49 CFR 1544).

The FAA's Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 40113 and 44701(f), delegated to me by the Administrator, I grant Airbus an exemption from 14 CFR 25.813(e), 121.310(f)(5), and 121.310(f)(6) to the extent necessary to allow the installation of mini-suite seating in Airbus Model A321neo ACF airplanes. Specifically, the exemption provides relief from the requirement that prohibits the installation of interior doors between passenger seats and emergency exits.

Conditions and Limitations

This exemption is subject to the following conditions and limitations. Limitation number 1 must be documented in the procedures section of the airplane flight manual (AFM) and limitation number 7 must be documented in the operating-limitations section of the AFM:

1. In addition to the crewmembers required by § 121.391, one extra crewmember is required and will verify the proper configuration (doors open) of up to 24 mini-suite doors during taxi, takeoff, and landing.

2. Training and operating instruction materials regarding the proper configuration (doors open) of the mini-suite doors for taxi, takeoff, and landing must be provided to the operator for incorporation into their flight attendant training programs and appropriate operational manuals.

3. Each mini-suite can only provide accommodation for one single occupant for taxi, takeoff, and landing.

4. Each mini-suite entrance can only provide access to that specific mini-suite (i.e., no other access to any other mini-suite or part of the airplane).

5. Mini-suites cannot provide an egress path for evacuation for any person other than the single occupant of the mini-suite.

6. Installation of the mini-suites must not introduce any additional deterrents to evacuating passengers, even from other parts of the cabin. This assessment must include use of the emergency passage feature required in condition 11.

7. The mini-suite doors must be open during taxi, takeoff, and landing with the hold-open mechanisms engaged.

8. The hold-open retention mechanism for mini-suite doors must hold the doors open under § 25.561(b) emergency landing conditions. Unless the emergency passage feature required by condition 11 is operable from any position of the door, the primary and secondary (see condition 9 below) hold-open retention mechanisms must also retain the door under § 25.562 dynamic emergency-landing conditions.

9. There must be a secondary back-up hold-open retention mechanism for the mini-suite doors that can be used to "lock" the doors in the open position. The secondary retention mechanism must hold the doors open under § 25.561(b) emergency landing conditions. The secondary retention-mechanism control must be positioned such that a seated and belted occupant would not be able to operate it.

10. Appropriate placards, or other equivalent means, must be provided to ensure the mini-suite doors are in the open position for taxi, takeoff, and landing with the hold-open mechanisms engaged.

11. The mini-suite doors must have an emergency passage feature that allows egress from the mini-suite, and both the primary and emergency egress paths must accommodate the range of occupants from a 5th-percentile female to a 95th-percentile male. The emergency feature must be available in the event the door becomes jammed.

12. The height of the mini-suite walls and doors must be such that a 95th-percentile male can fit between them and the airplane's interior furnishings. An evacuation demonstration is required that shows a 5th-percentile female and a 95th-percentile male will be able to exit the mini-suite in the event the door is closed and not openable. This demonstration must be conducted for each different mini-suite layout.

13. No mechanism to latch the door (or doors, if applicable) in the closed position is allowed.

14. The mini-suite doors must be openable from inside or outside of the mini-suite with 25 pounds of force or less (regardless of power failure conditions, if applicable).

15. Installation of mini-suites must not reduce the dimensions of the main aisles, crossaisles, and passageways below the regulatory minimum.

16. Mini-suite doors must not impede any egress paths when they are in the open, closed, or translating positions.

17. The mini-suite doors must be openable even with a crowded aisle.

Powered doors, if installed in the airplane

18. If the mini-suite doors are powered, the doors must remain locked in the open position after power loss.

19. Powered-door operations must not be hazardous to occupants. For example, compressive force of the door closing on body parts between the door and the door jamb must not be a hazard. The crushing of body parts and asphyxiation must both be considered.

20. A powered-door system must be designed to protect its components from damage that would prevent the door from being correctly positioned for taxi, takeoff, and landing (e.g., protection from items blocking the door operation, misalignment of the mechanism, and minor deformation of the structure).

21. A powered-door system must be designed to prevent the overheating of door components that could be an ignition source.

22. Powered doors must be able to be opened from either side of the doors regardless of the side from which the door was closed. If the hold-open mechanisms are powered, the doors must be able to be opened from either side of the doors regardless of the side from which the mechanisms are engaged.

Issued in Des Moines, Washington, on December 4, 2020.

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