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AEROSPACE RECOMMENDED PRACTICE

ARP 808

ESCAPE PROVISIONS, FLIGHT DECK

Issued 5-30-64
Revised

1. PURPOSE - The purpose of this Aerospace Recommended Practice is to establish criteria for the provision of crew escape facilities from the flight deck area of commercial transport aircraft.

2. SCOPE - This Aerospace Recommended Practice applies to all transport category aircraft certificated under CAR 4b, regardless of means of propulsion, design speed regime, or kind of payload carried.

3. DEFINITIONS

Emergency Exit - An emergency exit is an opening which may be used for emergency evacuation of the aircraft.

Class A - Openings primarily intended for personnel use.

Class B - Secondary openings primarily intended for servicing or personnel use.

Class C - Auxiliary openings primarily intended for emergency use.

Exit Closure - An exit closure is the door, window, or other device used to close or otherwise fill or occupy the exit opening.

4. DETAIL RECOMMENDATIONS

4.1 Emergency Exits - Sufficient emergency exits should be provided on the flight deck or otherwise be immediately accessible to permit the crew to escape from the aircraft after a ditching or survivable crash landing, regardless of the orientation of the flight deck. If any of the emergency exits required under this paragraph are not located within the flight deck itself, the accessibility of each emergency exit from the flight deck should be clear, positive, and unrestricted under survivable crash landing conditions.

4.1.1 If the aircraft is to operated over water, at least one emergency exit should be so placed as to be well above the anticipated waterline under the most adverse conditions expected after a water landing.

4.1.2 Each emergency exit should permit the free passage of a fully clothed, ambulatory, 220-pound, 6'3" man, and permit the free passage of all of the flight crew's survival equipment required for use with the aircraft under the terms of its operating certificate.

4.1.3 Each emergency exit should be provided with suitable means to permit the crew member using it to descend quickly and safely from the aircraft.

4.1.4 If the emergency exit is located overhead, means should be provided to permit the crew member using it to ascend to and climb through it without undue difficulty.

4.2 Exit Closures

4.2.1 Emergency exit closures should be openable both from inside and outside the aircraft. Attempted or partial operation from either side should not impair operation from the other side.

4.2.2 The method of operation of the release handle or lever, and the axis and direction of rotation should be obvious and natural to the operator. Specifically, rotation of "T" or "L" type handles in a counterclockwise direction from inside the aircraft or pulling of levers in a direction generally toward the operator, should unlatch and/or open the exit closure.

4.2.3 All handles should be capable of operation by one person using one hand.

4.2.4 The direction of motion required to open or unlock the mechanism from the exterior or the interior should be indicated in plain view on or in the immediate vicinity of the interior and exterior operating handles. The letters or markings should be easily readable and understandable under adverse conditions (night time, aircraft inverted, etc.). (See ARP 577 on placards and ARP 503 on illumination.)

4.2.5 The entire operation of the operating handle should be in a continuous motion without any sharp changes in direction throughout the general movement except for pulling from countersunk recesses on external installations.

4.2.6 The handle dimensions should take into consideration the normal hand grip limitations, including adequate handle-to-hand contact areas to reduce to a minimum possible personnel injury under high load applications to the handle.

4.2.7 All external handles should provide clearance to allow gripping of either external or countersunk handles with gloved hands.

4.2.8 It is desirable to locate the operating handles as far away from the exit closure hinges or axis of rotation as possible.

4.2.9 The operating handle should not restrict the available opening in case of partial exit opening because of closure jamming.

4.2.10 To allow normal operation, sufficient provisions should be made to prevent icing up of the outside or external handle mountings.

4.2.11 The design should enable the operator to open the exit closure, even with ice accumulation, seal vulcanization and reasonable amount of fuselage distortion.

4.2.12 Internal exit closure handles or their protective covers should be designed so that they cannot be hidden by the window curtains, stowed clothing, etc.

4.2.13 Increasing cabin differential pressure should act so as to increase the security and retention of the exit closure.

4.2.14 Means should be provided to prevent opening of the exit closure to a dangerous extent in flight.

4.2.15 The exit closure mechanism should be so designed that improper or incomplete closing of the exit will be obvious.

4.2.16 Consideration should be given to the operation and release of exit closures when aircraft is in other than an upright position.

4.2.17 Only the single operation of pulling or pushing the exit closure into the clear should be necessary. No secondary operation should be necessary such as moving or unlocking such devices as locks, catches, stops, bolts, bars, etc. This does not preclude the use of an easily removable or operable non-tampering protective cover.

4.2.18 The arc of rotation of handles should preferably not exceed 180°.

4.2.19 It is desirable in the use of "L" handle types to have the final motion of the handle consistent with the opening motion of the closure during its final operation.

4.2.20 External push plates used for operating closure opening mechanisms should move or give in the same direction as the opening movement of the exit closure when a push force is applied.

4.2.21 The nominal force or torque required to unfasten and open the exit closure, with the aircraft in the normally unpressurized configuration (inflight or on the ground), should be within the capabilities of a crew member. Consideration should be given to the position, mode, and direction of operation of the closure with respect to the person operating it, recognizing that humans are capable of more effective application of force in certain positions and directions than in others.*

*Reference is made to "Forces That May Be Exerted By Man In The Operation Of Aircraft Door Handles", McFadden & Swearingen, Volume I, Number 1, Journal of the Human Factors Society of America, September, 1958. This document states in part:

> "In general, the best position for applying force to a handle is one in which a subject can use his legs and lift. The next best is in pushing down and using body weight. The least effective method is the employment of an over or under motion. The under motion is slightly superior."