

EMERGENCY ILLUMINATION

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1. INTRODUCTION: The purpose of this Aerospace Recommended Practice is to provide design criteria which will lead to standards of illumination for emergency evacuation in passenger transport aircraft such that the emergency illumination will contribute to minimizing passenger exit time under emergency conditions.
2. PURPOSE:
 - 2.1 Definition: Emergency illumination is that illumination which is required when normal illumination is unavailable. Emergency illumination must be adequate to permit aircraft occupants to locate, proceed to, operate, and use cabin exits, both normal and emergency, escape slides, life jackets, life rafts, and special survival equipment.
 - 2.2 Scope: This Aerospace Recommended Practice provides criteria for design and location of power supplies, controls, light fixtures, and associated equipment which are used to provide emergency illumination in transport aircraft.
3. DETAIL RECOMMENDATIONS:
 - 3.1 General Provisions:
 - 3.1.1 Emergency illumination shall be designed so that no beam of light is directed into occupants' eyes in such a way as to compromise their ability to escape.
 - 3.1.2 Emergency illumination shall be provided independent of the normal electrical system power source.
 - 3.1.3 The emergency illumination system shall be designed, installed and located in such a manner that will minimize damage to or loss of any portion of the emergency illumination as a result of ditching or emergency landing.
 - 3.1.4 Break-up of the fuselage shall not render any portion of the emergency illumination inoperative, except those lights directly destroyed by the break.
 - 3.1.5 Emergency illumination shall be maintained above minimum levels for no less than 15 minutes, under emergency conditions.
 - 3.1.6 Emergency illumination shall be either continuously lighted or automatically energized when an emergency occurs.
 - 3.1.7 If emergency illumination is automatically energized, provision shall be made for alternate manual operation of the system at a single point by flight crew member or cabin attendant.
 - 3.1.8 Illuminated signs and other portions of the emergency illumination may be used under normal conditions, provided that depletion of the emergency illumination power supply is not possible, beyond the requirement of Paragraph 3.1.5.

Section 8.3 of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

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- 3.1.9 The emergency illumination system and associated equipment shall be designed and installed so that functional tests of the system can be readily performed.
- 3.1.10 The emergency illumination system and equipment shall be designed and qualified for ease of maintainability and highly reliable operation under the applicable aircraft environments.

3.2 Interior Provisions:

3.2.1 General Emergency Illumination:

- 3.2.1.1 Sufficient general emergency illumination shall be provided throughout the passenger cabin area to permit occupants to don life jackets and avoid obstacles while moving toward exits.
- 3.2.1.2 Not less than 0.2 foot candles of white light shall be provided on the floor of aisles and at the exit doors.

3.2.2 Exit Illumination:

- 3.2.2.1 All exit signs, including arrows and placards, shall be illuminated.
- 3.2.2.2 Under ambient light, the contrast ratio between the intelligence and background of all exit signs, arrows and placards shall be no less than 3.0.

NOTE: Contrast "C" is defined as:

$$C = \frac{B_2 - B_1}{B_1} \geq 3.0$$

where B_1 is the brightness of either the background or intelligence whichever is dimmer and B_2 is the brightness of either the background or intelligence whichever is brighter.

- 3.2.2.3 Lettering of the word "EXIT" on exit signs shall not be less than 1/2 inch high with a stroke width to letter height ratio of approximately 0.17. It is recommended that lettering be at least one inch high.
- 3.2.2.4 The brightness of lighted areas of exit signs, whether electrically lighted or self-luminous, shall be no less than 200 microlamberts (0.19 foot lamberts).
- 3.2.2.5 Instruction placards having letters not less than 5/16 inch high shall be provided for the operation of all exits. The brightness of lighted areas, whether electrically lighted or self-luminous, shall be no less than 100 microlamberts (0.095 foot lamberts).