Exemption No. 10422

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98057-3356

In the matter of the petition of **ACS-NAI Ltd.** for an exemption from § 25.813(e) of Title 14, Code of Federal Regulations	**Regulatory Docket No. FAA-2011-1052**

GRANT OF EXEMPTION

By letter dated September 13, 2011, Mr. Ian Stewart, of ACS-NAI Ltd., 25 Dunlop Avenue, Winnipeg, MB, Canada R2X 2V2, petitioned for exemption from the requirements of § 25.813(e) of Title 14, Code of Federal Regulations (14 CFR). The petitioner has requested the exemption to permit installation of interior doors between passenger compartments on a Bombardier Aerospace Model CL-600-2B19 airplane, to be designated as private use, not for hire, not for common carriage.

The petitioner requests relief from the following regulation:

> **Section 25.813(e), Amendment 25-46**[1] **-** No door may be installed in any partition between passenger compartments.

The petitioner supports their request with the following information:

This section quotes the relevant information, with some edits for clarity, from the petitioner's request. Their 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-2011-1052.

[1] For 14 CFR part 135 operations, there shall be instructions within the Airplane Flight Manual Supplement (AFMS) and Instructions for Continued Airworthiness (ICA) to provide a procedure to lock the door in the open position and install a cover plate to obscure the door and preventing the use of the door during flight.

ACS-NAI Ltd. requests an exemption to Federal Aviation Regulations (FAR) 25.813(e) to permit the installation of doors in partitions between passenger compartments in CL-600-2B19 aircraft used for corporate transport. In support of this request, ACS-NAI Ltd. is attaching a copy of TCCA Exemption NCR/RCN #147-2008 granting an exemption from the requirements of 25.813(e).

The CL-600-2B19 aircraft is designed to the requirements of FAR part 25, for Transport Category Aircraft. These rules are addressed to Transport Category airplanes that are used for the carriage of fare paying passengers from the general public and consider aircraft with passenger seating configurations of several hundred. The CL-600-2B19 aircraft configured with a corporate interior is Type Certified for a maximum of 19 passengers. FAR part 25 does not provide segregation for intended use of the aircraft, such as commercial air transport or corporate use.

The mid-cabin door installed for corporate interior configurations provides an increased level of comfort and privacy for the "office in the sky" concept. ACS-NAI Ltd. contends that aircraft interiors specifically designed for corporate operations should be eligible for an exemption [from] FAR part 25 requirements provided a level of safety is provided and can be demonstrated.

Design Safety Features:

1. The cabin of the CL-600-2B19 is approximately 8-feet wide. In order to provide a private area for use as an office or bedroom, it is necessary to divide the cabin width laterally. A side corridor is not practical for the interior arrangement on CL-600-2B 19 aircraft. The doors to be installed will be sliding pocket doors with retracting footers. The sliding pocket door will be frangible to ensure it can be broken open during an emergency landing condition and to have blow-out capabilities to provide adequate decompression capabilities.

2. The proposed doors will have a placard installed on both sides requiring the door to be secured within the bulkhead (i.e. door open) for taxi, take-off and landing.

3. The proposed doors will be equipped with dual means to latch the door within the bulkhead to minimize the probability of the door deploying into the egress path during an emergency landing condition. Either means will be capable of supporting the inertia loads specified in FAR 25.561.

4. A lighted annunciator will be installed in the cockpit instrument panel to alert the flight crew when the door is closed (i.e. across the egress path) and the airplane gear is down and locked, or flaps are not zero degrees. Due to the design philosophy of the cockpit and the configuration of the EICAS software for the CL-600-2B19, posting a "cabin door" message on the EICAS is not possible. The

TCCA Exemption permits this signal as the annunciator is "effected in an equivalent manner" to posting on the EICAS.

5. A description of the doors, passenger briefing requirements, limitations and procedures will be contained in the applicable Airplane Flight Manual Supplement and/or Flight Crew Operating Manual Supplement.

Effect of the Exemption:

The effect of the exemption considering the design safety features will ensure that there is a clear path through a cabin partition to an emergency exit. Should the cabin door be fully or partially closed following an emergency landing, there will still be simple means to get through the door to reach an exit. The frangibility feature will be tested using a 5th percentile female and the resulting opening will be demonstrated to be large enough for a 95th percentile male to escape. These safety features would provide a level of safety for the passengers in a CL-600-2B19 aircraft equal to that required for airline aircraft and other corporate aircraft such as the BD-700-1A10 and BD-700-1A11.

Issue of Public Interest:

Cabin doors have been installed in corporate aircraft such as the BD-700-1A10 and BD-700-1A11. Interior cabin doors are commonly installed on corporate aircraft at the request of the members of the public that use these aircraft. The installation of these cabin doors [has] been shown to be adequately safe for corporate aircraft operations.

It is our position that the above stated design safety features, the effect of the exemption and the issue of public interest provide an acceptable level of safety for passengers in a CL-600-2B19 with an interior cabin door installed. Compliance has been established against TCCA Exemption NCR/RCN #147-2008 for the installation of an interior cabin door.

We request to forgo the period for public consultation for the mid-cabin door exemption petition due to similarity with other FAA Exemption[s] [issued allowing] the installation of an interior cabin door.

Federal Register publication

The FAA has determined that good cause exists for waiving the requirement for Federal Register publication and comment because the exemption, if granted, would not set a precedent and any delay in acting on this petition would be detrimental to ACS-NAI Ltd.

The FAA's analysis

The FAA considers the petitioner's proposal to be in the public interest for the same reasons as those previously stated by the petitioner.

As more transport-category airplanes have been configured (or re-configured) for private use, the FAA has given considerable attention to the issue of appropriate regulation of such airplanes. Some of the current regulations governing design certification of transport-category airplanes are not compatible with private use of such airplanes. Because of this, we have received a number of petitions for exemption from certain regulations. We have granted such exemptions when we find that to do so is in the public interest and does not adversely affect the level of safety provided by the regulations. The FAA published *Special Requirements for Private Use Transport Category Airplanes*, SFAR No. 109 (74 FR 21533, May 8, 2009), which significantly reduced the need for case-by-case review of individual petitions for exemption for private-use airplanes. This airplane can not use SFAR No. 109 because this is a new type-certificate project, and the SFAR is applicable to amended type-certificate and supplemental type-certificate programs only.

The placement of interior doors is clearly quite significant to the owner/operator of the airplane. The flexibility to partition the airplane into individual rooms, such as private meeting rooms or bedrooms, is paramount to an acceptable interior. The availability of private meeting rooms and bedrooms is essential. The FAA acknowledges the desirability of these features from the operator's point of view.

When the regulations pertaining to interior doors were adopted, they did not necessarily consider "rooms." They considered two possible types of interior doors in a passenger compartment. The first type is an interior door between passenger compartments. The second type is an interior door between the exit and the passenger compartment.

Until recently, only the first type of door was prohibited by 14 CFR 25.813(e). However, part 25, as amended by Amendment 25-116, prohibits interior doors between the exit and the passenger compartment. In addition, Amendment 121-306 prohibits these doors in airplanes manufactured after November 27, 2006, operated under 14 CFR part 121. Amendments 25-116 and 121-306, titled *Miscellaneous Cabin Safety Changes*, were published in the Federal Register on October 27, 2004.

Airplanes configured for private-use, not-for-hire, not-for-common carriage typically use any of five different categories of door in the passenger cabins:

Category 1 – A door in a room and the room is less than the full width of the airplane. An aisle is outside the room. This type of room may be occupied during taxi, takeoff, and landing, and only the occupants of the room must use the door to reach an exit.

Category 2 – A door in a room and that is the same as Category 1, except a single emergency exit or pair of emergency exits is within the room.

Category 3 – A door or doors in a compartment and the compartment is the full width of the airplane. Passengers are seated on both sides (fore and aft) of the door(s), and the main aisle leads out of, or passes through, the compartment. The compartment does not have emergency exits. This type of compartment may be occupied during taxi, takeoff, and landing with doors in the proper configuration.

Category 4 – A door in a room and the room is the full width of the airplane. Passengers are seated on both sides (fore and aft) of the door, and a pair of emergency exits is at one end of the room. This type of compartment may be occupied during taxi, takeoff, and landing with doors in the proper configuration.

Category 5 – A door in a room that may be the full width of the airplane. This type of room is not occupied during taxi, takeoff, and landing. This room is only occupied during flight. Passengers seated in taxi, takeoff, and landing seats must not need to pass through this door to get to any emergency exits.

Because not all interior doors between passenger compartments are equivalent, the FAA has determined that the following requirements will produce an adequate level of safety:

1. To maximize the level of safety, doors in Category 2, 3, or 4 installed across the main cabin aisle must open and close in a transverse direction. That is, the direction of motion of the door must be at a right angle to the longitudinal axis of the airplane. A "pocket door" is one example of such a design. This will tend to minimize the chance that the inertia forces of an accident could force the door closed.

2. Redundant means are necessary to latch doors open for taxi, takeoff, and landing. Each latching means must have the capability of retaining the door in the taxi, takeoff, and landing position under the inertia forces of § 25.561.

3. Each interior door must be frangible, in the event that it is jammed in the closed position in flight or during taxi, takeoff, or landing. Frangibility is intended to ensure that if a door is jammed closed, occupants can escape in either direction and emergency equipment can be moved. Frangibility may be demonstrated in either of the following ways:

    - A 5th percentile female can break through the door, creating a large enough opening that a 95th percentile (or larger) male can pass through. (See Advisory Circular 25-17A, *Transport Airplane Cabin Interiors Crashworthiness Handbook*, paragraph 43b(2)).

    - A 5th percentile female can break a hinge on the door or a hinge on a smaller door within the door such that the door can swing open, allowing a 95th percentile (or larger) male to pass through the opening with the door swung open. This evaluation must be made with any cabin furnishing or equipment installed that could limit the swing-arc of the door with furnishing or equipment placed in the most adverse position. In using this approach, one must consider the possibility

that the door is physically jammed in the closed position by distortion of the fuselage or furnishings. This possibility must be considered even if the door normally translates into the open and closed positions.

4. Doors that fall into Category 1 must be in the open position during taxi, takeoff, and landing only when the room is occupied.

5. Doors that fall into Categories 2, 3, or 4 must be in the open position during taxi, takeoff, and landing, regardless of occupancy.

6. Doors that fall into Category 5 must be in the closed position during taxi, takeoff, and landing.

With respect to the possibility that a door remains closed when it should not be, we have determined that a higher level of awareness is required to address this issue. The petitioner's proposal to provide indication to the flight crew is considered adequate.

After considerable deliberation, we conclude that installation of interior doors, with certain limitations, can be accepted. To maximize the level of safety, we require that certain limitations, including some proposed by the petitioner, be made mandatory to permit such installations. As noted previously, precedents have been set for this decision and which apply to other private-use, not-for-hire, not-for-common-carriage airplanes.

The FAA's decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not adversely affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in 49 U.S.C. 40113 and 44701, delegated to me by the Administrator, I grant the petition of ACS-NAI Ltd. for an exemption from the requirements of 14 CFR 25.813(e) to allow installation of interior doors between passenger compartments on a Bombardier Aerospace Model CL-600-2B19 airplane. This exemption is subject to the following conditions. Conditions 1, 3, 4, 5, and 6 must be documented as operating limitations in the Limitations section of the Airplane Flight Manual (AFM). Refer to Categories 1 – 5, listed earlier in this document, where conditions reference categories.

This exemption is subject to the following conditions, and limitation numbers 1, 2, 3, 4, 5, and 6 must be documented in the Limitations Section of the AFM:

1. The airplane must not be operated for hire or offered for common carriage. This provision does not preclude the operator from receiving remuneration to the extent consistent with 14 CFR parts 125 and 91, subpart F, as applicable.

2. Each door between passenger compartments must be frangible from both sides. A placard describing the frangibility procedure must be installed in a conspicuous location on both sides of the door.

3. Doors that fall into Category 1 must be latched in the open position during taxi, takeoff, and landing when the room is occupied. A placard requiring the door to be in the open position must be installed in a conspicuous position on both sides of the door.

4. Doors that fall into Categories 2, 3, or 4 must be latched in the open position during taxi, takeoff, and landing, regardless of occupancy of the room. A placard requiring the door to be in the open position must be installed in a conspicuous position on both sides of the door.

5. Doors that fall into Category 5 must be in the closed position during taxi, takeoff, and landing. A placard requiring the door to be in the closed position, and requiring the room to be vacant, must be installed in a conspicuous position on both sides of the door.

6. Appropriate procedures must be established to both signal the flightcrew in the event a door between passenger compartments is not in the proper position, and prohibit taxi, takeoff, or landing. Doors in Category 5 do not need to comply with this requirement. For Category 5 doors, placards located on or near the door, indicating that the door must be closed and the room must be vacant for taxi, takeoff, and landing, are acceptable.

7. Doors between passenger compartments must have dual means to retain them in the open position. Each means must be capable of withstanding the inertia loads specified in § 25.561. Doors in Category 5 do not need to comply with this requirement because they are required to be closed for taxi, takeoff, and landing.

Issued in Renton Washington, on December 27, 2011.

/s/ K. C. Yanamura

K. C. Yanamura
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service