RBAC 23 Emenda 61	Proposta de RBAC 23 Emenda 62	Motivação
23.3 Airplane categories. (a) The normal category is limited to airplanes that have a seating configuration, excluding pilot seats, of nine or less, a maximum certificated takeoff weight of 12,500 pounds or less, and intended for nonacrobatic operation. Nonacrobatic operation includes: (1) Any maneuver incident to normal flying; (2) Stalls (except whip stalls); and (3) Lazy eights, chandelles, and steep turns, in which the angle of bank is not more than 60 degrees. (b) The utility category is limited to airplanes that have a seating configuration, excluding pilot seats, of nine or less, a maximum certificated takeoff weight of 12,500 pounds or less, and intended for limited acrobatic operation. Airplanes certificated in the utility category may be used in any of the operations covered under paragraph (a) of this section and in limited acrobatic operations. Limited acrobatic operation includes: (1) Spins (if approved for the particular type of airplane); and	**23.3 Airplane categories.** (a) The normal category is limited to airplanes that have a seating configuration, excluding pilot seats, of nine or less, a maximum certificated takeoff weight of 12.500 pounds (5.670 kg) or less, and intended for nonacrobatic operation. Nonacrobatic operation includes: (1) Any maneuver incident to normal flying; (2) Stalls (except whip stalls); and (3) Lazy eights, chandelles, and steep turns, in which the angle of bank is not more than 60 degrees. (b) The utility category is limited to airplanes that have a seating configuration, excluding pilot seats, of nine or less, a maximum certificated takeoff weight of 12.500 pounds (5.670 kg) or less, and intended for limited acrobatic operation. Airplanes certificated in the utility category may be used in any of the operations covered under paragraph (a) of this section and in limited acrobatic operations. Limited acrobatic operation includes: (1) Spins (if approved for the particular type of airplane); and	A revisão da seção 23.3 codifica a prática atual já adotada pela ANAC e pela FAA de certificar jatos multimotores com peso de até 19.000 libras (8.618 kg) sob o RBAC 23 na categoria transporte regional. As emendas anteriores do RBAC 23 limitavam a categoria transporte regional para aviões multimotores à hélice pesando não mais que 19.000 libras (8.618 kg). No entanto, a ANAC e a FAA emitiram isenções para permitir que jatos pesando mais que 12.500 libras (5.670 kg) fossem certificados sob o RBAC 23 na categoria transporte regional.

(2) Lazy eights, chandelles, and steep turns, or similar maneuvers, in which the angle of bank is more than 60 degrees but not more than 90 degrees. (c) The acrobatic category is limited to airplanes that have a seating configuration, excluding pilot seats, of nine or less, a maximum certificated takeoff weight of 12,500 pounds or less, and intended for use without restrictions, other than those shown to be necessary as a result of required flight tests. (d) The commuter category is limited to propeller-driven, multiengine airplanes that have a seating configuration, excluding pilot seats, of 19 or less, and a maximum certificated takeoff weight of 19,000 pounds or less. The commuter category operation is limited to any maneuver incident to normal flying, stalls (except whip stalls), and steep turns, in which the angle of bank is not more than 60 degrees. (e) Except for commuter category, airplanes may be type certificated in more than one category if the requirements of each requested category are met.	(2) Lazy eights, chandelles, and steep turns, or similar maneuvers, in which the angle of bank is more than 60 degrees but not more than 90 degrees. (c) The acrobatic category is limited to airplanes that have a seating configuration, excluding pilot seats, of nine or less, a maximum certificated takeoff weight of 12.500 pounds (5.670 kg) or less, and intended for use without restrictions, other than those shown to be necessary as a result of required flight tests. (d) The commuter category is limited to multiengine airplanes that have a seating configuration, excluding pilot seats, of 19 or less, and a maximum certificated takeoff weight of 19.000 pounds (8.618 kg) or less. The commuter category operation is limited to any maneuver incident to normal flying, stalls (except whip stalls), and steep turns, in which the angle of bank is not more than 60 degrees. (e) Except for commuter category, airplanes may be type certificated in more than one category if the requirements of each requested category are met.	
23.45 General. (a) Unless otherwise prescribed, the performance requirements of this part must be met for—	**23.45 General.** (a) Unless otherwise prescribed, the performance requirements of this part must be met for:	A proposta incorpora no RBAC 23 a atual abordagem já adotada em condições especiais de aplicar a maioria dos critérios da categoria transporte regional para jatos pesando mais que 6.000 libras

(1) Still air and standard atmosphere; and (2) Ambient atmospheric conditions, for commuter category airplanes, for reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight, and for turbine engine-powered airplanes. (b) Performance data must be determined over not less than the following ranges of conditions— (1) Airport altitudes from sea level to 10,000 feet; and (2) For reciprocating engine-powered airplanes of 6,000 pounds, or less, maximum weight, temperature from standard to 30 °C above standard; or (3) For reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight and turbine engine-powered airplanes, temperature from standard to 30 °C above standard, or the maximum ambient atmospheric temperature at which compliance with the cooling provisions of §23.1041 to §23.1047 is shown, if lower. (c) Performance data must be determined with the cowl flaps or other means for controlling the engine	(1) Still air and standard atmosphere; and (2) Ambient atmospheric conditions, for commuter category airplanes, for reciprocating engine-powered airplanes of more than 6.000 pounds (2.722 kg) maximum weight, and for turbine engine-powered airplanes. (b) Performance data must be determined over not less than the following ranges of conditions: (1) Airport altitudes from sea level to 10.000 feet; and (2) For reciprocating engine-powered airplanes of 6.000 pounds (2.722 kg), or less, maximum weight, temperature from standard to 30 °C above standard; or (3) For reciprocating engine-powered airplanes of more than 6.000 pounds (2.722 kg) maximum weight and turbine engine-powered airplanes, temperature from standard to 30 °C above standard, or the maximum ambient atmospheric temperature at which compliance with the cooling provisions of sections 23.1041 to 23.1047 is shown, if lower. (c) Performance data must be determined with the cowl flaps or other means for controlling the engine	(2.722 kg). As revisões propostas para a seção 23.45 aplicam os requisitos de desempenho da categoria transporte regional para jatos multimotores pesando mais que 6.000 libras (2.722 kg) das categorias normal, utilitária e acrobática.

cooling air supply in the position used in the cooling tests required by §23.1041 to §23.1047. (d) The available propulsive thrust must correspond to engine power, not exceeding the approved power, less— (1) Installation losses; and (2) The power absorbed by the accessories and services appropriate to the particular ambient atmospheric conditions and the particular flight condition. (e) The performance, as affected by engine power or thrust, must be based on a relative humidity: (1) Of 80 percent at and below standard temperature; and (2) From 80 percent, at the standard temperature, varying linearly down to 34 percent at the standard temperature plus 50 °F. (f) Unless otherwise prescribed, in determining the takeoff and landing distances, changes in the airplane's configuration, speed, and power must be made in accordance with procedures established by the applicant for operation in service. These procedures must be able to be executed consistently	cooling air supply in the position used in the cooling tests required by sections 23.1041 to 23.1047. (d) The available propulsive thrust must correspond to engine power, not exceeding the approved power, less: (1) Installation losses; and (2) The power absorbed by the accessories and services appropriate to the particular ambient atmospheric conditions and the particular flight condition. (e) The performance, as affected by engine power or thrust, must be based on a relative humidity: (1) Of 80 percent at and below standard temperature; and (2) From 80 percent, at the standard temperature, varying linearly down to 34 percent at the standard temperature plus 50 °F (10 ºC). (f) Unless otherwise prescribed, in determining the takeoff and landing distances, changes in the airplane's configuration, speed, and power must be made in accordance with procedures established by the applicant for operation in service. These procedures must be able to be executed consistently	

by pilots of average skill in atmospheric conditions reasonably expected to be encountered in service. (g) The following, as applicable, must be determined on a smooth, dry, hard-surfaced runway— (1) Takeoff distance of §23.53(b); (2) Accelerate-stop distance of §23.55; (3) Takeoff distance and takeoff run of §23.59; and (4) Landing distance of §23.75. Note: The effect on these distances of operation on other types of surfaces (for example, grass, gravel) when dry, may be determined or derived and these surfaces listed in the Airplane Flight Manual in accordance with §23.1583(p). (h) For commuter category airplanes, the following also apply: (1) Unless otherwise prescribed, the applicant must select the takeoff, enroute, approach, and landing configurations for the airplane. (2) The airplane configuration may vary with weight, altitude, and temperature, to the extent that they are	by pilots of average skill in atmospheric conditions reasonably expected to be encountered in service. (g) The following, as applicable, must be determined on a smooth, dry, hard-surfaced runway— (1) Takeoff distance of paragraph 23.53(b); (2) Accelerate-stop distance of section 23.55; (3) Takeoff distance and takeoff run of section 23.59; and (4) Landing distance of section 23.75. Note: The effect on these distances of operation on other types of surfaces (for example, grass, gravel) when dry, may be determined or derived and these surfaces listed in the Airplane Flight Manual in accordance with paragraph 23.1583(p). (h) For multiengine jets weighing over 6.000 pounds (2.722 kg) in the normal, utility, and acrobatic category and commuter category airplanes, the following also apply: (1) Unless otherwise prescribed, the applicant must select the takeoff, enroute, approach, and landing configurations for the airplane.	

compatible with the operating procedures required by paragraph (h)(3) of this section. (3) Unless otherwise prescribed, in determining the critical-engine-inoperative takeoff performance, takeoff flight path, and accelerate-stop distance, changes in the airplane's configuration, speed, and power must be made in accordance with procedures established by the applicant for operation in service. (4) Procedures for the execution of discontinued approaches and balked landings associated with the conditions prescribed in §23.67(c)(4) and §23.77(c) must be established. (5) The procedures established under paragraphs (h)(3) and (h)(4) of this section must— (i) Be able to be consistently executed by a crew of average skill in atmospheric conditions reasonably expected to be encountered in service; (ii) Use methods or devices that are safe and reliable; and (iii) Include allowance for any reasonably expected time delays in the execution of the procedures.	(2) The airplane configuration may vary with weight, altitude, and temperature, to the extent that they are compatible with the operating procedures required by paragraph (h)(3) of this section. (3) Unless otherwise prescribed, in determining the critical-engine-inoperative takeoff performance, takeoff flight path, and accelerate-stop distance, changes in the airplane's configuration, speed, and power must be made in accordance with procedures established by the applicant for operation in service. (4) Procedures for the execution of discontinued approaches and balked landings associated with the conditions prescribed in paragraphs 23.67(d)(4) and 23.77(c) must be established. (5) The procedures established under paragraphs (h)(3) and (h)(4) of this section must: (i) Be able to be consistently executed by a crew of average skill in atmospheric conditions reasonably expected to be encountered in service; (ii) Use methods or devices that are safe and reliable; and (iii) Include allowance for any reasonably expected time delays in the execution of the procedures.	

23.49 Stalling period. (a) V_{SO} and V_{S1} are the stalling speeds or the minimum steady flight speeds, in knots (CAS), at which the airplane is controllable with— (1) For reciprocating engine-powered airplanes, the engine(s) idling, the throttle(s) closed or at not more than the power necessary for zero thrust at a speed not more than 110 percent of the stalling speed; (2) For turbine engine-powered airplanes, the propulsive thrust not greater than zero at the stalling speed, or, if the resultant thrust has no appreciable effect on the stalling speed, with engine(s) idling and throttle(s) closed; (3) The propeller(s) in the takeoff position; (4) The airplane in the condition existing in the test, in which V_{SO} and V_{S1} are being used; (5) The center of gravity in the position that results in the highest value of V_{SO} and V_{S1}; and (6) The weight used when V_{SO} and V_{S1} are being used as a factor to determine compliance with a required performance standard.	**23.49 Stalling speed.** (a) VSO (maximum landing flap configuration) and VS1 are the stalling speeds or the minimum steady flight speeds, in knots (CAS), at which the airplane is controllable with: (1) For reciprocating engine-powered airplanes, the engine(s) idling, the throttle(s) closed or at not more than the power necessary for zero thrust at a speed not more than 110 percent of the stalling speed; (2) For turbine engine-powered airplanes, the propulsive thrust not greater than zero at the stalling speed, or, if the resultant thrust has no appreciable effect on the stalling speed, with engine(s) idling and throttle(s) closed; (3) The propeller(s) in the takeoff position; (4) The airplane in the condition existing in the test, in which VSO and VS1 are being used; (5) The center of gravity in the position that results in the highest value of VSO and VS1; and (6) The weight used when VSO and VS1 are being used as a factor to determine compliance with a required performance standard.	A proposta apenas esclarece o significado de VSO e revisa a aplicabilidade do parágrafo 23.49(c) para maior clareza.

(b) V_{SO} and V_{S1} must be determined by flight tests, using the procedure and meeting the flight characteristics specified in §23.201. (c) Except as provided in paragraph (d) of this section, V_{SO} and V_{S1} at maximum weight must not exceed 61 knots for— (1) Single-engine airplanes; and (2) Multiengine airplanes of 6,000 pounds or less maximum weight that cannot meet the minimum rate of climb specified in §23.67(a) (1) with the critical engine inoperative. (d) All single-engine airplanes, and those multiengine airplanes of 6,000 pounds or less maximum weight with a V_{SO} of more than 61 knots that do not meet the requirements of §23.67(a)(1), must comply with §23.562(d).	(b) VSO and VS1 must be determined by flight tests, using the procedure and meeting the flight characteristics specified in section 23.201. (c) Except as provided in paragraph (d) of this section, VSO at maximum weight may not exceed 61 knots (31,4 m/s) for: (1) Single-engine airplanes; and (2) Multiengine airplanes of 6.000 pounds (2.722 kg) or less maximum weight that cannot meet the minimum rate of climb specified in paragraph 23.67(a) (1) with the critical engine inoperative. (d) All single-engine airplanes, and those multiengine airplanes of 6.000 pounds (2.722 kg) or less maximum weight with a VSO of more than 61 knots that do not meet the requirements of paragraph 23.67(a)(1), must comply with paragraph 23.562(d).	
23.51 Takeoff speeds. (a) For normal, utility, and acrobatic category airplanes, rotation speed, V_R, is the speed at which the pilot makes a control input, with the intention of lifting the airplane out of contact with the runway or water surface.	**23.51 Takeoff speeds.** (a) For normal, utility, and acrobatic category airplanes, rotation speed, VR, is the speed at which the pilot makes a control input, with the intention of lifting the airplane out of contact with the runway or water surface.	A aplicabilidade dos requisitos das seções 23.51, 23.53, 23.55, 23.57, 23.59 e 23.61 referentes ao desempenho de decolagem foi revista para tornar aplicável os critérios da categoria transporte regional para todos os jatos multimotores pesando mais que 6.000 libras (2.722 kg) das categorias normal, utilitária e

(1) For multiengine landplanes, V_R, must not be less than the greater of 1.05 V_{MC}; or 1.10 V_{S1}; (2) For single-engine landplanes, V_R, must not be less than V_{S1}; and (3) For seaplanes and amphibians taking off from water, V_R, may be any speed that is shown to be safe under all reasonably expected conditions, including turbulence and complete failure of the critical engine. (b) For normal, utility, and acrobatic category airplanes, the speed at 50 feet above the takeoff surface level must not be less than: (1) or multiengine airplanes, the highest of— (i) A speed that is shown to be safe for continued flight (or emergency landing, if applicable) under all reasonably expected conditions, including turbulence and complete failure of the critical engine; (ii) 1.10 V_{MC}; or (iii) 1.20 V_{S1}. (2) For single-engine airplanes, the higher of—	(1) For multiengine landplanes, VR, must not be less than the greater of 1,05 VMC; or 1,10 VS1; (2) For single-engine landplanes, VR, must not be less than VS1; and (3) For seaplanes and amphibians taking off from water, VR, may be any speed that is shown to be safe under all reasonably expected conditions, including turbulence and complete failure of the critical engine. (b) For normal, utility, and acrobatic category airplanes, the speed at 50 feet (15,24 m) above the takeoff surface level must not be less than: (1) For multiengine airplanes, the highest of: (i) A speed that is shown to be safe for continued flight (or emergency landing, if applicable) under all reasonably expected conditions, including turbulence and complete failure of the critical engine; (ii) 1,10 VMC; or (iii) 1,20 VS1. (2) For single-engine airplanes, the higher of:	acrobática. Esta abordagem é adotada há algumas décadas pela ANAC e pela FAA através das condições especiais. A adoção dos requisitos de desempenho para estes jatos se provou bem sucedida em operações conduzidas de acordo com o RBHA 91 e é necessária para manter o nível de segurança existente.

(i) A speed that is shown to be safe under all reasonably expected conditions, including turbulence and complete engine failure; or (ii) 1.20 V_{S1}. (c) For commuter category airplanes, the following apply: (l) V_1 must be established in relation to V_{EF}as follows: (i) V_{EF} is the calibrated airspeed at which the critical engine is assumed to fail. V_{EF}must be selected by the applicant but must not be less than 1.05 V_{MC} determined under §23.149(b) or, at the option of the applicant, not less than V_{MCG} determined under §23.149(f). (ii) The takeoff decision speed, V_1, is the calibrated airspeed on the ground at which, as a result of engine failure or other reasons, the pilot is assumed to have made a decision to continue or discontinue the takeoff. The takeoff decision speed, V_1, must be selected by the applicant but must not be less than V_{EF}plus the speed gained with the critical engine inoperative during the time interval between the instant at which the critical engine is failed and the instant at which the pilot recognizes and reacts to the engine failure, as indicated by the pilot's application	(i) A speed that is shown to be safe under all reasonably expected conditions, including turbulence and complete engine failure; or (ii) 1,20 VS1. (c) For normal, utility, and acrobatic category multiengine jets of more than 6.000 pounds (2.722 kg) maximum weight and commuter category airplanes, the following apply: (1) V1 must be established in relation to VEF as follows: (i) VEF is the calibrated airspeed at which the critical engine is assumed to fail. VEF must be selected by the applicant but must not be less than 1,05 VMC determined under paragraph 23.149(b) or, at the option of the applicant, not less than VMCG determined under paragraph 23.149(f). (ii) The takeoff decision speed, V1, is the calibrated airspeed on the ground at which, as a result of engine failure or other reasons, the pilot is assumed to have made a decision to continue or discontinue the takeoff. The takeoff decision speed, V1, must be selected by the applicant but must not be less than VEF plus the speed gained with the critical engine inoperative during the time interval between the instant at which the critical engine is failed and the	

of the first retarding means during the accelerate-stop determination of §23.55. (2) The rotation speed, V_R, in terms of calibrated airspeed, must be selected by the applicant and must not be less than the greatest of the following: (i) V_1; (ii) 1.05 V_{MC} determined under §23.149(b); (iii) 1.10 V_{S1}; or (iv) The speed that allows attaining the initial climb-out speed, V_2, before reaching a height of 35 feet above the takeoff surface in accordance with §23.57(c)(2). (3) For any given set of conditions, such as weight, altitude, temperature, and configuration, a single value of $V_R$must be used to show compliance with both the one-engine-inoperative takeoff and all-engines-operating takeoff requirements. (4) The takeoff safety speed, V_2, in terms of calibrated airspeed, must be selected by the applicant so as to allow the gradient of climb required in §23.67 (c)(1) and (c)(2) but mut not be less than 1.10 V_{MC} or less than 1.20 V_{S1}.	instant at which the pilot recognizes and reacts to the engine failure, as indicated by the pilot's application of the first retarding means during the accelerate-stop determination of paragraph 23.55. (2) The rotation speed, VR, in terms of calibrated airspeed, must be selected by the applicant and must not be less than the greatest of the following: (i) V1; (ii) 1,05 VMC determined under paragraph 23.149(b); (iii) 1,10 VS1; or (iv) The speed that allows attaining the initial climb-out speed, V2, before reaching a height of 35 feet (10,67 m) above the takeoff surface in accordance with paragraph 23.57(c)(2). (3) For any given set of conditions, such as weight, altitude, temperature, and configuration, a single value of VR must be used to show compliance with both the one-engine-inoperative takeoff and all-engines-operating takeoff requirements. (4) The takeoff safety speed, V2, in terms of calibrated airspeed, must be selected by the applicant so as to allow the gradient of climb required in	

(5) The one-engine-inoperative takeoff distance, using a normal rotation rate at a speed 5 knots less than V_R, established in accordance with paragraph (c)(2) of this section, must be shown not to exceed the corresponding one-engine-inoperative takeoff distance, determined in accordance with §23.57 and §23.59(a)(1), using the established V_R. The takeoff, otherwise performed in accordance with §23.57, must be continued safely from the point at which the airplane is 35 feet above the takeoff surface and at a speed not less than the established V_2 minus 5 knots. (6) The applicant must show, with all engines operating, that marked increases in the scheduled takeoff distances, determined in accordance with §23.59(a)(2), do not result from over-rotation of the airplane or out-of-trim conditions.	paragraphs 23.67 (d)(1) and (d)(2) but must not be less than 1,10 VMC or less than 1,20 VS1. (5) The one-engine-inoperative takeoff distance, using a normal rotation rate at a speed 5 knots (2,6 m/s) less than VR, established in accordance with paragraph (c)(2) of this section, must be shown not to exceed the corresponding one-engine-inoperative takeoff distance, determined in accordance with section 23.57 and paragraph 23.59(a)(1), using the established VR. The takeoff, otherwise performed in accordance with section 23.57, must be continued safely from the point at which the airplane is 35 feet (10,67 m) above the takeoff surface and at a speed not less than the established V2 minus 5 knots (2,6 m/s). (6) The applicant must show, with all engines operating, that marked increases in the scheduled takeoff distances, determined in accordance with paragraph 23.59(a)(2), do not result from over-rotation of the airplane or out-of-trim conditions.	
23.53 Takeoff performance. (a) For normal, utility, and acrobatic category airplanes, the takeoff distance must be determined in accordance with paragraph (b) of this section, using speeds determined in accordance with §23.51 (a) and (b).	**23.53 Takeoff performance.** (a) For normal, utility, and acrobatic category airplanes, the takeoff distance must be determined in accordance with paragraph (b) of this section, using speeds determined in accordance with paragraph 23.51 (a) and (b).	A aplicabilidade dos requisitos das seções 23.51, 23.53, 23.55, 23.57, 23.59 e 23.61 referentes ao desempenho de decolagem foi revista para tornar aplicável os critérios da categoria transporte regional para todos os jatos multimotores pesando mais que

(b) For normal, utility, and acrobatic category airplanes, the distance required to takeoff and climb to a height of 50 feet above the takeoff surface must be determined for each weight, altitude, and temperature within the operational limits established for takeoff with— (1) Takeoff power on each engine; (2) Wing flaps in the takeoff position(s); and (3) Landing gear extended. (c) For commuter category airplanes, takeoff performance, as required by §§23.55 through 23.59, must be determined with the operating engine(s) within approved operating limitations.	(b) For normal, utility, and acrobatic category airplanes, the distance required to takeoff and climb to a height of 50 feet (15,24 m) above the takeoff surface must be determined for each weight, altitude, and temperature within the operational limits established for takeoff with: (1) Takeoff power on each engine; (2) Wing flaps in the takeoff position(s); and (3) Landing gear extended. (c) For normal, utility, and acrobatic category multiengine jets of more than 6.000 pounds (2.722 kg) maximum weight and commuter category airplanes, takeoff performance, as required by sections 23.55 through 23.59, must be determined with the operating engine(s) within approved operating limitations.	6.000 libras (2.722 kg) das categorias normal, utilitária e acrobática. Esta abordagem é adotada há algumas décadas pela ANAC e pela FAA através das condições especiais. A adoção dos requisitos de desempenho para estes jatos se provou bem sucedida em operações conduzidas de acordo com o RBHA 91 e é necessária para manter o nível de segurança existente.
23.55 Accelerate-stop distance. For each commuter category airplane, the accelerate-stop distance must be determined as follows: (a) The accelerate-stop distance is the sum of the distances necessary to—	**23.55 Accelerate-stop distance.** For normal, utility, and acrobatic category multiengine jets of more than 6.000 pounds (2.722 kg) maximum weight and commuter category airplanes, the accelerate-stop distance must be determined as follows:	A aplicabilidade dos requisitos das seções 23.51, 23.53, 23.55, 23.57, 23.59 e 23.61 referentes ao desempenho de decolagem foi revista para tornar aplicável os critérios da categoria transporte regional para todos os jatos multimotores pesando mais que 6.000 libras (2.722 kg) das categorias normal, utilitária e

(1) Accelerate the airplane from a standing start to $V_{EF}$with all engines operating; (2) Accelerate the airplane from V_{EF} to V_1, assuming the critical engine fails at V_{EF}; and (3) Come to a full stop from the point at which V_1 is reached. (b) Means other than wheel brakes may be used to determine the accelerate-stop distances if that means— (1) Is safe and reliable; (2) Is used so that consistent results can be expected under normal operating conditions; and (3) Is such that exceptional skill is not required to control the airplane.	(a) The accelerate-stop distance is the sum of the distances necessary to: (1) Accelerate the airplane from a standing start to VEF with all engines operating; (2) Accelerate the airplane from VEF to V1, assuming the critical engine fails at VEF; and (3) Come to a full stop from the point at which V1 is reached. (b) Means other than wheel brakes may be used to determine the accelerate-stop distances if that means: (1) Is safe and reliable; (2) Is used so that consistent results can be expected under normal operating conditions; and (3) Is such that exceptional skill is not required to control the airplane.	acrobática. Esta abordagem é adotada há algumas décadas pela ANAC e pela FAA através das condições especiais. A adoção dos requisitos de desempenho para estes jatos se provou bem sucedida em operações conduzidas de acordo com o RBHA 91 e é necessária para manter o nível de segurança existente.
23.57 Takeoff path. For each commuter category airplane, the takeoff path is as follows: (a) The takeoff path extends from a standing start to a point in the takeoff at which the airplane is 1500 feet above the takeoff surface at or below which	**23.57 Takeoff path.** For normal, utility, and acrobatic category multiengine jets of more than 6.000 pounds (2.722 kg) maximum weight and commuter category airplanes, the takeoff path is as follows:	A aplicabilidade dos requisitos das seções 23.51, 23.53, 23.55, 23.57, 23.59 e 23.61 referentes ao desempenho de decolagem foi revista para tornar aplicável os critérios da categoria transporte regional para todos os jatos multimotores pesando mais que

height the transition from the takeoff to the enroute configuration must be completed; and (1) The takeoff path must be based on the procedures prescribed in §23.45; (2) The airplane must be accelerated on the ground to VEFat which point the critical engine must be made inoperative and remain inoperative for the rest of the takeoff; and (3) After reaching V_{EF}, the airplane must be accelerated to V_2. (b) During the acceleration to speed V_2, the nose gear may be raised off the ground at a speed not less than V_R. However, landing gear retraction must not be initiated until the airplane is airborne. (c) During the takeoff path determination, in accordance with paragraphs (a) and (b) of this section— (1) The slope of the airborne part of the takeoff path must not be negative at any point; (2) The airplane must reach V_2 before it is 35 feet above the takeoff surface, and must continue at a	(a) The takeoff path extends from a standing start to a point in the takeoff at which the airplane is 1.500 feet (457,20 m) above the takeoff surface at or below which height the transition from the takeoff to the enroute configuration must be completed; and (1) The takeoff path must be based on the procedures prescribed in section 23.45; (2) The airplane must be accelerated on the ground to VEF at which point the critical engine must be made inoperative and remain inoperative for the rest of the takeoff; and (3) After reaching VEF, the airplane must be accelerated to V2. (b) During the acceleration to speed V2, the nose gear may be raised off the ground at a speed not less than VR. However, landing gear retraction must not be initiated until the airplane is airborne. (c) During the takeoff path determination, in accordance with paragraphs (a) and (b) of this section: (1) The slope of the airborne part of the takeoff path must not be negative at any point;	6.000 libras (2.722 kg) das categorias normal, utilitária e acrobática. Esta abordagem é adotada há algumas décadas pela ANAC e pela FAA através das condições especiais. A adoção dos requisitos de desempenho para estes jatos se provou bem sucedida em operações conduzidas de acordo com o RBHA 91 e é necessária para manter o nível de segurança existente.

speed as close as practical to, but not less than V_2, until it is 400 feet above the takeoff surface; (3) At each point along the takeoff path, starting at the point at which the airplane reaches 400 feet above the takeoff surface, the available gradient of climb must not be less than— (i) 1.2 percent for two-engine airplanes; (ii) 1.5 percent for three-engine airplanes; (iii) 1.7 percent for four-engine airplanes; and (4) Except for gear retraction and automatic propeller feathering, the airplane configuration must not be changed, and no change in power that requires action by the pilot may be made, until the airplane is 400 feet above the takeoff surface. (d) The takeoff path to 35 feet above the takeoff surface must be determined by a continuous demonstrated takeoff. (e) The takeoff path to 35 feet above the takeoff surface must be determined by synthesis from segments; and	(2) The airplane must reach V2 before it is 35 feet (10,67 m) above the takeoff surface, and must continue at a speed as close as practical to, but not less than V2, until it is 400 feet (121,92 m) above the takeoff surface; (3) At each point along the takeoff path, starting at the point at which the airplane reaches 400 feet (121,92 m) above the takeoff surface, the available gradient of climb must not be less than: (i) 1,2 percent for two-engine airplanes; (ii) 1,5 percent for three-engine airplanes; (iii) 1,7 percent for four-engine airplanes; and (4) Except for gear retraction and automatic propeller feathering, the airplane configuration must not be changed, and no change in power that requires action by the pilot may be made, until the airplane is 400 feet (121,92 m) above the takeoff surface. (d) The takeoff path to 35 feet (10,67 m)above the takeoff surface must be determined by a continuous demonstrated takeoff.	

(1) The segments must be clearly defined and must be related to distinct changes in configuration, power, and speed; (2) The weight of the airplane, the configuration, and the power must be assumed constant throughout each segment and must correspond to the most critical condition prevailing in the segment; and (3) The takeoff flight path must be based on the airplane's performance without utilizing ground effect.	(e) The takeoff path to 35 feet (10,67 m) above the takeoff surface must be determined by synthesis from segments; and (1) The segments must be clearly defined and must be related to distinct changes in configuration, power, and speed; (2) The weight of the airplane, the configuration, and the power must be assumed constant throughout each segment and must correspond to the most critical condition prevailing in the segment; and (3) The takeoff flight path must be based on the airplane's performance without utilizing ground effect.	
23.59 Takeoff distance and takeoff run. For each commuter category airplane, the takeoff distance and, at the option of the applicant, the takeoff run, must be determined. (a) Takeoff distance is the greater of— (1) The horizontal distance along the takeoff path from the start of the takeoff to the point at which the airplane is 35 feet above the takeoff surface as determined under §23.57; or	**23.59 Takeoff distance and takeoff run.** For normal, utility, and acrobatic category multiengine jets of more than 6.000 pounds (2.722 kg) maximum weight and commuter category airplanes, the takeoff distance and, at the option of the applicant, the takeoff run, must be determined. (a) Takeoff distance is the greater of: (1) The horizontal distance along the takeoff path from the start of the takeoff to the point at which the	A aplicabilidade dos requisitos das seções 23.51, 23.53, 23.55, 23.57, 23.59 e 23.61 referentes ao desempenho de decolagem foi revista para tornar aplicável os critérios da categoria transporte regional para todos os jatos multimotores pesando mais que 6.000 libras (2.722 kg) das categorias normal, utilitária e acrobática. Esta abordagem é adotada há algumas décadas pela ANAC e pela FAA através das condições especiais. A adoção dos

(2) With all engines operating, 115 percent of the horizontal distance from the start of the takeoff to the point at which the airplane is 35 feet above the takeoff surface, determined by a procedure consistent with §23.57. (b) If the takeoff distance includes a clearway, the takeoff run is the greater of— (1) The horizontal distance along the takeoff path from the start of the takeoff to a point equidistant between the liftoff point and the point at which the airplane is 35 feet above the takeoff surface as determined under §23.57; or (2) With all engines operating, 115 percent of the horizontal distance from the start of the takeoff to a point equidistant between the liftoff point and the point at which the airplane is 35 feet above the takeoff surface, determined by a procedure consistent with §23.57.	airplane is 35 feet (10,67 m) above the takeoff surface as determined under section 23.57; or (2) With all engines operating, 115 percent of the horizontal distance from the start of the takeoff to the point at which the airplane is 35 feet (10,67 m) above the takeoff surface, determined by a procedure consistent with section 23.57. (b) If the takeoff distance includes a clearway, the takeoff run is the greater of: (1) The horizontal distance along the takeoff path from the start of the takeoff to a point equidistant between the liftoff point and the point at which the airplane is 35 feet (10,67 m) above the takeoff surface as determined under section 23.57; or (2) With all engines operating, 115 percent of the horizontal distance from the start of the takeoff to a point equidistant between the liftoff point and the point at which the airplane is 35 feet (10,67 m) above the takeoff surface, determined by a procedure consistent with section 23.57.	requisitos de desempenho para estes jatos se provou bem sucedida em operações conduzidas de acordo com o RBHA 91 e é necessária para manter o nível de segurança existente.
23.61 Takeoff flight path. For each commuter category airplane, the takeoff flight path must be determined as follows:	**23.61 Takeoff flight path.** For normal, utility, and acrobatic category multiengine jets of more than 6,000 pounds	A aplicabilidade dos requisitos das seções 23.51, 23.53, 23.55, 23.57, 23.59 e 23.61 referentes ao desempenho de decolagem foi revista para tornar aplicável os critérios da categoria transporte

(a) The takeoff flight path begins 35 feet above the takeoff surface at the end of the takeoff distance determined in accordance with §23.59. (b) The net takeoff flight path data must be determined so that they represent the actual takeoff flight paths, as determined in accordance with §23.57 and with paragraph (a) of this section, reduced at each point by a gradient of climb equal to— (1) 0.8 percent for two-engine airplanes; (2) 0.9 percent for three-engine airplanes; and (3) 1.0 percent for four-engine airplanes. (c) The prescribed reduction in climb gradient may be applied as an equivalent reduction in acceleration along that part of the takeoff flight path at which the airplane is accelerated in level flight.	maximum weight and commuter category airplanes, the takeoff flight path must be determined as follows: (a) The takeoff flight path begins 35 feet (10,67 m) above the takeoff surface at the end of the takeoff distance determined in accordance with section 23.59. (b) The net takeoff flight path data must be determined so that they represent the actual takeoff flight paths, as determined in accordance with section 23.57 and with paragraph (a) of this section, reduced at each point by a gradient of climb equal to: (1) 0,8 percent for two-engine airplanes; (2) 0,9 percent for three-engine airplanes; and (3) 1,0 percent for four-engine airplanes. (c) The prescribed reduction in climb gradient may be applied as an equivalent reduction in acceleration along that part of the takeoff flight path at which the airplane is accelerated in level flight.	regional para todos os jatos multimotores pesando mais que 6.000 libras (2.722 kg) das categorias normal, utilitária e acrobática. Esta abordagem é adotada há algumas décadas pela ANAC e pela FAA através das condições especiais. A adoção dos requisitos de desempenho para estes jatos se provou bem sucedida em operações conduzidas de acordo com o RBHA 91 e é necessária para manter o nível de segurança existente.
23.63 Climb: General. (a) Compliance with the requirements of §§23.65, 23.66, 23.67, 23.69, and 23.77 must be shown—	**23.63 Climb: General.** (a) Compliance with the requirements of sections 23.65, 23.66, 23.67, 23.69, and 23.77 must be shown:	As seções 23.63, 23.65 e 23.67 foram revisadas para melhorar a segurança através do aumento do desempenho de subida OEI (um motor inoperante) para aviões mulimotores à pistão pesando

(1) Out of ground effect; and (2) At speeds that are not less than those at which compliance with the powerplant cooling requirements of §§23.1041 to 23.1047 has been demonstrated; and (3) Unless otherwise specified, with one engine inoperative, at a bank angle not exceeding 5 degrees. (b) For normal, utility, and acrobatic category reciprocating engine-powered airplanes of 6,000 pounds or less maximum weight, compliance must be shown with §23.65(a), §23.67(a), where appropriate, and §23.77(a) at maximum takeoff or landing weight, as appropriate, in a standard atmosphere. (c) For normal, utility, and acrobatic category reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight, and turbine engine-powered airplanes in the normal, utility, and acrobatic category, compliance must be shown at weights as a function of airport altitude and ambient temperature, within the operational limits established for takeoff and landing, respectively, with—	(1) Out of ground effect; and (2) At speeds that are not less than those at which compliance with the powerplant cooling requirements of sections 23.1041 to 23.1047 has been demonstrated; and (3) Unless otherwise specified, with one engine inoperative, at a bank angle not exceeding 5 degrees. (b) For normal, utility, and acrobatic category reciprocating engine-powered airplanes of 6.000 pounds (2.722 kg) or less maximum weight, compliance must be shown with paragraphs 23.65(a), 23.67(a), where appropriate, and paragraph 23.77(a) at maximum takeoff or landing weight, as appropriate, in a standard atmosphere. (c) For each of the following normal, utility, and acrobatic category airplanes: (1) reciprocating engine-powered airplanes of more than 6.000 pounds (2.722 kg) maximum weight, (2) single engine turbines, and (3) multiengine turbine airplanes of 6.000 pounds (2.722 kg) or less maximum weight, compliance must be shown at weights as a function of airport altitude and ambient temperature within the operational limits established for takeoff and landing, respectively, with:	mais que 6.000 libras (2.722 kg) e todos os aviões multimotores à turbina. A proposta revisa os requisitos de gradiente de subida OEI para requerer um gradiente de subida OEI de 1 porcento para todos os multimotores turbohélice e para os multimotores a pistão pesando mais que 6.000 libras (2.722 kg). Esta alteração foi feita devido à similaridade em como estes dois tipos de aviões são usados. Para os jatos multimotores pesando 6.000 libras (2.722 kg) ou menos será requerido satisfazer um gradiente de subida OEI de 1,2 porcento. Também foram feitas pequenas correções editorias para substituir o termo "*turbojet engine-powered*" por "jet" para simplificar o termo onde apropriado.

(1) Sections 23.65(b) and 23.67(b) (1) and (2), where appropriate, for takeoff, and (2) Section 23.67(b)(2), where appropriate, and §23.77(b), for landing. (d) For commuter category airplanes, compliance must be shown at weights as a function of airport altitude and ambient temperature within the operational limits established for takeoff and landing, respectively, with— (1) Sections 23.67(c)(1), 23.67(c)(2), and 23.67(c)(3) for takeoff; and (2) Sections 23.67(c)(3), 23.67(c)(4), and 23.77(c) for landing.	(1) For reciprocating engine-power airplanes of more than 6.000 pounds (2.722 kg) maximum weight: (i) Paragraphs 23.65(b) and 23.67(b)(1) and (2), where appropriate, for takeoff and (ii) Paragraphs 23.67(b)(2), where appropriate, and 23.77(b), for landing, (2) For single-engine turbines: (i) Paragraph 23.65(b), for takeoff, and (ii) Paragraph 23.77(b) for landing. (3) For multiengine turbine airplanes of 6.000 pounds (2.722 kg) or less maximum weight: (i) For takeoff, 23.65(b) and (A) If a turbopropeller-power airplane, 23.67(b)(1), and (2), where appropriate. (B) If a jet airplane, 23.67(c)(1), and (2), where appropriate. (ii) For landing, 23.77(b) and	

	(A) If a turbopropeller-powered airplane, 23.67(b)(2), where appropriate. (B) If a jet airplane, 23.67(c)(2), where appropriate. (d) For multiengine turbine airplanes over 6.000 pounds (2.722 kg) maximum weight in the normal, utility, and acrobatic category and commuter category airplanes, compliance must be shown at weights as a function of airport altitude and ambient temperature within the operational limits established for takeoff and landing, respectively, with: (1) If a normal, utility, or acrobatic category, turbopropeller-powered airplane: (i) Paragraphs 23.67(b)(1), and (2), where appropriate, for takeoff, and (ii) Paragraph 23.67(b)(2), where appropriate, and 23.77(c), for landing (2) If a jet or commuter category airplane: (i) Paragraphs 23.67(d)(1), (2), and (3), where appropriate, for takeoff, and (ii) Paragraphs 23.67(d)(3), and (4), where appropriate, and 23.77(c) for landing.	

23.65 Climb: All engines operating. (a) Each normal, utility, and acrobatic category reciprocating engine-powered airplane of 6,000 pounds or less maximum weight must have a steady climb gradient at sea level of at least 8.3 percent for landplanes or 6.7 percet for seaplanes and amphibians with— (1) Not more than maximum continuous power on each engine; (2) The landing gear retracted; (3) The wing flaps in the takeoff position(s); and (4) A climb speed not less than the greater of 1.1 V_{MC} and 1.2 V_{S1} f or multiengine airplanes and not less than 1.2 V_{S1} for single—engine airplanes. (b) Each normal, utility, and acrobatic category reciprocating engine-powered airplane of more than 6,000 pounds maximum weight and turbine engine-powered airplanes in the normal, utility, and acrobatic category must have a steady gradient of climb after takeoff of at least 4 percent with (1) Take off power on each engine;	**23.65 Climb: All engines operating.** (a) Each normal, utility, and acrobatic category reciprocating engine-powered airplane of 6.000 pounds (2.722 kg) or less maximum weight must have a steady climb gradient at sea level of at least 8.3 percent for landplanes or 6.7 percent for seaplanes and amphibians with: (1) Not more than maximum continuous power on each engine; (2) The landing gear retracted; (3) The wing flaps in the takeoff position(s); and (4) A climb speed not less than the greater of 1.1 VMC and 1.2 VS1 for multiengine airplanes and not less than 1.2 VS1 for single—engine airplanes. (b) Each normal, utility, and acrobatic category reciprocating engine-powered airplane of more than 6.000 pounds (2.722 kg) maximum weight, single-engine turbine, and multiengine turbine airplanes of 6.000 pounds (2.722 kg) or less maximum in the normal, utility, and acrobatic category must have a steady gradient of climb after takeoff of at least 4 percent with:	As seções 23.63, 23.65 e 23.67 foram revisadas para melhorar a segurança através do aumento do desempenho de subida OEI (um motor inoperante) para aviões mulimotores à pistão pesando mais que 6.000 libras (2.722 kg) e todos os aviões multimotores à turbina. A proposta revisa os requisitos de gradiente de subida OEI para requerer um gradiente de subida OEI de 1 porcento para todos os multimotores turbohélice e para os multimotores a pistão pesando mais que 6.000 libras (2.722 kg). Esta alteração foi feita devido à similaridade em como estes dois tipos de aviões são usados. Para os jatos multimotores pesando 6.000 libras (2.722 kg) ou menos será requerido satisfazer um gradiente de subida OEI de 1,2 porcento. Também foram feitas pequenas correções editorias para substituir o termo "*turbojet engine-powered*" por "jet" para simplificar o termo onde apropriado.

(2) The landing gear extended, except that if the landing gear can be retracted in not more than sven seconds, the test may be conducted with the gear retracted; (3) The wing flaps in the takeoff position(s); and (4) A climb speed as specified in §23.65(a)(4).	(1) Take off power on each engine; (2) The landing gear extended, except that if the landing gear can be retracted in not more than seven seconds, the test may be conducted with the gear retracted; (3) The wing flaps in the takeoff position(s); and (4) A climb speed as specified in paragraph 23.65(a)(4).	
23.66 Takeoff climb: One-engine inoperative. For normal, utility, and acrobatic category reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight, and turbine engine-powered airplanes in the normal, utility, and acrobatic category, the steady gradient of climb or descent must be determined at each weight, altitude, and ambient temperature within the operational limits established by the applicant with— (a) The critical engine inoperative and its propeller in the position it rapidly and automatically assumes; (b) The remaining engine(s) at takeoff power; (c) The landing gear extended, except that if the landing gear can be retracted in not more than seven	**23.67 Climb: One engine inoperative.** (a) For normal, utility, and acrobatic category reciprocating multiengine-powered airplanes of 6.000 pounds (2.722 kg) or less maximum weight, the following apply: (1) Except for those airplanes that meet the requirements prescribed in paragraph 23.562(d), each airplane with a VSO of more than 61 knots (31,4 m/s) must be able to maintain a steady climb gradient of at least 1,5 percent at a pressure altitude of 5.000 feet (1.524 m) with the: (i) Critical engine inoperative and its propeller in the minimum drag position;	As seções 23.63, 23.65 e 23.67 foram revisadas para melhorar a segurança através do aumento do desempenho de subida OEI (um motor inoperante) para aviões mulimotores à pistão pesando mais que 6.000 libras (2.722 kg) e todos os aviões multimotores à turbina. A proposta revisa os requisitos de gradiente de subida OEI para requerer um gradiente de subida OEI de 1 porcento para todos os multimotores turbohélice e para os multimotores a pistão pesando mais que 6.000 libras (2.722 kg). Esta alteração foi feita devido à similaridade em como estes dois tipos de aviões são usados. Para os

seconds, the test may be conducted with the gear retracted; (d) The wing flaps in the takeoff position(s): (e) The wings level; and (f) A climb speed equal to that achieved at 50 feet in the demonstration of §23.53.	(ii) Remaining engine(s) at not more than maximum continuous power; (iii) Landing gear retracted; (iv) Wing flaps retracted; and (v) Climb speed not less than 1,2 VS1. (2) For each airplane that meets the requirements prescribed in paragraph 23.562(d), or that has a VSO of 61 knots or less, the steady gradient of climb or descent at a pressure altitude of 5,000 feet (1.524 m) must be determined with the: (i) Critical engine inoperative and its propeller in the minimum drag position; (ii) Remaining engine(s) at not more than maximum continuous power; (iii) Landing gear retracted; (iv) Wing flaps retracted; and (v) Climb speed not less than 1.2VS1. (b) For normal, utility, and acrobatic category reciprocating multiengine-powered airplanes of more than 6.000 pounds (2.722 kg) maximum	jatos multimotores pesando 6.000 libras (2.722 kg) ou menos será requerido satisfazer um gradiente de subida OEI de 1,2 porcento. Também foram feitas pequenas correções editorias para substituir o termo "*turbojet engine-powered*" por "jet" para simplificar o termo onde apropriado.

	weight, and multiengine turbopropeller-powered airplanes in the normal, utility, and acrobatic category: (1) The steady gradient of climb at an altitude of 400 feet above the takeoff must be no less than 1 percent with: (i) The critical engine inoperative and its propeller in the minimum drag position; (ii) Remaining engine(s) at takeoff power; (iii) Landing gear retracted; (iv) Wing flaps in the takeoff position(s); and (v) Climb speed equal to that achieved at 50 feet in the demonstration of section 23.53. (2) The steady gradient of climb must not be less than 0,75 percent at an altitude of 1.500 feet (457,2 m) above the takeoff surface, or landing surface, as appropriate, with the: (i) Critical engine inoperative and its propeller in the minimum drag position;	

	(ii) Remaining engine(s) at not more than maximum continuous power; (iii) Landing gear retracted; (iv) Wing flaps retracted; and (v) Climb speed not less than 1,2 VS1. (c) For normal, utility, and acrobatic category multiengine jets of 6.000 pounds (2.722 kg) or less maximum weight: (1) The steady gradient of climb at an altitude of 400 feet (121,9 m) above the takeoff must be no less than 1,2 percent with the: (i) Critical engine inoperative; (ii) Remaining engine(s) at takeoff power; (iii) Landing gear retracted; (iv) Wing flaps in the takeoff position(s); and (v) Climb speed equal to that achieved at 50 feet (15,24 m) in the demonstration of section 23.53. (2) The steady gradient of climb may not be less than 0,75 percent at an altitude of 1.500 feet (457,2 m)	

	above the takeoff surface, or landing surface, as appropriate, with the: (i) Critical engine inoperative; (ii) Remaining engine(s) at not more than maximum continuous power; (iii) Landing gear retracted; (iv) Wing flaps retracted; and (v) Climb speed not less than 1,2 VS1. (d) For multiengine jets over 6.000 pounds (2.722 kg) maximum weight in the normal, utility and acrobatic category and commuter category airplanes, the following apply: (1) Takeoff; landing gear extended. The steady gradient of climb at the altitude of the takeoff surface must be measurably positive for two-engine airplanes, not less than 0,3 percent for three-engine airplanes, or 0,5 percent for four-engine airplanes with: (i) The critical engine inoperative and its propeller, if applicable, in the position it rapidly and automatically assumes;	

	(ii) The remaining engine(s) at takeoff power; (iii) The landing gear extended, and all landing gear doors open; (iv) The wing flaps in the takeoff position(s); (v) The wings level; and (vi) A climb speed equal to V2. (2) Takeoff; landing gear retracted. The steady gradient of climb at an altitude of 400 feet (121,92 m) above the takeoff surface must be not less than 2,0 percent of two-engine airplanes, 2,3 percent for three-engine airplanes, and 2,6 percent for four-engine airplanes with: (i) The critical engine inoperative and its propeller, if applicable, in the position it rapidly and automatically assumes; (ii) The remaining engine(s) at takeoff power; (iii) The landing gear retracted; (iv) The wing flaps in the takeoff position(s); (v) A climb speed equal to V2.	

	(3) Enroute. The steady gradient of climb at an altitude of 1.500 feet (457,2 m) above the takeoff or landing surface, as appropriate, must be not less than 1,2 percent for two-engine airplanes, 1,5 percent for three-engine airplanes, and 1,7 percent for four-engine airplanes with: (i) The critical engine inoperative and its propeller, if applicable, in the minimum drag position; (ii) The remaining engine(s) at not more than maximum continuous power; (iii) The landing gear retracted; (iv) The wing flaps retracted; and (v) A climb speed not less than 1,2 VS1. (4) Discontinued approach. The steady gradient of climb at an altitude of 400 feet (121,9 m) above the landing surface must be not less than 2,1 percent for two-engine airplanes, 2,4 percent for three-engine airplanes, and 2,7 percent for four-engine airplanes, with: (i) The critical engine inoperative and its propeller, if applicable, in the minimum drag position;	

	(ii) The remaining engine(s) at takeoff power; (iii) Landing gear retracted; (iv) Wing flaps in the approach position(s) in which VS1 for these position(s) does not exceed 110 percent of the VS1 for the related all-engines-operated landing position(s); and (v) A climb speed established in connection with normal landing procedures but not exceeding 1,5 VS1.	
23.73 Reference landing approach speed. (a) For normal, utility, and acrobatic category reciprocating engine-powered airplanes of 6,000 pounds or less maximum weight, the reference landing approach speed, V_{REF}, must not be less than the greater of V_{MC}, determined in §23.149(b) with the wing flaps in the most extended takeoff position, and 1.3 V_{SO}. (b) For normal, utility, and acrobatic category reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight, and turbine engine-powered airplanes in the normal, utility, and acrobatic category, the reference landing approach speed, V_{REF}, must not be less than the greater of V_{MC}, determined in §23.149(c), and 1.3 V_{SO}.	**23.73 Reference landing approach speed.** (a) For normal, utility, and acrobatic category reciprocating engine-powered airplanes of 6.000 pounds (2.722 kg) or less maximum weight, the reference landing approach speed, VREF, may not be less than the greater of VMC, determined in 23.149(b) with the wing flaps in the most extended takeoff position, and 1,3 VS1. (b) Each of the following normal, utility, and acrobatic category airplanes: (1) reciprocating engine-powered airplane of more than 6.000 pounds (2.722 kg) maximum weight, (2) turbine powered airplane of 6.000 pounds (2.722 kg) or less maximum weight, and (3) single engine turbine powered airplane of more than 6.000 pounds (2.722 kg) maximum weight, the reference landing	A alteração na seção 23.73 corrige um erro de referência a um termo de velocidade. A máxima velocidade de estol em configuração de pouso (VS0) foi alterada para a velocidade de estol na configuração específica de flap (VS1). VS0 não é aplicável para outras configurações de flap. A velocidade de referência de aproximação para pouso (VREF) é baseada em 1,3 vezes a VS1. A alteração proposta permite tratar aviões certificados de acordo com o RBAC 23 que possam ter mais que uma posição de flap para pouso. Adicionalmente, a proposta torna aplicável os

(c) For commuter category airplanes, the reference landing approach speed, V_{REF}, must not be less than the greater of 1.05 V_{MC}, determined in §23.149(c), and 1.3 V_{SO}.	approach speed, VREF, may not be less than the greater of VMC, determined in 23.149(c), and 1,3 VS1. (c) For normal, utility, and acrobatic category multiengine turbine powered airplanes over 6.000 pounds (2.722 kg) maximum weight and commuter category airplanes, the reference landing approach speed, VREF, may not be less than the greater of 1,05 VMC, determined in 23.149(c), and 1,3 VS1.	critérios da categoria transporte regional para jatos multimotores pesando mais que 6.000 libras (2.722 kg).
23.77 Balked landing. (a) Each normal, utility, and acrobatic category reciprocating engine-powered airplane at 6,000 pounds or less maximum weight must be able to maintain a steady gradient of climb at sea level of at least 3.3 percent with— (1) Takeoff power on each engine; (2) The landing gear extended; (3) The wing flaps in the landing position, except that if the flaps may safely be retracted in two seconds or less without loss of altitude and without sudden changes of angle of attack, they may be retracted; and	**23.77 Balked landing.** (a) Each normal, utility, and acrobatic category reciprocating engine-powered airplane at 6.000 pounds (2.722 kg) or less maximum weight must be able to maintain a steady gradient of climb at sea level of at least 3,3 percent with: (1) Takeoff power on each engine; (2) The landing gear extended; (3) The wing flaps in the landing position, except that if the flaps may safely be retracted in two seconds or less without loss of altitude and without sudden changes of angle of attack, they may be retracted; and	A seção 23.77 foi revista para tornar aplicável os critérios da categoria transporte regional para todos os aviões multimotores à turbina e para os aviões à turbina com mais de 6.000 libras de forma consistente às condições especiais que tem sido emitidas nestes casos.

(4) A climb speed equal to V_{REF}, as defined in §23.73(a). (b) Each normal, utility, and acrobatic category reciprocating engine-powered airplane of more than 6,000 pounds maximum weight and each normal, utility, and acrobatic category turbine engine-powered airplane must be able to maintain a steady gradient of climb of at least 2.5 percent with— (1) Not more than the power that is available on each engine eight seconds after initiation of movement of the power controls from minimum flight-idle position; (2) The landing gear extended; (3) The wing flaps in the landing position; and (4) A climb speed equal to V_{REF}, as defined in §23.73(b). (c) Each commuter category airplane must be able to maintain a steady gradient of climb of at least 3.2 percent with— (1) Not more than the power that is available on each engine eight seconds after initiation of movement of	(4) A climb speed equal to VREF, as defined in paragraph 23.73(a). (b) Each of the following normal, utility, and acrobatic category airplanes: (1) reciprocating engine-powered airplane of more than 6.000 pounds (2.722 kg) maximum weight, (2) turbine powered airplane of 6.000 pounds (2.722 kg) or less maximum weight, and (3) single engine turbine powered airplane of more than 6.000 pounds (2.722 kg) maximum weight, must be able to maintain a steady gradient of climb of at least 2,5 percent with: (1) Not more than the power that is available on each engine eight seconds after initiation of movement of the power controls from minimum flight-idle position; (2) The landing gear extended; (3) The wing flaps in the landing position; and (4) A climb speed equal to VREF, as defined in paragraph 23.73(b). (c) Each normal, utility, and acrobatic multiengine turbine powered airplane over 6.000 pounds (2.722 kg) maximum weight and each commuter category	

the power controls from the minimum flight idle position; (2) Landing gear extended; (3) Wing flaps in the landing position; and (4) A climb speed equal to V_{REF}, as defined in §23.73(c).	airplane must be able to maintain a steady gradient of climb of at least 3,2 percent with: (1) Not more than the power that is available on each engine eight seconds after initiation of movement of the power controls from the minimum flight idle position; (2) Landing gear extended; (3) Wing flaps in the landing position; and (4) A climb speed equal to VREF, as defined in paragraph 23.73(c).	
23.161 Trim. (a) General. Each airplane must meet the trim requirements of this section after being trimmed and without further pressure upon, or movement of, the primary controls or their corresponding trim controls by the pilot or the automatic pilot. In addition, it must be possible, in other conditions of loading, configuration, speed and power to ensure that the pilot will not be unduly fatigued or distracted by the need to apply residual control forces exceeding those for prolonged application of §23.143(c). This applies in normal operation of the airplane and, if applicable, to those conditions associated with the failure of one	**23.161 Trim.** (a) General. Each airplane must meet the trim requirements of this section after being trimmed and without further pressure upon, or movement of, the primary controls or their corresponding trim controls by the pilot or the automatic pilot. In addition, it must be possible, in other conditions of loading, configuration, speed and power to ensure that the pilot will not be unduly fatigued or distracted by the need to apply residual control forces exceeding those for prolonged application of paragraph 23.143(c). This applies in normal operation of the airplane and, if applicable, to those conditions associated with the	Correção das referências apresentadas no parágrafo (d) desta seção.

engine for which performance characteristics are established. (b) Lateral and directional trim. The airplane must maintain lateral and directional trim in level flight with the landing gear and wing flaps retracted as follows: (1) For normal, utility, and acrobatic category airplanes, at a speed of 0.9 V_H, V_C, or V_{MO}/M_O, whichever is lowest; and (2) For commuter category airplanes, at all speeds from 1.4 $V_{S1}$to the lesser of $V_H$or V_{MO}/M_{MO}. (c) Longitudinal trim. The airplane must maintain longitudinal trim under each of the following conditions: (1) A climb with— (i) Takeoff power, landing gear retracted, wing flaps in the takeoff position(s), at the speeds used in determining the climb performance required by §23.65; and (ii) Maximum continuous power at the speeds and in the configuration used in determining the climb performance required by §23.69(a).	failure of one engine for which performance characteristics are established. (b) Lateral and directional trim. The airplane must maintain lateral and directional trim in level flight with the landing gear and wing flaps retracted as follows: (1) For normal, utility, and acrobatic category airplanes, at a speed of 0,9 VH, VC, or VMO/MO, whichever is lowest; and (2) For commuter category airplanes, at all speeds from 1,4 VS1 to the lesser of VH or VMO/MMO. (c) Longitudinal trim. The airplane must maintain longitudinal trim under each of the following conditions: (1) A climb with: (i) Takeoff power, landing gear retracted, wing flaps in the takeoff position(s), at the speeds used in determining the climb performance required by section 23.65; and (ii) Maximum continuous power at the speeds and in the configuration used in determining the climb performance required by paragraph 23.69(a).	

(2) Level flight at all speeds from the lesser of $V_H$and either V_{NO}or V_{MO}/M_{MO}(as appropriate), to 1.4 V_{S1}, with the landing gear and flaps retracted. (3) A descent at V_{NO}or V_{MO}/M_{MO}, whichever is applicable, with power off and with the landing gear and flaps retracted. (4) Approach with landing gear extended and with— (i) A 3 degree angle of descent, with flaps retracted and at a speed of 1.4 V_{S1}; (ii) A 3 degree angle of descent, flaps in the landing position(s) at V_{REF}; and (iii) An approach gradient equal to the steepest used in the landing distance demonstrations of §23.75, flaps in the landing position(s) at V_{REF}. (d) In addition, each multiple airplane must maintain longitudinal and directional trim, and the lateral control force must not exceed 5 pounds at the speed used in complying with §23.67(a), (b)(2), or (c)(3), as appropriate, with— (1) The critical engine inoperative, and if applicable, its propeller in the minimum drag position;	(2) Level flight at all speeds from the lesser of VH and either VNO or VMO/MMO (as appropriate), to 1,4 VS1, with the landing gear and flaps retracted. (3) A descent at VNO or VMO/MMO, whichever is applicable, with power off and with the landing gear and flaps retracted. (4) Approach with landing gear extended and with: (i) A 3 degree angle of descent, with flaps retracted and at a speed of 1,4 VS1; (ii) A 3 degree angle of descent, flaps in the landing position(s) at VREF; and (iii) An approach gradient equal to the steepest used in the landing distance demonstrations of section 23.75, flaps in the landing position(s) at VREF. (d) In addition, each multiengine airplane must maintain longitudinal and directional trim, and the lateral control force must not exceed 5 pounds at the speed used in complying with paragraphs 23.67(a), (b)(2), (c)(2), or (d)(3), as appropriate, with (1) The critical engine inoperative, and if applicable, its propeller in the minimum drag position;	

(2) The remaining engines at maximum continuous power; (3) The landing gear retracted; (4) Wing flaps retracted; and (5) An angle of bank of not more than five degrees. (e) In addition, each commuter category airplane for which, in the determination of the takeoff path in accordance with §23.57, the climb in the takeoff configuration at V_2extends beyond 400 feet above the takeoff surface, it must be possible to reduce the longitudinal and lateral control forces to 10 pounds and 5 pounds, respectively, and the directional control force must not exceed 50 pounds at $V_2$with— (1) The critical engine inoperative and its propeller in the minimum drag position; (2) The remaining engine(s) at takeoff power; (3) Landing gear retracted; (4) Wing flaps in the takeoff position(s); and (5) An angle of bank not exceeding 5 degrees.	(2) The remaining engines at maximum continuous power; (3) The landing gear retracted; (4) Wing flaps retracted; and (5) An angle of bank of not more than five degrees. (e) In addition, each commuter category airplane for which, in the determination of the takeoff path in accordance with section 23.57, the climb in the takeoff configuration at V2 extends beyond 400 feet above the takeoff surface, it must be possible to reduce the longitudinal and lateral control forces to 10 pounds and 5 pounds, respectively, and the directional control force must not exceed 50 pounds at V2 with: (1) The critical engine inoperative and its propeller in the minimum drag position; (2) The remaining engine(s) at takeoff power; (3) Landing gear retracted; (4) Wing flaps in the takeoff position(s); and (5) An angle of bank not exceeding 5 degrees.	

23.177 Static directional and lateral stability. (a) The static directional stability, as shown by the tendency to recover from a wings level sideslip with the rudder free, must be positive for any landing gear and flap position appropriate to the takeoff, climb, cruise, approach, and landing configurations. This must be shown with symmetrical power up to maximum continuous power, and at speeds from 1.2 V_{S1}up to the maximum allowable speed for the condition being investigated. The angel of sideslip for these tests must be appropriate to the type of airplane. At larger angles of sideslip, up to that at which full rudder is used or a control force limit in §23.143 is reached, whichever occurs first, and at speeds from 1.2 $V_{S1}$to V_O, the rudder pedal force must not reverse. (b) The static lateral stability, as shown by the tendency to raise the low wing in a sideslip, must be positive for all landing gear and flap positions. This must be shown with symmetrical power up to 75 percent of maximum continuous power at speeds above 1.2 V_{S1}in the take off configuration(s) and at speeds above 1.3 V_{S1}in other configurations, up to the maximum allowable speed for the configuration being investigated, in the takeoff, climb, cruise, and approach configurations. For the landing configuration, the power must be that necessary to maintain a 3 degree angle of descent in coordinated	**23.177 Static directional and lateral stability.** (a)(1) The static directional stability, as shown by the tendency to recover from a wings level sideslip with the rudder free, must be positive for any landing gear and flap position appropriate to the takeoff, climb, cruise, approach, and landing configurations. This must be shown with symmetrical power up to maximum continuous power, and at speeds from 1,2 VS1 up to VFE, VLE, VNO, VFC/MFC, whichever is appropriate. (2) The angle of sideslip for these tests must be appropriate to the type of airplane. The rudder pedal force must not reverse at larger angles of sideslip, up to that at which full rudder is used or a control force limit in section 23.143 is reached, whichever occurs first, and at speeds from 1,2 VS1 to VO. (b)(1) The static lateral stability, as shown by the tendency to raise the low wing in a sideslip with the aileron controls free, may not be negative for any landing gear and flap position appropriate to the takeoff, climb, cruise, approach, and landing configurations. This must be shown with symmetrical power from idle up to 75 percent of maximum continuous power at speeds from 1,2 VS1 in the takeoff configuration(s) and at speeds from 1,3 VS1 in other configurations, up to the maximum allowable airspeed for the configuration being	A revisão da seção 23.177 esclarece as limitações de velocidades específicas para incluir os jatos. As limitações de velocidade também incluem critérios específicos (“VFE, VLE, VNO ou VFC/MFC como apropriado”).

flight. The static lateral stability must not be negative at 1.2 V_{S1}in the takeoff configuration, or at 1.3 V_{S1}in other configurations. The angle of sideslip for these tests must be appropriate to the type of airplane, but in no case may the constant heading sideslip angle be less than that obtainable with a 10 degree bank, or if less, the maximum bank angle obtainable with full rudder deflection or 150 pound rudder force. (c) Paragraph (b) of this section does not apply to acrobatic category airplanes certificated for inverted flight. (d) In straight, steady slips at 1.2 $V_{S1}$for any landing gear and flap positions, and for any symmetrical power conditions up to 50 percent of maximum continuous power, the aileron and rudder control movements and forces must increase steadily, but not necessarily in constant proportion, as the angle of sideslip is increased up to the maximum appropriate to the type of airplane. At larger slip angles, up to the angle at which full rudder or aileron control is used or a control force limit contained in §23.143 is reached, the aileron and rudder control movements and forces must not reverse as the angle of sideslip is increased. Rapid entry into, and recovery from, a maximum sideslip considered appropriate for the airplane must not result in uncontrollable flight characteristics.	investigated (VFE, VLE, VNO, VFC/MFC, whichever is appropriate) in the takeoff, climb, cruise, descent, and approach configurations. For the landing configuration, the power must be that necessary to maintain a 3-degree angle of descent in coordinated flight. (2) The static lateral stability may not be negative at 1,2 VS1 in the takeoff configuration, or at 1,3 VS1 in other configurations. (3) The angle of sideslip for these tests must be appropriate to the type of airplane, but in no case may the constant heading sideslip angle be less than that obtainable with a 10 degree bank or, if less, the maximum bank angle obtainable with full rudder deflection or 150 pound rudder force. (c) Paragraph (b) of this section does not apply to acrobatic category airplanes certificated for inverted flight. (d)(1) In straight, steady slips at 1,2 VS1 for any landing gear and flap position appropriate to the takeoff, climb, cruise, approach, and landing configurations, and for any symmetrical power conditions up to 50 percent of maximum continuous power, the aileron and rudder control movements and forces must increase steadily, but not necessarily in constant proportion, as the angle of sideslip is	

	increased up to the maximum appropriate to the type of airplane. (2) At larger slip angles, up to the angle at which the full rudder or aileron control is used or a control force limit contained in section 23.143 is reached, the aileron and rudder control movements and forces may not reverse as the angle of sideslip is increased. (3) Rapid entry into, and recovery from, a maximum sideslip considered appropriate for the airplane may not result in uncontrollable flight characteristics.	
23.181 Dynamic stability. (a) Any short period oscillation not including combined lateral-directional oscillations occurring between the stalling speed and the maximum allowable speed appropriate to the configuration of the airplane must be heavily damped with the primary controls— (1) Free; and (2) In a fixed position. (b) Any combined lateral-directional oscillations ("Dutch roll") occurring between the stalling speed and the maximum allowable speed appropriate to the	**23.181 Dynamic stability.** (a) Any short period oscillation not including combined lateral-directional oscillations occurring between the stalling speed and the maximum allowable speed appropriate to the configuration of the airplane must be heavily damped with the primary controls: (1) Free; and (2) In a fixed position. (b) Any combined lateral-directional oscillations (Dutch roll) occurring between the stalling speed and the maximum allowable speed (VFE, VLE, VN0, VFC/MFC) appropriate to the configuration of the	A seção 23.181 foi revisada para relaxar os requisitos de estabilidade para aviões operando acima de 18.000 pés. Os requisitos originais foram desenvolvidos para pequenos aviões que tipicamente operavam abaixo de 18.000 pés e que não eram equipados com *yaw dampers*. O requisito existente ainda é apropriado para operações em baixas altitudes assim como para aproximações. No entanto, o requisito existente não é apropriado para aviões de maior porte que normalmente usam *yaw dampers* e que voam a altitudes acima dos 18.000 pés. De fato, a

configuration of the airplane must be damped to 1/10 amplitude in 7 cycles with the primary controls— (1) Free; and (2) In a fixed position. (c) If it is determined that the function of a stability augmentation system, reference §23.672, is needed to meet the flight characteristic requirements of this part, the primary control requirements of paragraphs (a)(2) and (b)(2) of this section are not applicable to the tests needed to verify the acceptability of that system. (d) During the conditions as specified in §23.175, when the longitudinal control force required to maintain speeds differing from the trim speed by at least plus and minus 15 percent is suddenly released, the response of the airplane must not exhibit any dangerous characteristics nor be excessive in relation to the magnitude of the control force released. Any long-period oscillation of flight path, phugoid oscillation, that results must not be so unstable as to increase the pilot's workload or otherwise endanger the airplane.	airplane with the primary controls in both free and fixed position, must be damped to 1/10 amplitude in: (1) Seven (7) cycles below 18.000 feet (5.486,4 m) and (2) Thirteen (13) cycles from 18.000 feet (5.486,4 m) to the certified maximum altitude. (c) If it is determined that the function of a stability augmentation system, reference section 23.672, is needed to meet the flight characteristic requirements of this part, the primary control requirements of paragraphs (a)(2) and the fixed position testing of (b) of this section are not applicable to the tests needed to verify the acceptability of that system. (d) During the conditions as specified in section 23.175, when the longitudinal control force required to maintain speeds differing from the trim speed by at least plus and minus 15 percent is suddenly released, the response of the airplane must not exhibit any dangerous characteristics nor be excessive in relation to the magnitude of the control force released. Any long-period oscillation of flight path, phugoid oscillation, that results must not be so unstable as to increase the pilot's workload or otherwise endanger the airplane.	ANAC e a FAA emitiram diversos ELOS para a maioria dos jatos certificados de acordo com o RBAC 23 porque estes ELOS são apropriados para operações em altitudes altas com altas velocidades.
23.201 Wings level stall.	**23.201 Wings level stall.**	As seções 23.201 e 23.203 foram revisadas para incluir jatos e uma

(a) It must be possible to produce and to correct roll by unreversed use of the rolling control and to produce and to correct yaw by unreversed use of the directional control, up to the time the airplane stalls. (b) The wings level stall characteristics must be demonstrated in flight as follows. Starting from a speed at least 10 knots above the stall speed, the elevator control must be pulled back so that the rate of speed reduction will not exceed one knot per second until a stall is produced, as shown by either: (1) An uncontrollable downward pitching motion of the airplane; (2) A downward pitching motion of the airplane that results from the activation of a stall avoidance device (for example, stick pusher); or (3) The control reaching the stop. (c) Normal use of elevator control for recovery is allowed after the downward pitching motion of paragraphs (b)(1) or (b)(2) of this section has unmistakably been produced, or after the control has been held against the stop for not less than the longer of two seconds or the time employed in the minimum steady slight speed determination of §23.49.	(a) It must be possible to produce and to correct roll by unreversed use of the rolling control and to produce and to correct yaw by unreversed use of the directional control, up to the time the airplane stalls. (b) The wings level stall characteristics must be demonstrated in flight as follows. Starting from a speed at least 10 knots above the stall speed, the elevator control must be pulled back so that the rate of speed reduction will not exceed one knot per second until a stall is produced, as shown by either: (1) An uncontrollable downward pitching motion of the airplane; (2) A downward pitching motion of the airplane that results from the activation of a stall avoidance device (for example, stick pusher); or (3) The control reaching the stop. (c) Normal use of elevator control for recovery is allowed after the downward pitching motion of paragraphs (b)(1) or (b)(2) of this section has unmistakably been produced, or after the control has been held against the stop for not less than the longer of two seconds or the time employed in the minimum steady slight speed determination of section 23.49.	nova geração de aviões certificados de acordo com RBAC 23 que tenham uma capacidade de grande energia e grande altitude. As revisões propostas incluem a incorporação de configurações adicionais para todos os aviões certificados de acordo com o RBAC 23, o esclarecimento das posições de flap e trem de pouso como apropriadas para a altitude e fases de voo, relaxamento dos requisitos de *roll-off* para estóis em grande altitude e definição do significado de "*extreme nose-high atitudes*".

(d) During the entry into and the recovery from the maneuver, it must be possible to prevent more than 15 degrees of roll or yaw by the normal use of controls. (e) Compliance with the requirements of this section must be shown under the following conditions: (1) Wing flaps. Retracted, fully extended, and each intermediate normal operating position. (2) Landing gear. Retracted and extended. (3) Cowl flaps. Appropriate to configuration. (4) Power: (i) Power off; and (ii) 75 percent of maximum continuous power. However, if the power-to-weight ratio at 75 percent of maximum continuous power result in extreme nose-up attitudes, the test may be carried out with the power required for level flight in the landing configuration at maximum landing weight and a speed of 1.4 V_{SO}, except that the power may not be less than 50 percent of maximum continuous power.	(d) During the entry into and the recovery from the maneuver, it must be possible to prevent more than 15 degrees of roll or yaw by the normal use of controls except as provided for in paragraph (e) of this section. (e) For airplanes approved with a maximum operating altitude at or above 25.000 feet (7.620 metros) during the entry into and the recovery from stalls performed at or above 25.000 feet (7.620 metros), it must be possible to prevent more than 25 degrees of roll or yaw by the normal use of controls. (f) Compliance with the requirements of this section must be shown under the following conditions: (1) Wing flaps. Retracted, fully extended, and each intermediate normal operating position, as appropriate for the phase of flight. (2) Landing gear. Retracted and extended as appropriate for the altitude. (3) Cowl flaps. Appropriate to configuration. (4) Spoilers/speedbrakes: Retracted and extended unless they have no measureable effect at low speeds.	

(5) Trim. The airplane trimmed at a speed as near 1.5 V_{S1}as practicable. (6) Propeller. Full increase r.p.m. position for the power off condition.	(5) Power: (i) Power/Thrust off; and (ii) For reciprocating engine powered airplanes: 75 percent of maximum continuous power. However, if the power-to-weight ratio at 75 percent of maximum continuous power results in nose-high attitudes exceeding 30 degrees, the test may be carried out with the power required for level flight in the landing configuration at maximum landing weight and a speed of 1,4 VSO, except that the power may not be less than 50 percent of maximum continuous power; or (iii) For turbine engine powered airplanes: The maximum engine thrust, except that it need not exceed the thrust necessary to maintain level flight at 1,5 VS1 (where VS1 corresponds to the stalling speed with flaps in the approach position, the landing gear retracted, and maximum landing weight). (6) Trim: At 1,5 VS1 or the minimum trim speed, whichever is higher. (7) Propeller. Full increase r.p.m. position for the power off condition.	
23.203 Turning flight and accelerated turning stalls.	**23.203 Turning flight and accelerated turning stalls.**	As seções 23.201 e 23.203 foram revisadas para incluir jatos e uma nova geração de aviões

Turning flight and accelerated turning stalls must be demonstrated in tests as follows: (a) Establish and maintain a coordinated turn in a 30 degree bank. Reduce speed by steadily and progressively tightening the turn with the elevator until the airplane is stalled, as defined in §23.201(b). The rate of speed reduction must be constant, and— (1) For a turning flight stall, may not exceed one knot per second; and (2) For an accelerated turning stall, be 3 to 5 knots per second with steadily increasing normal acceleration. (b) After the airplane has stalled, as defined in §23.201(b), it must be possible to regain wings level flight by normal use of the flight controls, but without increasing power and without— (1) Excessive loss of altitude; (2) Undue pitchup; (3) Uncontrollable tendency to spin;	Turning flight and accelerated turning stalls must be demonstrated in tests as follows: (a) Establish and maintain a coordinated turn in a 30 degree bank. Reduce speed by steadily and progressively tightening the turn with the elevator until the airplane is stalled, as defined in paragraph 23.201(b). The rate of speed reduction must be constant, and: (1) For a turning flight stall, may not exceed one knot per second (0,5 m/s); and (2) For an accelerated turning stall, be 3 to 5 knots (1,5 to 2,6 m/s) per second with steadily increasing normal acceleration. (b) After the airplane has stalled, as defined in paragraph 23.201(b), it must be possible to regain wings level flight by normal use of the flight controls, but without increasing power and without: (1) Excessive loss of altitude; (2) Undue pitchup; (3) Uncontrollable tendency to spin;	certificados de acordo com RBAC 23 que tenham uma capacidade de grande energia e grande altitude. As revisões propostas incluem a incorporação de configurações adicionais para todos os aviões certificados de acordo com o RBAC 23, o esclarecimento das posições de flap e trem de pouso como apropriadas para a altitude e fases de voo, relaxamento dos requisitos de *roll-off* para estóis em grande altitude e definição do significado de "*extreme nose-high atitudes*".

(4) Exceeding a bank angle of 60 degrees in the original direction of the turn or 30 degrees in the opposite direction in the case of turning flight stalls; (5) Exceeding a bank angle of 90 degrees in the original direction of the turn or 60 degrees in the opposite direction in the case of accelerated turning stalls; and (6) Exceeding the maximum permissible speed or allowable limit load factor. (c) Compliance with the requirements of this section must be shown under the following conditions: (1) Wing flaps: Retracted, fully extended, and each intermediate normal operating position; (2) Landing gear: Retracted and extended; (3) Cowl flaps: Appropriate to configuration; (4) Power: (i) Power off; and (ii) 75 percent of maximum continuous power. However, if the power-to-weight ratio at 75 percent of maximum continuous power results in extreme nose-up attitudes, the test may be carried out with the	(4) Exceeding a bank angle of 60 degrees in the original direction of the turn or 30 degrees in the opposite direction in the case of turning flight stalls; (5) Exceeding a bank angle of 90 degrees in the original direction of the turn or 60 degrees in the opposite direction in the case of accelerated turning stalls; and (6) Exceeding the maximum permissible speed or allowable limit load factor. (c) Compliance with the requirements of this section must be shown under the following conditions: (1) Wing flaps: Retracted, fully extended, and each intermediate normal operating position as appropriate for the phase of flight. (2) Landing gear: Retracted and extended as appropriate for the altitude. (3) Cowl flaps: Appropriate to configuration. (4) Spoilers/speedbrakes: Retracted and extended unless they have no measureable effect at low speeds. (5) Power:	

power required for level flight in the landing configuration at maximum landing weight and a speed of 1.4 V_{SO}, except that the power may not be less than 50 percent of maximum continuous power. (5) Trim: The airplane trimmed at a speed as near 1.5 V_{S1}as practicable. (6) Propeller. Full increase rpm position for the power off condition.	(i) Power/Thrust off; and (ii) For reciprocating engine powered airplanes: 75 percent of maximum continuous power. However, if the power-to-weight ratio at 75 percent of maximum continuous power results in nose-high attitudes exceeding 30 degrees, the test may be carried out with the power required for level flight in the landing configuration at maximum landing weight and a speed of 1,4 VSO, except that the power may not be less than 50 percent of maximum continuous power; or (iii) For turbine engine powered airplanes: The maximum engine thrust, except that it need not exceed the thrust necessary to maintain level flight at 1,5 VS1 (where VS1 corresponds to the stalling speed with flaps in the approach position, the landing gear retracted, and maximum landing weight). (6) Trim: The airplane trimmed at 1,5 VS1. (7) Propeller. Full increase rpm position for the power off condition.	
23.221 Spinning. (a) Normal category airplanes. A single-engine, normal category airplane must be able to recover from a one-turn spin or a three-second spin, whichever takes longer, in not more than one	**23.221 Spinning.** (a) Normal category airplanes. A single-engine, normal category airplane must be able to recover from a one-turn spin or a three-second spin, whichever takes longer, in not more than one	A alteração proposta apenas introduz correções de referências que estavam incorretas na emenda anterior.

additional turn after initiation of the first control action for recovery, or demonstrate compliance with the optional spin resistant requirements of this section. (1) The following apply to one turn or three second spins: (i) For both the flaps-retracted and flaps-extended conditions, the applicable airspeed limit and positive limit maneuvering load factor must not be exceeded; (ii) No control forces or characteristic encountered during the spin or recovery may adversely affect prompt recovery; (iii) It must be impossible to obtain unrecoverable spins with any use of the flight or engine power controls either at the entry into or during the spin; and (iv) For the flaps-extended condition, the flaps may be retracted during the recovery but not before rotation has ceased. (2) At the applicant's option, the airplane may be demonstrated to be spin resistant by the following: (i) During the stall maneuver contained in §23.201, the pitch control must be pulled back and held	additional turn after initiation of the first control action for recovery, or demonstrate compliance with the optional spin resistant requirements of this section. (1) The following apply to one turn or three second spins: (i) For both the flaps-retracted and flaps-extended conditions, the applicable airspeed limit and positive limit maneuvering load factor must not be exceeded; (ii) No control forces or characteristic encountered during the spin or recovery may adversely affect prompt recovery; (iii) It must be impossible to obtain unrecoverable spins with any use of the flight or engine power controls either at the entry into or during the spin; and (iv) For the flaps-extended condition, the flaps may be retracted during the recovery but not before rotation has ceased. (2) At the applicant's option, the airplane may be demonstrated to be spin resistant by the following: (i) During the stall maneuver contained in section 23.201, the pitch control must be pulled back and	

against the stop. Then, using ailerons and rudders in the proper direction, it must be possible to maintain wings-level flight within 15 degrees of bank and to roll the airplane from a 30 degree bank in one direction to a 30 degree bank in the other direction; (ii) Reduce the airplane speed using pitch control at a rate of approximately one knot per second until the pitch control reaches the stop; then, with the pitch control pulled back and held against the stop, apply full rudder control in a manner to promote spin entry for a period of seven seconds or through a 360 degree heading change, whichever occurs first. If the 360 degree heading change is reached first, it must have taken no fewer than four seconds. This maneuver must be performed first with the ailerons in the neutral position, and then with the ailerons deflected opposite the direction of turn in the most adverse manner. Power and airplane configuration must be set in accordance with §23.201(e) without change during the maneuver. At the end of seven seconds or a 360 degree heading change, the airplane must respond immediately and normally to primary flight controls applied to regain coordinated, unstalled flight without reversal of control effect and without exceeding the temporary control forces specified by §23.143(c); and (iii) Compliance with §§23.201 and 23.203 must be demonstrated with the airplane in uncoordinated	held against the stop. Then, using ailerons and rudders in the proper direction, it must be possible to maintain wings-level flight within 15 degrees of bank and to roll the airplane from a 30 degree bank in one direction to a 30 degree bank in the other direction; (ii) Reduce the airplane speed using pitch control at a rate of approximately one knot per second (0,5 m/s) until the pitch control reaches the stop; then, with the pitch control pulled back and held against the stop, apply full rudder control in a manner to promote spin entry for a period of seven seconds or through a 360 degree heading change, whichever occurs first. If the 360 degree heading change is reached first, it must have taken no fewer than four seconds. This maneuver must be performed first with the ailerons in the neutral position, and then with the ailerons deflected opposite the direction of turn in the most adverse manner. Power and airplane configuration must be set in accordance with paragraph 23.201(f) without change during the maneuver. At the end of seven seconds or a 360 degree heading change, the airplane must respond immediately and normally to primary flight controls applied to regain coordinated, unstalled flight without reversal of control effect and without exceeding the temporary control forces specified by paragraph 23.143(c); and	

flight, corresponding to one ball width displacement on a slip-skid indicator, unless one ball width displacement cannot be obtained with full rudder, in which case the demonstration must be with full rudder applied. (b) Utility category airplanes. A utility category airplane must meet the requirements of paragraph (a) of this section. In addition, the requirements of paragraph (c) of this section and §23.807(b)(7) must be met if approval for spinning is requested. (c) Acrobatic category airplanes. An acrobatic category airplane must meet the spin requirements of paragraph (a) of this section and §23.807(b)(6). In addition, the following requirements must be met in each configuration for which approval for spinning is requested: (1) The airplane must recover from any point in a spin up to and including six turns, or any greater number of turns for which certification is requested, in not more than one and one-half additional turns after initiation of the first control action for recovery. However, beyond three turns, the spin may be discontinued if spiral characteristics appear. (2) The applicable airspeed limits and limit maneuvering load factors must not be exceeded. For flaps-extended configurations for which approval is	(iii) Compliance with sections 23.201 and 23.203 must be demonstrated with the airplane in uncoordinated flight, corresponding to one ball width displacement on a slip-skid indicator, unless one ball width displacement cannot be obtained with full rudder, in which case the demonstration must be with full rudder applied. (b) Utility category airplanes. A utility category airplane must meet the requirements of paragraph (a) of this section. In addition, the requirements of paragraph (c) of this section and paragraph 23.807(b)(6) must be met if approval for spinning is requested. (c) Acrobatic category airplanes. An acrobatic category airplane must meet the spin requirements of paragraph (a) of this section and paragraph 23.807(b)(5). In addition, the following requirements must be met in each configuration for which approval for spinning is requested: (1) The airplane must recover from any point in a spin up to and including six turns, or any greater number of turns for which certification is requested, in not more than one and one-half additional turns after initiation of the first control action for recovery. However, beyond three turns, the spin may be discontinued if spiral characteristics appear.	

requested, the flaps must not be retracted during the recovery. (3) It must be impossible to obtain unrecoverable spins with any use of the flight or engine power controls either at the entry into or during the spin. (4) There must be no characteristics during the spin (such as excessive rates of rotation or extreme oscillatory motion) that might prevent a successful recovery due to disorientation or incapacitation of the pilot.	(2) The applicable airspeed limits and limit maneuvering load factors must not be exceeded. For flaps-extended configurations for which approval is requested, the flaps must not be retracted during the recovery. (3) It must be impossible to obtain unrecoverable spins with any use of the flight or engine power controls either at the entry into or during the spin. (4) There must be no characteristics during the spin (such as excessive rates of rotation or extreme oscillatory motion) that might prevent a successful recovery due to disorientation or incapacitation of the pilot.	
23.251 Vibration and buffeting. There must be no vibration or buffeting severe enough to result in structural damage, and each part of the airplane must be free from excessive vibration, under any appropriate speed and power conditions up to V_D/M_D. In addition, there must be no buffeting in any normal flight condition severe enough to interfere with the satisfactory control of the airplane or cause excessive fatigue to the flight crew. Stall warning buffeting within these limits is allowable.	**23.251 Vibration and buffeting.** (a) There must be no vibration or buffeting severe enough to result in structural damage, and each part of the airplane must be free from excessive vibration, under any appropriate speed and power conditions up to VD/MD, or VDF/MDF for jets. In addition, there must be no buffeting in any normal flight condition, including configuration changes during cruise, severe enough to interfere with the satisfactory control of the airplane or cause excessive fatigue to the flight crew. Stall warning buffeting within these limits is allowable.	A proposta incorpora provisões dos parágrafos 25.251(d) e (e) no 23.251 para aviões que voam acima de 25.000 pés ou que tem uma velocidade de mergulho (MD) maior que Mach 0,6. Também incorpora o uso de VDF/MDF como já adotado nas condições especiais emitidas para os jatos certificados de acordo com o RBAC 23.

	(b) There must be no perceptible buffeting condition in the cruise configuration in straight flight at any speed up to VMO/MMO, except stall buffeting, which is allowable. (c) For airplanes with MD greater than M 0,6 or a maximum operating altitude greater than 25.000 feet (7.620 m), the positive maneuvering load factors at which the onset of perceptible buffeting occurs must be determined with the airplane in the cruise configuration for the ranges of airspeed or Mach number, weight, and altitude for which the airplane is to be certificated. The envelopes of load factor, speed, altitude, and weight must provide a sufficient range of speeds and load factors for normal operations. Probable inadvertent excursions beyond the boundaries of the buffet onset envelopes may not result in unsafe conditions.	
23.253 High speed characteristics. If a maximum operating speed V_{MO}/M_{MO} is established under §23.1505(c), the following speed increase and recovery characteristics must be met: (a) Operating conditions and characteristics likely to cause inadvertent speed increases (including upsets in pitch and roll) must be simulated with the airplane trimmed at any likely speed up to V_{MO}/M_{MO}. These conditions and characteristics include gust upsets, inadvertent control movements, low stick force	**23.253 High speed characteristics.** If a maximum operating speed VMO/MMO is established under paragraph 23.1505(c), the following speed increase and recovery characteristics must be met: (a) Operating conditions and characteristics likely to cause inadvertent speed increases (including upsets in pitch and roll) must be simulated with the airplane trimmed at any likely speed up to VMO/MMO. These conditions and characteristics include gust	As alterações propostas introduzem novos requisitos para tratar mais adequadamente a nova geração de aviões de alto desempenho certificados de acordo com o RBAC 23 que possuem velocidades e altitudes de operação maiores.

gradients in relation to control friction, passenger movement, leveling off from climb, and descent from Mach to airspeed limit altitude. (b) Allowing for pilot reaction time after occurrence of the effective inherent or artificial speed warning specified in §23.1303, it must be shown that the airplane can be recovered to a normal attitude and its speed reduced to V_{MO}/M_{MO}, without— (1) Exceeding V_D/M_D, the maximum speed shown under §23.251, or the structural limitations; or (2) Buffeting that would impair the pilot's ability to read the instruments or to control the airplane for recovery. (c) There may be no control reversal about any axis at any speed up to the maximum speed shown under §23.251. Any reversal of elevator control force or tendency of the airplane to pitch, roll, or yaw must be mild and readily controllable, using normal piloting techniques.	upsets, inadvertent control movements, low stick force gradients in relation to control friction, passenger movement, leveling off from climb, and descent from Mach to airspeed limit altitude. (b) Allowing for pilot reaction time after occurrence of the effective inherent or artificial speed warning specified in section 23.1303, it must be shown that the airplane can be recovered to a normal attitude and its speed reduced to VMO/MMO, without: (1) Exceptional piloting strength or skill; (2) Exceeding VD/MD, or VDF/MDF for jets, the maximum speed shown under section 23.251, or the structural limitations; and (3) Buffeting that would impair the pilot's ability to read the instruments or to control the airplane for recovery. (c) There may be no control reversal about any axis at any speed up to the maximum speed shown under section 23.251. Any reversal of elevator control force or tendency of the airplane to pitch, roll, or yaw must be mild and readily controllable, using normal piloting techniques. (d) Maximum speed for stability characteristics, VFC/MFC. VFC/MFC may not be less than a speed	

	midway between VMO/MMO and VDF/MDF except that, for altitudes where Mach number is the limiting factor, MFC need not exceed the Mach number at which effective speed warning occurs.	
	23.255 Out of trim characteristics. For airplanes with an MD greater than M 0.6 and that incorporate a trimmable horizontal stabilizer, the following requirements for out-of-trim characteristics apply: (a) From an initial condition with the airplane trimmed at cruise speeds up to VMO/MMO, the airplane must have satisfactory maneuvering stability and controllability with the degree of out-of-trim in both the airplane nose-up and nose-down directions, which results from the greater of the following: (1) A three-second movement of the longitudinal trim system at its normal rate for the particular flight condition with no aerodynamic load (or an equivalent degree of trim for airplanes that do not have a power-operated trim system), except as limited by stops in the trim system, including those required by paragraph 23.655(b) for adjustable stabilizers; or	A seção 23.255 foi revisada para incluir novos requisites que consideram os potenciais efeitos de altas velocidades para aviões com uma MD maior que M 0,6. Estes requisitos, que são derivados do RBAC 25, visam aviões que incorporam um estabilizador horizontal ajustável. Esta decisão foi baseada no histórico de serviço positivo com a frota existente de jatos certificados de acordo com o RBAC 23 projetados com caudas horizontais convencionais e aqueles que usam profundores ajustáveis. Aviões que experimentaram incidentes de *upset* envolvendo condições *out-of-trim* eram aviões certificados de acordo com o RBAC 25 e projetados com um estabilizador horizontal ajustável.

	(2) The maximum mistrim that can be sustained by the autopilot while maintaining level flight in the high speed cruising condition. (b) In the out-of-trim condition specified in paragraph (a) of this section, when the normal acceleration is varied from +l g to the positive and negative values specified in paragraph (c) of this section, the following apply: (1) The stick force versus g curve must have a positive slope at any speed up to and including VFC/MFC; and (2) At speeds between VFC/MFC and VDF/MDF, the direction of the primary longitudinal control force may not reverse. (c) Except as provided in paragraphs (d) and (e) of this section, compliance with the provisions of paragraph (a) of this section must be demonstrated in flight over the acceleration range as follows: (1) -1 g to +2.5 g; or (2) 0 g to 2.0 g, and extrapolating by an acceptable method to -1 g and +2.5 g. (d) If the procedure set forth in paragraph (c)(2) of this section is used to demonstrate compliance and	

	marginal conditions exist during flight test with regard to reversal of primary longitudinal control force, flight tests must be accomplished from the normal acceleration at which a marginal condition is found to exist to the applicable limit specified in paragraph (b)(1) of this section. (e) During flight tests required by paragraph (a) of this section, the limit maneuvering load factors, prescribed in paragraph 23.333(b) and section 23.337, need not be exceeded. In addition, the entry speeds for flight test demonstrations at normal acceleration values less than 1 g must be limited to the extent necessary to accomplish a recovery without exceeding VDF/MDF. (f) In the out-of-trim condition specified in paragraph (a) of this section, it must be possible from an overspeed condition at VDF/MDF to produce at least 1.5 g for recovery by applying not more than 125 pounds of longitudinal control force using either the primary longitudinal control alone or the primary longitudinal control and the longitudinal trim system. If the longitudinal trim is used to assist in producing the required load factor, it must be shown at VDF/MDF that the longitudinal trim can be actuated in the airplane nose-up direction with the primary surface loaded to correspond to the least of the following airplane nose-up control forces:	

	(1) The maximum control forces expected in service, as specified in sections 23.301 and 23.397. (2) The control force required to produce 1.5 g. (3) The control force corresponding to buffeting or other phenomena of such intensity that it is a strong deterrent to further application of primary longitudinal control force.	
23.561 General. (a) The airplane, although it may be damaged in emergency landing conditions, must be designed as prescribed in this section to protect each occupant under those conditions. (b) The structure must be designed to give each occupant every reasonable chance of escaping serious injury when— (1) Proper use is made of the seats, safety belts, and shoulder harnesses provided for in the design; (2) The occupant experiences the static inertia loads corresponding to the following ultimate load factors—	**23.561 General.** (a) The airplane, although it may be damaged in emergency landing conditions, must be designed as prescribed in this section to protect each occupant under those conditions. (b) The structure must be designed to give each occupant every reasonable chance of escaping serious injury when: (1) Proper use is made of the seats, safety belts, and shoulder harnesses provided for in the design; (2) The occupant experiences the static inertia loads corresponding to the following ultimate load factors: (i) Upward, 3,0g for normal, utility, and commuter category airplanes, or 4,5g for acrobatic category airplanes;	As alterações da seção 23.561 tratam de requisitos estruturais para motores incorporados na fuselagem ou localizados atrás da cabine de passageiros. Estas mudanças foram propostas para: (1) adicionar requisitos estruturais para jatos monomotor com motor no eixo de voo incorporado na fuselagem, e (2) minimizar a chance do motor adentrar o compartimento de passageiros no evento de um pouso de emergência. As mudanças reduzem o potencial de um motor separar das suas fixações sob cargas de ruptura atuando para a frente e, na sequência, invadir a cabine de passageiros.

(i) Upward, 3.0g for normal, utility, and commuter category airplanes, or 4.5g for acrobatic category airplanes; (ii) Forward, 9.0g; (iii) Sideward, 1.5g; and (iv) Downward, 6.0g when certification to the emergency exit provisions of §23.807(d)(4) is requested; and (3) The items of mass within the cabin, that could injure an occupant, experience the static inertia loads corresponding to the following ultimate load factors— (i) Upward, 3.0g; (ii) Forward, 18.0g; and (iii) Sideward, 4.5g. (c) Each airplane with retractable landing gear must be designed to protect each occupant in a landing— (1) With the wheels retracted; (2) With moderate descent velocity; and	(ii) Forward, 9,0g; (iii) Sideward, 1,5g; and (iv) Downward, 6,0g when certification to the emergency exit provisions of paragraph 23.807(d)(4) is requested; and (3) The items of mass within the cabin, that could injure an occupant, experience the static inertia loads corresponding to the following ultimate load factors: (i) Upward, 3,0g; (ii) Forward, 18,0g; and (iii) Sideward, 4,5g. (c) Each airplane with retractable landing gear must be designed to protect each occupant in a landing: (1) With the wheels retracted; (2) With moderate descent velocity; and (3) Assuming, in the absence of a more rational analysis: (i) A downward ultimate inertia force of 3 g; and	

(3) Assuming, in the absence of a more rational analysis— (i) A downward ultimate inertia force of 3 g; and (ii) A coefficient of friction of 0.5 at the ground. (d) If it is not established that a turnover is unlikely during an emergency landing, the structure must be designed to protect the occupants in a complete turnover as follows: (1) The likelihood of a turnover may be shown by an analysis assuming the following conditions— (i) The most adverse combination of weight and center of gravity position; (ii) Longitudinal load factor of 9.0g; (iii) Vertical load factor of 1.0g; and (iv) For airplanes with tricycle landing gear, the nose wheel strut failed with the nose contacting the ground. (2) For determining the loads to be applied to the inverted airplane after a turnover, an upward	(ii) A coefficient of friction of 0,5 at the ground. (d) If it is not established that a turnover is unlikely during an emergency landing, the structure must be designed to protect the occupants in a complete turnover as follows: (1) The likelihood of a turnover may be shown by an analysis assuming the following conditions: (i) The most adverse combination of weight and center of gravity position; (ii) Longitudinal load factor of 9.0g; (iii) Vertical load factor of 1,0g; and (iv) For airplanes with tricycle landing gear, the nose wheel strut failed with the nose contacting the ground. (2) For determining the loads to be applied to the inverted airplane after a turnover, an upward ultimate inertia load factor of 3,0g and a coefficient of friction with the ground of 0,5 must be used. (e) Except as provided in paragraph 23.787(c), the supporting structure must be designed to restrain, under loads up to those specified in paragraph (b)(3)	

ultimate inertia load factor of 3.0g and a coefficient of friction with the ground of 0.5 must be used. (e) Except as provided in §23.787(c), the supporting structure must be designed to restrain, under loads up to those specified in paragraph (b)(3) of this section, each item of mass that could injure an occupant if it came loose in a minor crash landing.	of this section, each item of mass that could injure an occupant if it came loose in a minor crash landing. (1) For engines mounted inside the fuselage, aft of the cabin, it must be shown by test or analysis that the engine and attached accessories, and the engine mounting structure: (i) Can withstand a forward acting static ultimate inertia load factor of 18,0 g plus the maximum takeoff engine thrust; or (ii) The airplane structure is designed to preclude the engine and its attached accessories from entering or protruding into the cabin should the engine mounts fail. (2) [Reserved]	
23.562 Emergency landing dynamic conditions. (a) Each seat/restraint system for use in a normal, utility, or acrobatic category airplane must be designed to protect each occupant during an emergency landing when— (1) Proper use is made of seats, safety belts, and shoulder harnesses provided for in the design; and	**23.562 Emergency landing dynamic conditions.** (a) Each seat/restraint system for use in a normal, utility, or acrobatic category airplane, or in a commuter category jet airplane, must be designed to protect each occupant during an emergency landing when: (1) Proper use is made of seats, safety belts, and shoulder harnesses provided for in the design; and	Foram propostas alterações para requerer testes dinâmicos de assentos para jatos categoria transporte regional. Também foram propostas alterações para o cálculo do Critério de Ferimentos na Cabeça (*Head Injury Criteria* – HIC) para torná-lo consistente com os cálculos contidos na seção 25.562. A intenção da regra proposta é codificar um requisito que já se tornou prática da

(2) The occupant is exposed to the loads resulting from the conditions prescribed in this section. (b) Except for those seat/restraint systems that are required to meet paragraph (d) of this section, each seat/restraint system for crew or passenger occupancy in a normal, utility, or acrobatic category airplane, must successfully complete dynamic tests or be demonstrated by rational analysis supported by dynamic tests, in accordance with each of the following conditions. These tests must be conducted with an occupant simulated by an anthropomorphic test dummy (ATD) defined by 49 CFR Part 572, Subpart B, or an FAA-approved equivalent, with a nominal weight of 170 pounds and seated in the normal upright position. (1) For the first test, the change in velocity may not be less than 31 feet per second. The seat/restraint system must be oriented in its nominal position with respect to the airplane and with the horizontal plane of the airplane pitched up 60 degrees, with no yaw, relative to the impact vector. For seat/restraint systems to be installed in the first row of the airplane, peak deceleration must occur in not more than 0.05 seconds after impact and must reach a minimum of 19g. For all other seat/restraint systems, peak deceleration must occur in not more than 0.06	(2) The occupant is exposed to the loads resulting from the conditions prescribed in this section. (b) Except for those seat/restraint systems that are required to meet paragraph (d) of this section, each seat/restraint system for crew or passenger occupancy in a normal, utility, or acrobatic category airplane, or in a commuter category jet airplane, must successfully complete dynamic tests or be demonstrated by rational analysis supported by dynamic tests, in accordance with each of the following conditions. These tests must be conducted with an occupant simulated by an anthropomorphic test dummy (ATD) defined by 49 CFR Part 572, Subpart B, or an ANAC-approved equivalent, with a nominal weight of 170 pounds (77 kg) and seated in the normal upright position. (1) For the first test, the change in velocity may not be less than 31 feet per second (34 km/h). The seat/restraint system must be oriented in its nominal position with respect to the airplane and with the horizontal plane of the airplane pitched up 60 degrees, with no yaw, relative to the impact vector. For seat/restraint systems to be installed in the first row of the airplane, peak deceleration must occur in not more than 0,05 seconds after impact and must reach a minimum of 19g. For all other seat/restraint systems, peak deceleration must occur in not more	indústria. Todos os fabricantes de jatos recentemente certificados na categoria transporte regional concordaram em cumprir com a seção 23.562. Não é intenção incluir aviões à hélice da categoria transporte regional em vista do histórico regulatório associado com a alteração.

seconds after impact and must reach a minimum of 15g. (2) For the second test, the change in velocity may not be less than 42 feet per second. The seat/restraint system must be oriented in its nominal position with respect to the airplane and with the vertical plane of the airplane yawed 10 degrees, with no pitch, relative to the impact vector in a direction that results in the greatest load on the shoulder harness. For seat/restraint systems to be installed in the first row of the airplane, peak deceleration must occur in not more than 0.05 seconds after impact and must reach a minimum of 26g. For all other seat/restraint systems, peak deceleration must occur in not more than 0.06 seconds after impact and must reach a minimum of 21g. (3) To account for floor warpage, the floor rails or attachment devices used to attach the seat/restraint system to the airframe structure must be preloaded to misalign with respect to each other by at least 10 degrees vertically (i.e., pitch out of parallel) and one of the rails or attachment devices must be preloaded to misalign by 10 degrees in roll prior to conducting the test defined by paragraph (b)(2) of this section.	than 0,06 seconds after impact and must reach a minimum of 15g. (2) For the second test, the change in velocity may not be less than 42 feet per second (45 km/h). The seat/restraint system must be oriented in its nominal position with respect to the airplane and with the vertical plane of the airplane yawed 10 degrees, with no pitch, relative to the impact vector in a direction that results in the greatest load on the shoulder harness. For seat/restraint systems to be installed in the first row of the airplane, peak deceleration must occur in not more than 0.05 seconds after impact and must reach a minimum of 26g. For all other seat/restraint systems, peak deceleration must occur in not more than 0,06 seconds after impact and must reach a minimum of 21g. (3) To account for floor warpage, the floor rails or attachment devices used to attach the seat/restraint system to the airframe structure must be preloaded to misalign with respect to each other by at least 10 degrees vertically (i.e., pitch out of parallel) and one of the rails or attachment devices must be preloaded to misalign by 10 degrees in roll prior to conducting the test defined by paragraph (b)(2) of this section.	

(c) Compliance with the following requirements must be shown during the dynamic tests conducted in accordance with paragraph (b) of this section: (1) The seat/restraint system must restrain the ATD although seat/restraint system components may experience deformation, elongation, displacement, or crushing intended as part of the design. (2) The attachment between the seat/restraint system and the test fixture must remain intact, although the seat structure may have deformed. (3) Each shoulder harness strap must remain on the ATD's shoulder during the impact. (4) The safety belt must remain on the ATD's pelvis during the impact. (5) The results of the dynamic tests must show that the occupant is protected from serious head injury. (i) When contact with adjacent seats, structure, or other items in the cabin can occur, protection must be provided so that the head impact does not exceed a head injury criteria (HIC) of 1,000. (ii) The value of HIC is defined as—	(c) Compliance with the following requirements must be shown during the dynamic tests conducted in accordance with paragraph (b) of this section: (1) The seat/restraint system must restrain the ATD although seat/restraint system components may experience deformation, elongation, displacement, or crushing intended as part of the design. (2) The attachment between the seat/restraint system and the test fixture must remain intact, although the seat structure may have deformed. (3) Each shoulder harness strap must remain on the ATD's shoulder during the impact. (4) The safety belt must remain on the ATD's pelvis during the impact. (5) The results of the dynamic tests must show that the occupant is protected from serious head injury. (i) When contact with adjacent seats, structure, or other items in the cabin can occur, protection must be provided so that the head impact does not exceed a head injury criteria (HIC) of 1.000. (ii) The value of HIC is defined as:	

$$HIC = \left\{ (t_2 - t_1) \left[\frac{1}{(t_2 - t_1)} \int_{t_1}^{t_2} a(t)\,dt \right]^{2.5} \right\}_{Max}$$ Where: $t_1$is the initial integration time, expressed in seconds, $t_2$is the final integration time, expressed in seconds, ($t_2 - t_1$) is the time duration of the major head impact, expressed in seconds, and a(t) is the resultant deceleration at the center of gravity of the head form expressed as a multiple of g (units of gravity). (iii) Compliance with the HIC limit must be demonstrated by measuring the head impact during dynamic testing as prescribed in paragraphs (b)(1) and (b)(2) of this section or by a separate showing of compliance with the head injury criteria using test or analysis procedures. (6) Loads in individual shoulder harness straps may not exceed 1,750 pounds. If dual straps are used for retaining the upper torso, the total strap loads may not exceed 2,000 pounds. (7) The compression load measured between the pelvis and the lumbar spine of the ATD may not exceed 1,500 pounds.	$$HIC = \left\{ (t_2 - t_1) \left[\frac{1}{(t_2 - t_1)} \int_{t_1}^{t_2} a(t)\,dt \right]^{2.5} \right\}_{Max}$$ Where: t1 is the initial integration time, expressed in seconds, t2 is the final integration time, expressed in seconds, and a(t) is the total acceleration vs. time curve for the head strike expressed as a multiple of g (units of gravity). (iii) Compliance with the HIC limit must be demonstrated by measuring the head impact during dynamic testing as prescribed in paragraphs (b)(1) and (b)(2) of this section or by a separate showing of compliance with the head injury criteria using test or analysis procedures. (6) Loads in individual shoulder harness straps may not exceed 1.750 pounds (7.784 N). If dual straps are used for retaining the upper torso, the total strap loads may not exceed 2.000 pounds (8.896 N). (7) The compression load measured between the pelvis and the lumbar spine of the ATD may not exceed 1.500 pounds (6.672 N). (d) For all single-engine airplanes with a VSO of more than 61 knots at maximum weight, and those	

(d) For all single-engine airplanes with a $V_{SO}$of more than 61 knots at maximum weight, and those multiengine airplanes of 6,000 pounds or less maximum weight with a $V_{SO}$of more than 61 knots at maximum weight that do not comply with §23.67(a)(1); (1) The ultimate load factors of §23.561(b) must be increased by multiplying the load factors by the square of the ratio of the increased stall speed to 61 knots. The increased ultimate load factors need not exceed the values reached at a $V_{S0}$of 79 knots. The upward ultimate load factor for acrobatic category airplanes need not exceed 5.0g. (2) The seat/restraint system test required by paragraph (b)(1) of this section must be conducted in accordance with the following criteria: (i) The change in velocity may not be less than 31 feet per second. (ii)(A) The peak deceleration (g_p) of 19g and 15g must be increased and multiplied by the square of the ratio of the increased stall speed to 61 knots: g_p=19.0 $(V_{S0}/61)^2$ or g_p=15.0 $(V_{S0}/61)^2$	multiengine airplanes of 6.000 pounds (2.722 kg) or less maximum weight with a VSO of more than 61 knots at maximum weight that do not comply with paragraph 23.67(a)(1); (1) The ultimate load factors of paragraph 23.561(b) must be increased by multiplying the load factors by the square of the ratio of the increased stall speed to 61 knots. The increased ultimate load factors need not exceed the values reached at a VS0of 79 knots. The upward ultimate load factor for acrobatic category airplanes need not exceed 5.0g. (2) The seat/restraint system test required by paragraph (b)(1) of this section must be conducted in accordance with the following criteria: (i) The change in velocity may not be less than 31 feet per second. (ii)(A) The peak deceleration (gp) of 19g and 15g must be increased and multiplied by the square of the ratio of the increased stall speed to 61 knots: gp=19.0 (VS0/61)2 or gp=15.0 (VS0/61)2 (B) The peak deceleration need not exceed the value reached at a VS0of 79 knots.	

(B) The peak deceleration need not exceed the value reached at a V_{S0} of 79 knots. (iii) The peak deceleration must occur in not more than time (t_r), which must be computed as follows: $t_r = \frac{31}{32.2(g_p)} = \frac{.96}{g_p}$ where— g_p=The peak deceleration calculated in accordance with paragraph (d)(2)(ii) of this section t_r=The rise time (in seconds) to the peak deceleration. (e) An alternate approach that achieves an equivalent, or greater, level of occupant protection to that required by this section may be used if substantiated on a rational basis.	(iii) The peak deceleration must occur in not more than time (tr), which must be computed as follows: $t_r = \frac{31}{32.2(g_p)} = \frac{.96}{g_p}$ where: gp = The peak deceleration calculated in accordance with paragraph (d)(2)(ii) of this section tr = The rise time (in seconds) to the peak deceleration. (e) An alternate approach that achieves an equivalent, or greater, level of occupant protection to that required by this section may be used if substantiated on a rational basis.	
23.571 Metallic pressurized cabin structures. For normal, utility, and acrobatic category airplanes, the strength, detail design, and fabrication of the metallic structure of the pressure cabin must be evaluated under one of the following:	**23.571 Metallic pressurized cabin structures.** For normal, utility, and acrobatic category airplanes, the strength, detail design, and fabrication of the metallic structure of the pressure cabin must be evaluated under paragraphs (a), (b), or (c). In	O texto introdutório foi revisado para esclarecer a aplicabilidade de cada parágrafo da seção. Foi introduzido um novo parágrafo para tratar das operações acima de 41.000 pés conforme discutido em diversas outras seções modificadas por esta

(a) A fatigue strength investigation in which the structure is shown by tests, or by analysis supported by test evidence, to be able to withstand the repeated loads of variable magnitude expected in service; or (b) A fail safe strength investigation, in which it is shown by analysis, tests, or both that catastrophic failure of the structure is not probable after fatigue failure, or obvious partial failure, of a principal structural element, and that the remaining structures are able to withstand a static ultimate load factor of 75 percent of the limit load factor at V C,considering the combined effects of normal operating pressures, expected external aerodynamic pressures, and flight loads. These loads must be multiplied by a factor of 1.15 unless the dynamic effects of failure under static load are otherwise considered. (c) The damage tolerance evaluation of §23.573(b).	addition, the requirements of paragraph (d) must be met when applicable. (a) A fatigue strength investigation in which the structure is shown by tests, or by analysis supported by test evidence, to be able to withstand the repeated loads of variable magnitude expected in service; or (b) A fail safe strength investigation, in which it is shown by analysis, tests, or both that catastrophic failure of the structure is not probable after fatigue failure, or obvious partial failure, of a principal structural element, and that the remaining structures are able to withstand a static ultimate load factor of 75 percent of the limit load factor at V C,considering the combined effects of normal operating pressures, expected external aerodynamic pressures, and flight loads. These loads must be multiplied by a factor of 1.15 unless the dynamic effects of failure under static load are otherwise considered. (c) The damage tolerance evaluation of paragraph 23.573(b). (d) If certification for operation above 41.000 feet is requested, a damage tolerance evaluation of the fuselage pressure boundary per paragraph 23.573(b) must be conducted.	emenda. Este parágrafo requer que a tolerância a danos seja usada para avaliar estruturas para operações acima de 41.000 pés em qualquer avião, exceto aqueles da categoria transporte regional. Os aviões da categoria transporte regional já são requeridos a usar tolerância a danos de acordo com a seção 23.574.
23.629 Flutter.	**23.629 Flutter.**	A proposta esclarece o uso de MD ou velocidade de mergulho (VD)

(a) It must be shown by the methods of paragraph (b) and either paragraph (c) or (d) of this section, that the airplane is free from flutter, control reversal, and divergence for any condition of operation within the limit V-n envelope and at all speeds up to the speed specified for the selected method. In addition— (1) Adequate tolerances must be established for quantities which affect flutter, including speed, damping, mass balance, and control system stiffness; and (2) The natural frequencies of main structural components must be determined by vibration tests or other approved methods. (b) Flight flutter tests must be made to show that the airplane is free from flutter, control reversal and divergence and to show that— (1) Proper and adequate attempts to induce flutter have been made within the speed range up to V_D; (2) The vibratory response of the structure during the test indicates freedom from flutter; (3) A proper margin of damping exists at V_D; and	(a) It must be shown by the methods of paragraph (b) and either paragraph (c) or (d) of this section, that the airplane is free from flutter, control reversal, and divergence for any condition of operation within the limit V-n envelope and at all speeds up to the speed specified for the selected method. In addition: (1) Adequate tolerances must be established for quantities which affect flutter, including speed, damping, mass balance, and control system stiffness; and (2) The natural frequencies of main structural components must be determined by vibration tests or other approved methods. (b) Flight flutter tests must be made to show that the airplane is free from flutter, control reversal and divergence and to show that: (1) Proper and adequate attempts to induce flutter have been made within the speed range up to VD/MD, or VDF/MDF for jets; (2) The vibratory response of the structure during the test indicates freedom from flutter; (3) A proper margin of damping exists at VD/MD, or VDF/MDF for jets; and	na seção 23.629 para jatos. Conforme a velocidade de mergulho aumenta em aviões de alto desempenho, os efeitos da compressibilidade do ar se tornam mais significantes de forma que é mais apropriado nestes casos se referir a MD em vez de VD. As alterações propostas também permitem o uso de velocidade de mergulho em voo “demonstrada” (VDF/MDF) em vez das velocidades teóricas (VD/MD) nos testes em voo de *flutter* para jatos. Usar uma velocidade demonstrada em vez de uma teórica pode reduzir o ônus de cumprimento quando o avião é incapaz de atingir as velocidades de mergulho teóricas durante a fase de ensaios do programa de certificação de um avião.

(4) There is no large and rapid reduction in damping as V_D is approached. (c) Any rational analysis used to predict freedom from flutter, control reversal and divergence must cover all speeds up to 1.2 V_D. (d) Compliance with the rigidity and mass balance criteria (pages 4–12), in Airframe and Equipment Engineering Report No. 45 (as corrected) "Simplified Flutter Prevention Criteria" (published by the Federal Aviation Administration) may be accomplished to show that the airplane is free from flutter, control reversal, or divergence if— (1) V_D/M_D for the airplane is less than 260 knots (EAS) and less than Mach 0.5, (2) The wing and aileron flutter prevention criteria, as represented by the wing torsional stiffness and aileron balance criteria, are limited in use to airplanes without large mass concentrations (such as engines, floats, or fuel tanks in outer wing panels) along the wing span, and (3) The airplane— (i) Does not have a T-tail or other unconventional tail configurations;	(4) As VD/MD (or VDF/MDF for jets) is approached, there is no large and rapid reduction in damping. (c) Any rational analysis used to predict freedom from flutter, control reversal and divergence must cover all speeds up to 1,2 VD/1,2 MD, limited to Mach 1,0 for subsonic airplanes. (d) Compliance with the rigidity and mass balance criteria (pages 4–12), in Airframe and Equipment Engineering Report No. 45 (as corrected) "Simplified Flutter Prevention Criteria" (published by the Federal Aviation Administration) may be accomplished to show that the airplane is free from flutter, control reversal, or divergence if: (1) VD/MD for the airplane is less than 260 knots (EAS) and less than Mach 0,5, (2) The wing and aileron flutter prevention criteria, as represented by the wing torsional stiffness and aileron balance criteria, are limited in use to airplanes without large mass concentrations (such as engines, floats, or fuel tanks in outer wing panels) along the wing span, and (3) The airplane:	

(ii) Does not have unusual mass distributions or other unconventional design features that affect the applicability of the criteria, and (iii) Has fixed-fin and fixed-stabilizer surfaces. (e) For turbopropeller-powered airplanes, the dynamic evaluation must include— (1) Whirl mode degree of freedom which takes into account the stability of the plane of rotation of the propeller and significant elastic, inertial, and aerodynamic forces, and (2) Propeller, engine, engine mount, and airplane structure stiffness and damping variations appropriate to the particular configuration. (f) Freedom from flutter, control reversal, and divergence up to V_D/M_Dmust be shown as follows: (1) For airplanes that meet the criteria of paragraphs (d)(1) through (d)(3) of this section, after the failure, malfunction, or disconnection of any single element in any tab control system. (2) For airplanes other than those described in paragraph (f)(1) of this section, after the failure, malfunction, or disconnection of any single element	(i) Does not have a T-tail or other unconventional tail configurations; (ii) Does not have unusual mass distributions or other unconventional design features that affect the applicability of the criteria, and (iii) Has fixed-fin and fixed-stabilizer surfaces. (e) For turbopropeller-powered airplanes, the dynamic evaluation must include: (1) Whirl mode degree of freedom which takes into account the stability of the plane of rotation of the propeller and significant elastic, inertial, and aerodynamic forces, and (2) Propeller, engine, engine mount, and airplane structure stiffness and damping variations appropriate to the particular configuration. (f) Freedom from flutter, control reversal, and divergence up to VD/MD must be shown as follows: (1) For airplanes that meet the criteria of paragraphs (d)(1) through (d)(3) of this section, after the failure, malfunction, or disconnection of any single element in any tab control system.	

in the primary flight control system, any tab control system, or any flutter damper. (g) For airplanes showing compliance with the fail-safe criteria of §§23.571 and 23.572, the airplane must be shown by analysis to be free from flutter up to V_D/M_Dafter fatigue failure, or obvious partial failure, of a principal structural element. (h) For airplanes showing compliance with the damage tolerance criteria of §23.573, the airplane must be shown by analysis to be free from flutter up to $V_D/M_D$with the extent of damage for which residual strength is demonstrated. (i) For modifications to the type design that could affect the flutter characteristics, compliance with paragraph (a) of this section must be shown, except that analysis based on previously approved data may be used alone to show freedom from flutter, control reversal and divergence, for all speeds up to the speed specified for the selected method.	(2) For airplanes other than those described in paragraph (f)(1) of this section, after the failure, malfunction, or disconnection of any single element in the primary flight control system, any tab control system, or any flutter damper. (g) For airplanes showing compliance with the fail-safe criteria of sections 23.571 and 23.572, the airplane must be shown by analysis to be free from flutter up to VD/MD after fatigue failure, or obvious partial failure, of a principal structural element. (h) For airplanes showing compliance with the damage tolerance criteria of section 23.573, the airplane must be shown by analysis to be free from flutter up to VD/MD with the extent of damage for which residual strength is demonstrated. (i) For modifications to the type design that could affect the flutter characteristics, compliance with paragraph (a) of this section must be shown, except that analysis based on previously approved data may be used alone to show freedom from flutter, control reversal and divergence, for all speeds up to the speed specified for the selected method.	
23.703 Takeoff warning system. For commuter category airplanes, unless it can be shown that a lift or longitudinal trim device that affects the takeoff performance of the aircraft would	**23.703 Takeoff warning system.** For all airplanes with a maximum weight more than 6.000 pounds (2.722 kg) and all jets, unless it can be shown that a lift or longitudinal trim device that	A proposta altera o texto introdutório para adicionar a necessidade de sistemas de alerta de decolagem para todos os aviões pesando mais que 6.000 libras

not give an unsafe takeoff configuration when selection out of an approved takeoff position, a takeoff warning system must be installed and meet the following requirements: (a) The system must provide to the pilots an aural warning that is automatically activated during the initial portion of the takeoff role if the airplane is in a configuration that would not allow a safe takeoff. The warning must continue until— (1) The configuration is changed to allow safe takeoff, or (2) Action is taken by the pilot to abandon the takeoff roll. (b) The means used to activate the system must function properly for all authorized takeoff power settings and procedures and throughout the ranges of takeoff weights, altitudes, and temperatures for which certification is requested.	affects the takeoff performance of the airplane would not give an unsafe takeoff configuration when selection out of an approved takeoff position, a takeoff warning system must be installed and meet the following requirements: (a) The system must provide to the pilots an aural warning that is automatically activated during the initial portion of the takeoff role if the airplane is in a configuration that would not allow a safe takeoff. The warning must continue until: (1) The configuration is changed to allow safe takeoff, or (2) Action is taken by the pilot to abandon the takeoff roll. (b) The means used to activate the system must function properly for all authorized takeoff power settings and procedures and throughout the ranges of takeoff weights, altitudes, and temperatures for which certification is requested. (c) For the purpose of this section, an unsafe takeoff configuration is the inability to rotate or the inability to prevent an immediate stall after rotation.	(2.722 kg) e para todos os jatos. O parágrafo (b) inclui a definição de uma condição de decolagem insegura.
23.735 Brakes.	**23.735 Brakes.**	A aplicabilidade dos requisitos de decolagem abortada na seção 23.735, que antes estava restrita

(a) Brakes must be provided. The landing brake kinetic energy capacity rating of each main wheel brake assembly must not be less than the kinetic energy absorption requirements determined under either of the following methods: (1) The brake kinetic energy absorption requirements must be based on a conservative rational analysis of the sequence of events expected during landing at the design landing weight. (2) Instead of a rational analysis, the kinetic energy absorption requirements for each main wheel brake assembly may be derived from the following formula: $KE=0.0443\ WV^2\ /N$ where— KE=Kinetic energy per wheel (ft.-lb.); W=Design landing weight (lb.); V=Airplane speed in knots. V must be not less than V_S √, the poweroff stalling speed of the airplane at sea level, at the design landing weight, and in the landing configuration; and	(a) Brakes must be provided. The landing brake kinetic energy capacity rating of each main wheel brake assembly must not be less than the kinetic energy absorption requirements determined under either of the following methods: (1) The brake kinetic energy absorption requirements must be based on a conservative rational analysis of the sequence of events expected during landing at the design landing weight. (2) Instead of a rational analysis, the kinetic energy absorption requirements for each main wheel brake assembly may be derived from the following formula: KE=0.0443 WV2 /N where: KE=Kinetic energy per wheel (ft.-lb.); W=Design landing weight (lb.); V=Airplane speed in knots. V must be not less than VS √, the poweroff stalling speed of the airplane at sea level, at the design landing weight, and in the landing configuration; and	apenas para aviões categoria transporte regional, foi ampliada para incluir todos os jatos pesando mais que 6.000 libras (2.722 kg) de forma consistente às alterações introduzidas na seção 23.55. As velocidades e distâncias de decolagem maiores necessárias para estes aviões tornam a habilidade de parar na distância especificada um problema de segurança de voo.

N=Number of main wheels with brakes. (b) Brakes must be able to prevent the wheels from rolling on a paved runway with takeoff power on the critical engine, but need not prevent movement of the airplane with wheels locked. (c) During the landing distance determination required by §23.75, the pressure on the wheel braking system must not exceed the pressure specified by the brake manufacturer. (d) If antiskid devices are installed, the devices and associated systems must be designed so that no single probable malfunction or failure will result in a hazardous loss of braking ability or directional control of the airplane. (e) In addition, for commuter category airplanes, the rejected takeoff brake kinetic energy capacity rating of each main wheel brake assembly must not be less than the kinetic energy absorption requirements determined under either of the following methods— (1) The brake kinetic energy absorption requirements must be based on a conservative rational analysis of the sequence of events expected during a rejected takeoff at the design takeoff weight.	N=Number of main wheels with brakes. (b) Brakes must be able to prevent the wheels from rolling on a paved runway with takeoff power on the critical engine, but need not prevent movement of the airplane with wheels locked. (c) During the landing distance determination required by section 23.75 of this RBAC, the pressure on the wheel braking system must not exceed the pressure specified by the brake manufacturer. (d) If antiskid devices are installed, the devices and associated systems must be designed so that no single probable malfunction or failure will result in a hazardous loss of braking ability or directional control of the airplane. (e) For airplanes required to meet section 23.55 of this RBAC, the rejected takeoff brake kinetic energy capacity rating of each main wheel brake assembly may not be less than the kinetic energy absorption requirements determined under either of the following methods: (1) The brake kinetic energy absorption requirements must be based on a conservative rational analysis of the sequence of events expected during a rejected takeoff at the design takeoff weight.	

(2) Instead of a rational analysis, the kinetic energy absorption requirements for each main wheel brake assembly may be derived from the following formula— $KE=0.0443 \frac{WV^2}{N}$ where, KE=Kinetic energy per wheel (ft.-lbs.); W=Design takeoff weight (lbs.); V=Ground speed, in knots, associated with the maximum value of V_1selected in accordance with §23.51(c)(1); N=Number of main wheels with brakes.	(2) Instead of a rational analysis, the kinetic energy absorption requirements for each main wheel brake assembly may be derived from the following formula: KE=0.0443 WV2/N where; KE=Kinetic energy per wheel (ft.-lbs.); W=Design takeoff weight (lbs.); V=Ground speed, in knots, associated with the maximum value of V1 selected in accordance with paragraph 23.51(c)(1) of this RBAC; N=Number of main wheels with brakes.	
23.777 Cockpit controls. (a) Each cockpit control must be located and (except where its function is obvious) identified to provide convenient operation and to prevent confusion and inadvertent operation. (b) The controls must be located and arranged so that the pilot, when seated, has full and unrestricted movement of each control without interference from either his clothing or the cockpit structure.	**23.777 Cockpit controls.** (a) Each cockpit control must be located and (except where its function is obvious) identified to provide convenient operation and to prevent confusion and inadvertent operation. (b) The controls must be located and arranged so that the pilot, when seated, has full and unrestricted movement of each control without interference from either his clothing or the cockpit structure.	Alterações previamente introduzidas na seção 23.777 padronizaram a altura e localização dos controles do grupo motopropulsor porque os pilotos podiam confundir-se e usar os controles errados em aviões a hélice. No entanto, elas não incluíram seletores de potência simples que são normalmente usados em motores controlados eletronicamente. ANAC e FAA

(c) Powerplant controls must be located— (1) For multiengine airplanes, on the pedestal or overhead at or near the center of the cockpit; (2) For single and tandem seated single-engine airplanes, on the left side console or instrument panel; (3) For other single-engine airplanes at or near the center of the cockpit, on the pedestal, instrument panel, or overhead; and (4) For airplanes, with side-by-side pilot seats and with two sets of powerplant controls, on left and right consoles. (d) The control location order from left to right must be power (thrust) lever, propeller (rpm control), and mixture control (condition lever and fuel cutoff for turbine-powered airplanes). Power (thrust) levers must be at least one inch higher or longer to make them more prominent than propeller (rpm control) or mixture controls. Carburetor heat or alternate air control must be to the left of the throttle or at least eight inches from the mixture control when located other than on a pedestal. Carburetor heat or alternate air control, when located on a pedestal must be aft or below the power (thrust) lever. Supercharger controls must be located below or aft of the propeller	(c) Powerplant controls must be located: (1) For multiengine airplanes, on the pedestal or overhead at or near the center of the cockpit; (2) For single and tandem seated single-engine airplanes, on the left side console or instrument panel; (3) For other single-engine airplanes at or near the center of the cockpit, on the pedestal, instrument panel, or overhead; and (4) For airplanes, with side-by-side pilot seats and with two sets of powerplant controls, on left and right consoles. (d) When separate and distinct control levers are co-located (such as located together on the pedestal), the control location order from left to right must be power (thrust) lever, propeller (rpm control), and mixture control (condition lever and fuel cut-off for turbine-powered airplanes). Power (thrust) levers must be easily distinguishable from other controls, and provide for accurate, consistent operation. Carburetor heat or alternate air control must be to the left of the throttle or at least eight inches (20,32 cm) from the mixture control when located other than on a pedestal. Carburetor heat or alternate air control, when located on a pedestal, must be aft or below the	emitiram ELOS para cada programa que incluía um sistema deste tipo. A alteração no parágrafo 23.777(d) incorpora a linguagem adotada nestes ELOS.

controls. Airplanes with tandem seating or single-place airplanes may utilize control locations on the left side of the cabin compartment; however, location order from left to right must be power (thrust) lever, propeller (rpm control) and mixture control. (e) Identical powerplant controls for each engine must be located to prevent confusion as to the engines they control. (1) Conventional multiengine powerplant controls must be located so that the left control(s) operates the left engines(s) and the right control(s) operates the right engine(s). (2) On twin-engine airplanes with front and rear engine locations (tandem), the left powerplant controls must operate the front engine and the right powerplant controls must operate the rear engine. (f) Wing flap and auxiliary lift device controls must be located— (1) Centrally, or to the right of the pedestal or powerplant throttle control centerline; and (2) Far enough away from the landing gear control to avoid confusion.	power (thrust) lever. Supercharger controls must be located below or aft of the propeller controls. Airplanes with tandem seating or single-place airplanes may utilize control locations on the left side of the cabin compartment; however, location order from left to right must be power (thrust) lever, propeller (rpm control), and mixture control. (e) Identical powerplant controls for each engine must be located to prevent confusion as to the engines they control. (1) Conventional multiengine powerplant controls must be located so that the left control(s) operates the left engines(s) and the right control(s) operates the right engine(s). (2) On twin-engine airplanes with front and rear engine locations (tandem), the left powerplant controls must operate the front engine and the right powerplant controls must operate the rear engine. (f) Wing flap and auxiliary lift device controls must be located: (1) Centrally, or to the right of the pedestal or powerplant throttle control centerline; and	

(g) The landing gear control must be located to the left of the throttle centerline or pedestal centerline. (h) Each fuel feed selector control must comply with §23.995 and be located and arranged so that the pilot can see and reach it without moving any seat or primary flight control when his seat is at any position in which it can be placed. (1) For a mechanical fuel selector: (i) The indication of the selected fuel valve position must be by means of a pointer and must provide positive identification and feel (detent, etc.) of the selected position. (ii) The position indicator pointer must be located at the part of the handle that is the maximum dimension of the handle measured from the center of rotation. (2) For electrical or electronic fuel selector: (i) Digital controls or electrical switches must be properly labelled. (ii) Means must be provided to indicate to the flight crew the tank or function selected. Selector switch position is not acceptable as a means of indication.	(2) Far enough away from the landing gear control to avoid confusion. (g) The landing gear control must be located to the left of the throttle centerline or pedestal centerline. (h) Each fuel feed selector control must comply with section 23.995 and be located and arranged so that the pilot can see and reach it without moving any seat or primary flight control when his seat is at any position in which it can be placed. (1) For a mechanical fuel selector: (i) The indication of the selected fuel valve position must be by means of a pointer and must provide positive identification and feel (detent, etc.) of the selected position. (ii) The position indicator pointer must be located at the part of the handle that is the maximum dimension of the handle measured from the center of rotation. (2) For electrical or electronic fuel selector: (i) Digital controls or electrical switches must be properly labelled. (ii) Means must be provided to indicate to the flight crew the tank or function selected. Selector switch	

The “off” or “closed” position must be indicated in red. (3) If the fuel valve selector handle or electrical or digital selection is also a fuel shut-off selector, the off position marking must be colored red. If a separate emergency shut-off means is provided, it also must be colored red.	position is not acceptable as a means of indication. The “off” or “closed” position must be indicated in red. (3) If the fuel valve selector handle or electrical or digital selection is also a fuel shut-off selector, the off position marking must be colored red. If a separate emergency shut-off means is provided, it also must be colored red.	
23.785 Seats, berths, litters, safety belts, and shoulder harnesses. There must be a seat or berth for each occupant that meets the following: (a) Each seat/restraint system and the supporting structure must be designed to support occupants weighing at least 215 pounds when subjected to the maximum load factors corresponding to the specified flight and ground load conditions, as defined in the approved operating envelope of the airplane. In addition, these loads must be multiplied by a factor of 1.33 in determining the strength of all fittings and the attachment of— (1) Each seat to the structure; and (2) Each safety belt and shoulder harness to the seat or structure.	**23.785 Seats, berths, litters, safety belts, and shoulder harnesses.** There must be a seat or berth for each occupant that meets the following: (a) Each seat/restraint system and the supporting structure must be designed to support occupants weighing at least 215 pounds (98 kg) when subjected to the maximum load factors corresponding to the specified flight and ground load conditions, as defined in the approved operating envelope of the airplane. In addition, these loads must be multiplied by a factor of 1.33 in determining the strength of all fittings and the attachment of: (1) Each seat to the structure; and (2) Each safety belt and shoulder harness to the seat or structure.	Esta alteração é considerada editorial por apenas esclarecer e reforçar a aplicabilidade da seção 23.562 para jatos categoria transporte regional.

(b) Each forward-facing or aft-facing seat/restraint system in normal, utility, or acrobatic category airplanes must consist of a seat, a safety belt, and a shoulder harness, with a metal-to-metal latching device, that are designed to provide the occupant protection provisions required in §23.562. Other seat orientations must provide the same level of occupant protection as a forward-facing or aft-facing seat with a safety belt and a shoulder harness, and must provide the protection provisions of §23.562. (c) For commuter category airplanes, each seat and the supporting structure must be designed for occupants weighing at least 170 pounds when subjected to the inertia loads resulting from the ultimate static load factors prescribed in §23.561(b)(2) of this part. Each occupant must be protected from serious head injury when subjected to the inertia loads resulting from these load factors by a safety belt and shoulder harness, with a metal-to-metal latching device, for the front seats and a safety belt, or a safety belt and shoulder harness, with a metal-to-metal latching device, for each seat other than the front seats. (d) Each restraint system must have a single-point release for occupant evacuation. (e) The restraint system for each crewmember must allow the crewmember, when seated with the safety	(b) Each forward-facing or aft-facing seat/restraint system in normal, utility, or acrobatic category airplanes must consist of a seat, a safety belt, and a shoulder harness, with a metal-to-metal latching device, that are designed to provide the occupant protection provisions required in section 23.562. Other seat orientations must provide the same level of occupant protection as a forward-facing or aft-facing seat with a safety belt and a shoulder harness, and must provide the protection provisions of section 23.562. (c) For commuter category airplanes, each seat and the supporting structure must be designed for occupants weighing at least 170 pounds (77 kg) when subjected to the inertia loads resulting from the ultimate static load factors prescribed in paragraph 23.561(b)(2) of this RBAC. Each occupant must be protected from serious head injury when subjected to the inertia loads resulting from these load factors by a safety belt and shoulder harness, with a metal-to-metal latching device, for the front seats and a safety belt, or a safety belt and shoulder harness, with a metal-to-metal latching device, for each seat other than the front seats. Commuter category jet airplanes, must also comply with the requirements of section 23.562.	

belt and shoulder harness fastened, to perform all functions necessary for flight operations. (f) Each pilot seat must be designed for the reactions resulting from the application of pilot forces to the primary flight controls as prescribed in §23.395 of this part. (g) There must be a means to secure each safety belt and shoulder harness, when not in use, to prevent interference with the operation of the airplane and with rapid occupant egress in an emergency. (h) Unless otherwise placarded, each seat in a utility or acrobatic category airplane must be designed to accommodate an occupant wearing a parachute. (i) The cabin area surrounding each seat, including the structure, interior walls, instrument panel, control wheel, pedals, and seats within striking distance of the occupant's head or torso (with the restraint system fastened) must be free of potentially injurious objects, sharp edges, protuberances, and hard surfaces. If energy absorbing designs or devices are used to meet this requirement, they must protect the occupant from serious injury when the occupant is subjected to the inertia loads resulting from the ultimate static load factors prescribed in §23.561(b)(2) of this part, or they must comply with the occupant protection provisions of §23.562 of this	(d) Each restraint system must have a single-point release for occupant evacuation. (e) The restraint system for each crewmember must allow the crewmember, when seated with the safety belt and shoulder harness fastened, to perform all functions necessary for flight operations. (f) Each pilot seat must be designed for the reactions resulting from the application of pilot forces to the primary flight controls as prescribed in section 23.395 of this RBAC. (g) There must be a means to secure each safety belt and shoulder harness, when not in use, to prevent interference with the operation of the airplane and with rapid occupant egress in an emergency. (h) Unless otherwise placarded, each seat in a utility or acrobatic category airplane must be designed to accommodate an occupant wearing a parachute. (i) The cabin area surrounding each seat, including the structure, interior walls, instrument panel, control wheel, pedals, and seats within striking distance of the occupant's head or torso (with the restraint system fastened) must be free of potentially injurious objects, sharp edges, protuberances, and hard surfaces. If energy absorbing designs or devices are used to meet this requirement, they must protect the	

part, as required in paragraphs (b) and (c) of this section. (j) Each seat track must be fitted with stops to prevent the seat from sliding off the track. (k) Each seat/restraint system may use design features, such as crushing or separation of certain components, to reduce occupant loads when showing compliance with the requirements of §23.562 of this part; otherwise, the system must remain intact. (l) For the purposes of this section, a front seat is a seat located at a flight crewmember station or any seat located alongside such a seat. (m) Each berth, or provisions for a litter, installed parallel to the longitudinal axis of the airplane, must be designed so that the forward part has a padded end-board, canvas diaphragm, or equivalent means that can withstand the load reactions from a 215-pound occupant when subjected to the inertia loads resulting from the ultimate static load factors of §23.561(b)(2) of this part. In addition— (1) Each berth or litter must have an occupant restraint system and may not have corners or other parts likely to cause serious injury to a person	occupant from serious injury when the occupant is subjected to the inertia loads resulting from the ultimate static load factors prescribed in paragraph 23.561(b)(2) of this RBAC, or they must comply with the occupant protection provisions of section 23.562 of this RBAC, as required in paragraphs (b) and (c) of this section. (j) Each seat track must be fitted with stops to prevent the seat from sliding off the track. (k) Each seat/restraint system may use design features, such as crushing or separation of certain components, to reduce occupant loads when showing compliance with the requirements of section 23.562 of this RBAC; otherwise, the system must remain intact. (l) For the purposes of this section, a front seat is a seat located at a flight crewmember station or any seat located alongside such a seat. (m) Each berth, or provisions for a litter, installed parallel to the longitudinal axis of the airplane, must be designed so that the forward part has a padded end-board, canvas diaphragm, or equivalent means that can withstand the load reactions from a 215-pound (98 kg) occupant when subjected to the inertia	

occupying it during emergency landing conditions; and (2) Occupant restraint system attachments for the berth or litter must withstand the inertia loads resulting from the ultimate static load factors of §23.561(b)(2) of this part. (n) Proof of compliance with the static strength requirements of this section for seats and berths approved as part of the type design and for seat and berth installations may be shown by— (1) Structural analysis, if the structure conforms to conventional airplane types for which existing methods of analysis are known to be reliable; (2) A combination of structural analysis and static load tests to limit load; or (3) Static load tests to ultimate loads.	loads resulting from the ultimate static load factors of paragraph 23.561(b)(2) of this RBAC. In addition: (1) Each berth or litter must have an occupant restraint system and may not have corners or other parts likely to cause serious injury to a person occupying it during emergency landing conditions; and (2) Occupant restraint system attachments for the berth or litter must withstand the inertia loads resulting from the ultimate static load factors of paragraph 23.561(b)(2) of this RBAC. (n) Proof of compliance with the static strength requirements of this section for seats and berths approved as part of the type design and for seat and berth installations may be shown by: (1) Structural analysis, if the structure conforms to conventional airplane types for which existing methods of analysis are known to be reliable; (2) A combination of structural analysis and static load tests to limit load; or (3) Static load tests to ultimate loads.	
23.807 Emergency exits.	**23.807 Emergency exits.**	A proposta fornece uma alternativa para satisfazer o requisito de uma saída de

(a) Number and location. Emergency exits must be located to allow escape without crowding in any probable crash attitude. The airplane must have at least the following emergency exits: (1) For all airplanes with a seating capacity of two or more, excluding airplanes with canopies, at least one emergency exit on the opposite side of the cabin from the main door specified in §23.783 of this part. (2) [Reserved] (3) If the pilot compartment is separated from the cabin by a door that is likely to block the pilot's escape in a minor crash, there must be an exit in the pilot's compartment. The number of exits required by paragraph (a)(1) of this section must then be separately determined for the passenger compartment, using the seating capacity of that compartment. (4) Emergency exits must not be located with respect to any propeller disk or any other potential hazard so as to endanger persons using that exit. (b) Type and operation. Emergency exits must be movable windows, panels, canopies, or external doors, openable from both inside and outside the airplane, that provide a clear and unobstructed opening large enough to admit a 19-by-26-inch	(a) Number and location. Emergency exits must be located to allow escape without crowding in any probable crash attitude. The airplane must have at least the following emergency exits: (1) For all airplanes with a seating capacity of two or more, excluding airplanes with canopies, at least one emergency exit on the opposite side of the cabin from the main door specified in section 23.783 of this RBAC. (2) [Reserved] (3) If the pilot compartment is separated from the cabin by a door that is likely to block the pilot's escape in a minor crash, there must be an exit in the pilot's compartment. The number of exits required by paragraph (a)(1) of this section must then be separately determined for the passenger compartment, using the seating capacity of that compartment. (4) Emergency exits must not be located with respect to any propeller disk or any other potential hazard so as to endanger persons using that exit. (b) Type and operation. Emergency exits must be movable windows, panels, canopies, or external doors, openable from both inside and outside the airplane, that provide a clear and unobstructed	emergência acima da linha d’água em ambos os lados da cabine para aviões multimotores. A alteração proposta permite o posicionamento de uma barreira de água na entrada da cabine principal como um meio para cumprir com o requisito de saída acima da linha d’água. Esta barreira está acima da linha d’água e retarda a entrada da água assim permitindo a saída através da porta principal da cabine em um avião que pousou na água. ANAC e FAA já aprovaram o uso desta barreira como uma alternativa para a saída acima da linha d’água para diversos aviões através de ELOS.

ellipse. Auxiliary locking devices used to secure the airplane must be designed to be overridden by the normal internal opening means. The inside handles of emergency exits that open outward must be adequately protected against inadvertent operation. In addition, each emergency exit must— (1) Be readily accessible, requiring no exceptional agility to be used in emergencies; (2) Have a method of opening that is simple and obvious; (3) Be arranged and marked for easy location and operation, even in darkness; (4) Have reasonable provisions against jamming by fuselage deformation; and (5) In the case of acrobatic category airplanes, allow each occupant to abandon the airplane at any speed between $V_{SO}$and V_D; and (6) In the case of utility category airplanes certificated for spinning, allow each occupant to abandon the airplane at the highest speed likely to be achieved in the maneuver for which the airplane is certificated.	opening large enough to admit a 19-by-26-inch (0,48-by-0,66-meters) ellipse. Auxiliary locking devices used to secure the airplane must be designed to be overridden by the normal internal opening means. The inside handles of emergency exits that open outward must be adequately protected against inadvertent operation. In addition, each emergency exit must: (1) Be readily accessible, requiring no exceptional agility to be used in emergencies; (2) Have a method of opening that is simple and obvious; (3) Be arranged and marked for easy location and operation, even in darkness; (4) Have reasonable provisions against jamming by fuselage deformation; and (5) In the case of acrobatic category airplanes, allow each occupant to abandon the airplane at any speed between VSO and VD; and (6) In the case of utility category airplanes certificated for spinning, allow each occupant to abandon the airplane at the highest speed likely to be	

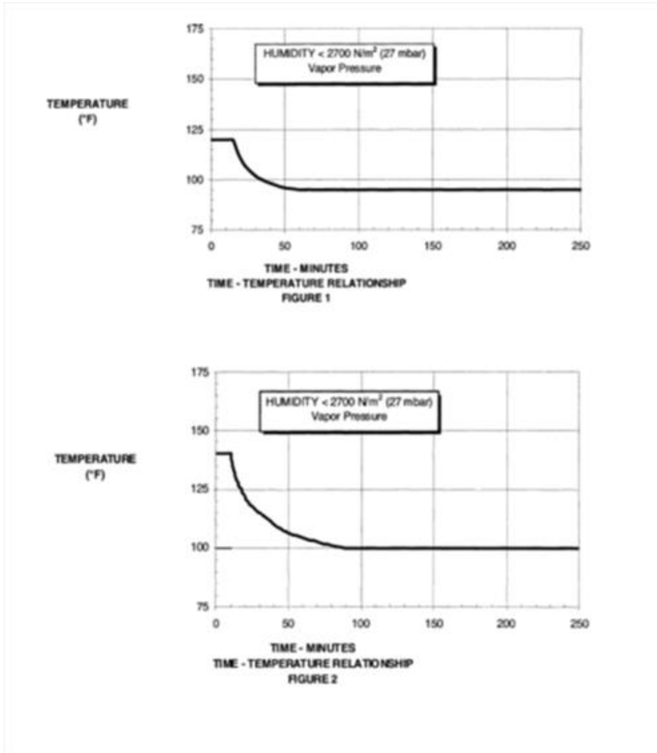
(c) Tests. The proper functioning of each emergency exit must be shown by tests. (d) Doors and exits. In addition, for commuter category airplanes, the following requirements apply: (1) In addition to the passenger entry door— (i) For an airplane with a total passenger seating capacity of 15 or fewer, an emergency exit, as defined in paragraph (b) of this section, is required on each side of the cabin; and (ii) For an airplane with a total passenger seating capacity of 16 through 19, three emergency exits, as defined in paragraph (b) of this section, are required with one on the same side as the passenger entry door and two on the side opposite the door. (2) A means must be provided to lock each emergency exit and to safeguard against its opening in flight, either inadvertently by persons or as a result of mechanical failure. In addition, a means for direct visual inspection of the locking mechanism must be provided to determine that each emergency exit for which the initial opening movement is outward is fully locked.	achieved in the maneuver for which the airplane is certificated. (c) Tests. The proper functioning of each emergency exit must be shown by tests. (d) Doors and exits. In addition, for commuter category airplanes, the following requirements apply: (1) In addition to the passenger entry door: (i) For an airplane with a total passenger seating capacity of 15 or fewer, an emergency exit, as defined in paragraph (b) of this section, is required on each side of the cabin; and (ii) For an airplane with a total passenger seating capacity of 16 through 19, three emergency exits, as defined in paragraph (b) of this section, are required with one on the same side as the passenger entry door and two on the side opposite the door. (2) A means must be provided to lock each emergency exit and to safeguard against its opening in flight, either inadvertently by persons or as a result of mechanical failure. In addition, a means for direct visual inspection of the locking mechanism must be provided to determine that each emergency exit for	

(3) Each required emergency exit, except floor level exits, must be located over the wing or, if not less than six feet from the ground, must be provided with an acceptable means to assist the occupants to descend to the ground. Emergency exits must be distributed as uniformly as practical, taking into account passenger seating configuration. (4) Unless the applicant has complied with paragraph (d)(1) of this section, there must be an emergency exit on the side of the cabin opposite the passenger entry door, provided that— (i) For an airplane having a passenger seating configuration of nine or fewer, the emergency exit has a rectangular opening measuring not less than 19 inches by 26 inches high with corner radii not greater than one-third the width of the exit, located over the wing, with a step up inside the airplane of not more than 29 inches and a step down outside the airplane of not more than 36 inches; (ii) For an airplane having a passenger seating configuration of 10 to 19 passengers, the emergency exit has a rectangular opening measuring not less than 20 inches wide by 36 inches high, with corner radii not greater than one-third the width of the exit, and with a step up inside the airplane of not more than 20 inches. If the exit is located over the wing,	which the initial opening movement is outward is fully locked. (3) Each required emergency exit, except floor level exits, must be located over the wing or, if not less than six feet (1,83 m) from the ground, must be provided with an acceptable means to assist the occupants to descend to the ground. Emergency exits must be distributed as uniformly as practical, taking into account passenger seating configuration. (4) Unless the applicant has complied with paragraph (d)(1) of this section, there must be an emergency exit on the side of the cabin opposite the passenger entry door, provided that: (i) For an airplane having a passenger seating configuration of nine or fewer, the emergency exit has a rectangular opening measuring not less than 19 inches by 26 inches (0,48m by 0,66m) high with corner radii not greater than one-third the width of the exit, located over the wing, with a step up inside the airplane of not more than 29 inches (0,74 m) and a step down outside the airplane of not more than 36 inches (0,91 m); (ii) For an airplane having a passenger seating configuration of 10 to 19 passengers, the emergency exit has a rectangular opening measuring not less than 20 inches (0,51 m) wide by 36 inches (0,91 m)	

the step down outside the airplane may not exceed 27 inches; and (iii) The airplane complies with the additional requirements of §§23.561(b)(2)(iv), 23.803(b), 23.811(c), 23.812, 23.813(b), and 23.815. (e) For multiengine airplanes, ditching emergency exits must be provided in accordance with the following requirements, unless the emergency exits required by paragraph (a) or (d) of this section already comply with them: (1) One exit above the waterline on each side of the airplane having the dimensions specified in paragraph (b) or (d) of this section, as applicable; and (2) If side exits cannot be above the waterline, there must be a readily accessible overhead hatch emergency exit that has a rectangular opening measuring not less than 20 inches wide by 36 inches long, with corner radii not greater than one-third the width of the exit.	high, with corner radii not greater than one-third the width of the exit, and with a step up inside the airplane of not more than 20 inches (0,51 m). If the exit is located over the wing, the step down outside the airplane may not exceed 27 inches; and (iii) The airplane complies with the additional requirements of paragraphs 23.561(b)(2)(iv), 23.803(b), 23.811(c), 23.812, 23.813(b), and 23.815. (e) For multiengine airplanes, ditching emergency exits must be provided in accordance with the following requirements, unless the emergency exits required by paragraph (a) or (d) of this section already comply with them: (1) One exit above the waterline on each side of the airplane having the dimensions specified in paragraph (b) or (d) of this section, as applicable; and (2) If side exits cannot be above the waterline, there must be a readily accessible overhead hatch emergency exit that has a rectangular opening measuring not less than 20 inches (0,51 m) wide by 36 inches (0,91 m) long, with corner radii not greater than one-third the width of the exit. (3) In lieu of paragraph (e)(2) of this section, if any side exit(s) cannot be above the waterline, a device may be placed at each of such exit(s) prior to	

	ditching. This device must slow the inflow of water when such exit(s) is opened with the airplane ditched. For commuter category airplanes, the clear opening of such exit(s) must meet the requirements defined in paragraph (d) of this section.	
23.831 Ventilation. (a) Each passenger and crew compartment must be suitably ventilated. Carbon monoxide concentration may not exceed one part in 20,000 parts of air. (b) For pressurized airplanes, the ventilating air in the flightcrew and passenger compartments must be free of harmful or hazardous concentrations of gases and vapors in normal operations and in the event of reasonably probable failures or malfunctioning of the ventilating, heating, pressurization, or other systems and equipment. If accumulation of hazardous quantities of smoke in the cockpit area is reasonably probable, smoke evacuation must be readily accomplished starting with full pressurization and without depressurizing beyond safe limits.	**23.831 Ventilation.** (a) Each passenger and crew compartment must be suitably ventilated. Carbon monoxide concentration may not exceed one part in 20.000 parts of air (50 ppm). (b) For pressurized airplanes, the ventilating air in the flightcrew and passenger compartments must be free of harmful or hazardous concentrations of gases and vapors in normal operations and in the event of reasonably probable failures or malfunctioning of the ventilating, heating, pressurization, or other systems and equipment. If accumulation of hazardous quantities of smoke in the cockpit area is reasonably probable, smoke evacuation must be readily accomplished starting with full pressurization and without depressurizing beyond safe limits. (c) For jet pressurized airplanes that operate at altitudes above 41.000 feet (12.497 meters), under normal operating conditions and in the event of any probable failure conditions of any system which would adversely affect the ventilating air, the ventilation system must provide reasonable	As alterações propostas na seção 23.831 adicionam dois novos parágrafos que incluem padrões apropriados para aviões operando em altas altitudes além daquelas incluídas no RBAC 23. As mudanças visam garantir que os ambientes da cabine de voo e passageiros não criem erros mentais ou exaustão física da tripulação. Tais eventos preveniriam a tripulação de completar suas tarefas para o voo continuado e pouso seguro de um avião. Um requerente pode demonstrar cumprimento com o parágrafo (d) desta seção se demonstrar que o desempenho da tripulação não é degradado. Diversos novos programas de certificação de jatos de acordo com o RBAC 23 incluem aprovação para operação a altitudes de até 41.000 pés. Adicionalmente, foram alteradas

	passenger comfort. The ventilation system must also provide a sufficient amount of uncontaminated air to enable the flight crew members to perform their duties without undue discomfort or fatigue. For normal operating conditions, the ventilation system must be designed to provide each occupant with at least 0,55 pounds (0,25 kg) of fresh air per minute. In the event of the loss of one source of fresh air, the supply of fresh airflow may not be less than 0,4 pounds (0,18 kg) per minute for any period exceeding five minutes. (d) For jet pressurized airplanes that operate at altitudes above 41.000 feet (12.497 meters), other probable and improbable Environmental Control System failure conditions that adversely affect the passenger and flight crew compartment environmental conditions may not affect flight crew performance so as to result in a hazardous condition, and no occupant shall sustain permanent physiological harm. The cabin cooling system must be designed to meet the following conditions during flight above 15,000 feet mean sea level (MSL): (1) After any probable failure, the cabin temperature-time history may not exceed the values shown in Figure 1 of this paragraph.	as regras para operações até 49.000 pés e regras especiais para estruturas e o ambiente de cabine para garantir a integridade estrutural do avião em altitudes mais elevadas. Também foram feitas mudanças para prevenir a exposição dos ocupantes a altitudes de pressão de cabine que poderiam causar problemas fisiológicos ou prevenir a tripulação de voo de voar e pousar seguramente o avião. A intenção da sentença “*not affect crew performance so as to result in a hazardous condition*” é que a tripulação possa realizar confiavelmente as tarefas publicadas para que foram treinados que permitam completar um voo e pouso seguros. No passado, a habilidade de uma pessoa para determinar e realizar tarefas era medida pelo desempenho da tripulação, no entanto, o desempenho aceitável da tripulação é limitado aos procedimentos pelo fabricante ou requeridos pelos regulamentos existentes. A sentença “*No*

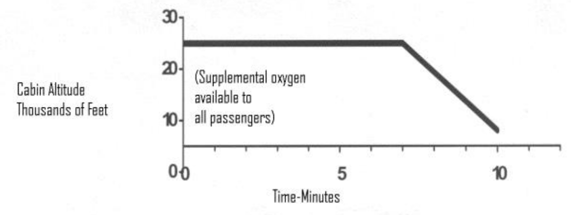
	(2) After any improbable failure, the cabin temperature-time history may not exceed the values shown in Figure 2 of this paragraph.  	*occupant shall sustain permanent physiological harm*" é usada para descrever o requisito que os ocupantes que possam requerer alguma forma de assistência, após tratados, devem poder retomar suas atividades normais.
23.841 Pressurized cabins. (a) If certification for operation over 25,000 feet is requested, the airplane must be able to maintain a cabin pressure altitude of not more than 15,000 feet	**23.841 Pressurized cabins.** (a) If certification for operation above 25.000 feet (7.620 meters) is requested, the airplane must be able to maintain a cabin pressure altitude of not more than 15.000 feet (4.572 meters), in event of any probable	A proposta de alteração da seção 23.841 visa prevenir a exposição de ocupantes a altitudes de pressão de cabine que poderiam tirar a capacidade da tripulação de voo de voar e pousar em segurança o

in event of any probable failure or malfunction in the pressurization system. (b) Pressurized cabins must have at least the following valves, controls, and indicators, for controlling cabin pressure: (1) Two pressure relief valves to automatically limit the positive pressure differential to a predetermined value at the maximum rate of flow delivered by the pressure source. The combined capacity of the relief valves must be large enough so that the failure of any one valve would not cause an appreciable rise in the pressure differential. The pressure differential is positive when the internal pressure is greater than the external. (2) Two reverse pressure differential relief valves (or their equivalent) to automatically prevent a negative pressure differential that would damage the structure. However, one valve is enough if it is of a design that reasonably precludes its malfunctioning. (3) A means by which the pressure differential can be rapidly equalized. (4) An automatic or manual regulator for controlling the intake or exhaust airflow, or both, for	failure condition in the pressurization system. During decompression, the cabin altitude may not exceed 15.000 feet (4.572 meters) for more than 10 seconds and 25.000 feet (7.620 meters) for any duration. (b) Pressurized cabins must have at least the following valves, controls, and indicators, for controlling cabin pressure: (1) Two pressure relief valves to automatically limit the positive pressure differential to a predetermined value at the maximum rate of flow delivered by the pressure source. The combined capacity of the relief valves must be large enough so that the failure of any one valve would not cause an appreciable rise in the pressure differential. The pressure differential is positive when the internal pressure is greater than the external. (2) Two reverse pressure differential relief valves (or their equivalent) to automatically prevent a negative pressure differential that would damage the structure. However, one valve is enough if it is of a design that reasonably precludes its malfunctioning. (3) A means by which the pressure differential can be rapidly equalized.	avião ou causar problemas fisiológicos permanentes aos ocupantes. As mudanças fornecem padrões de aeronavegabilidade que permitem jatos subsônicos pressurizados a operar nas altitudes máximas que possam atingir – a altitude mais alta que um requerente pode optar por demonstrar os efeitos para diversos itens relacionados aos ocupantes após uma descompressão. Emendas anteriores requeriam um sistema de controle da pressão de cabine para manter a cabine a uma altitude de não mais que 15.000 pés após qualquer falha ou mal funcionamento provável no sistema de pressurização. Sistemas de controle de pressão de cabine em aviões certificados de acordo com o RBAC 23 frequentemente ultrapassam levemente o limite de 15.000 pés antes de estabilizar abaixo deste limite. A tecnologia existente para sistemas de controle de pressão de cabine em aviões RBAC 23 não é capaz de prevenir esta

maintaining the required internal pressures and airflow rates. (5) Instruments to indicate to the pilot the pressure differential, the cabin pressure altitude, and the rate of change of cabin pressure altitude. (6) Warning indication at the pilot station to indicate when the safe or preset pressure differential is exceeded and when a cabin pressure altitude of 10,000 feet is exceeded. (7) A warning placard for the pilot if the structure is not designed for pressure differentials up to the maximum relief valve setting in combination with landing loads. (8) A means to stop rotation of the compressor or to divert airflow from the cabin if continued rotation of an engine-driven cabin compressor or continued flow of any compressor bleed air will create a hazard if a malfunction occurs.	(4) An automatic or manual regulator for controlling the intake or exhaust airflow, or both, for maintaining the required internal pressures and airflow rates. (5) Instruments to indicate to the pilot the pressure differential, the cabin pressure altitude, and the rate of change of cabin pressure altitude. (6) Warning indication at the pilot station to indicate when the safe or preset pressure differential is exceeded and when a cabin pressure altitude of 10.000 feet (3.048 meters) is exceeded. The 10.000 feet (3.048 meters) cabin altitude warning may be increased up to 15.000 feet (4.572 meters) for operations from high altitude airfields (10.000 to 15.000 feet – 3.048 a 4.572 meters) provided: (i) The landing or the take off modes (normal or high altitude) are clearly indicated to the flight crew. (ii) Selection of normal or high altitude airfield mode requires no more than one flight crew action and goes to normal airfield mode at engine stop. (iii) The pressurization system is designed to ensure cabin altitude does not exceed 10,000 feet when in flight above flight level (FL) 250.	ultrapassagem momentânea o que preveni o cumprimento estrito desta regra. A ANAC e a FAA emitiram ELOS para esta característica uma vez que dados fisiológicos demonstram que a breve duração da ultrapassagem não produz qualquer efeito significante nos ocupantes do avião. As condições especiais emitidas para jatos certificados de acordo com o RBAC 23 que operam em altitudes acima de 41.000 pés são equivalentes aos requisitos da seção 25.841 adotados em 1996. As condições especiais requeriam considerações de falhas específicas. O RBAC 25 incorporava conceitos de confiabilidade, probabilidade e tolerância a danos. As seções 23.571, 23.573 e 23.574 tratam os requisitos de tolerância a danos. Esta alteração requer o uso dos métodos de análise adicionais. Esta proposta também modifica o requisito de um alerta de uma altitude de cabine excessiva a 10.000 pés. A emenda atual do

	(iv) The pressurization system and cabin altitude warning system is designed to ensure cabin altitude warning at 10.000 feet (3.048 meters) when in flight above FL250. (7) A warning placard for the pilot if the structure is not designed for pressure differentials up to the maximum relief valve setting in combination with landing loads. (8) A means to stop rotation of the compressor or to divert airflow from the cabin if continued rotation of an engine-driven cabin compressor or continued flow of any compressor bleed air will create a hazard if a malfunction occurs. (c) If certification for operation above 41.000 feet (12.497 meters) and not more than 45,000 feet (13.716 meters) is requested: (1) The airplane must prevent cabin pressure altitude from exceeding the following after decompression from any probable pressurization system failure in conjunction with any undetected, latent pressurization system failure condition: (i) If depressurization analysis shows that the cabin altitude does not exceed 25.000 feet (7.620 meters), the pressurization system must prevent the cabin	RBAC 23 não trata adequadamente as operações em aeródromos acima de 10.000 pés. Em vez de desabilitar o alerta para evitar alertas espúrios, a ANAC e a FAA emitiram ELOS para permitir que a altitude de alerta pode ser alterada acima da máxima altitude de aeródromo aprovada, não excedendo 15.000 pés. Esta alteração incorpora a linguagem destes ELOS no regulamento.

	altitude from exceeding the cabin altitude-time history shown in Figure 1 of this section. (ii) Maximum cabin altitude is limited to 30.000 feet (9.144 meters). If cabin altitude exceeds 25.000 feet (7.620 meters), the maximum time the cabin altitude may exceed 25.000 feet (7.620 meters) is 2 minutes; time starting when the cabin altitude exceeds 25.000 feet (7.620 meters) and ending when it returns to 25.000 feet (7.620 meters). (2) The airplane must prevent cabin pressure altitude from exceeding the following after decompression from any single pressurization system failure in conjunction with any probable fuselage damage: (i) If depressurization analysis shows that the cabin altitude does not exceed 37.000 feet (11.278 meters), the pressurization system must prevent the cabin altitude from exceeding the cabin altitude-time history shown in Figure 2 of this section. (ii) Maximum cabin altitude is limited to 40.000 feet (12.192 meters). If cabin altitude exceeds 37.000 feet (11.278 meters), the maximum time the cabin altitude may exceed 25.000 feet (7.620 meters) is 2 minutes; time starting when the cabin altitude exceeds 25.000 feet (7.620 meters) and ending when it returns to 25.000 feet (7.620 meters).	

	(3) In showing compliance with paragraphs (c)(1) and (c)(2) of this section, it may be assumed that an emergency descent is made by an approved emergency procedure. A 17-second flight crew recognition and reaction time must be applied between cabin altitude warning and the initiation of an emergency descent. Fuselage structure, engine and system failures are to be considered in evaluating the cabin decompression.  FIGURE 1—Cabin Altitude--Time History Note: For Figure 1, time starts at the moment cabin altitude exceeds 10,000 feet during decompression.	

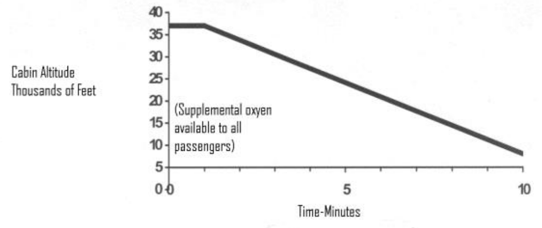


FIGURE 2—Cabin Altitude—Time History

Note: For Figure 2, time starts at the moment cabin altitude exceeds 10,000 feet during decompression.

(d) If certification for operation above 45.000 feet (13.176 meters) and not more than 51.000 feet (15.545 meters) is requested:

(1) Pressurized cabins must be equipped to provide a cabin pressure altitude of not more than 8.000 feet (2.438 meters) at the maximum operating altitude of the airplane under normal operating conditions.

(2) The airplane must prevent cabin pressure altitude from exceeding the following after decompression from any failure condition not shown to be extremely improbable:

(i) Twenty-five thousand (25.000) feet (7.620 meters) for more than 2 minutes; or

	(ii) Forty thousand (40.000) feet (12.192 meters) for any duration. (3) Fuselage structure, engine and system failures are to be considered in evaluating the cabin decompression. (4) In addition to the cabin altitude indicating means in paragraph (b)(6) of this section, an aural or visual signal must be provided to warn the flight crew when the cabin pressure altitude exceeds 10.000 feet (3.048 meters). (5) The sensing system and pressure sensors necessary to meet the requirements of paragraphs (b)(5), (b)(6), and (d)(4) of this section and paragraph 23.1447(e) of this RBAC, must, in the event of low cabin pressure, actuate the required warning and automatic presentation devices without any delay that would significantly increase the hazards resulting from decompression.	
23.853 Passenger and crew compartment interiors. For each compartment to be used by the crew or passengers: (a) The materials must be at least flame-resistant;	**23.853 Passenger and crew compartment interiors.** For each compartment to be used by the crew or passengers: (a) The materials must be at least flame-resistant;	Foi removido o requisito sobre tamanho das letras dos placares em aviões categoria transporte regional pois isto não era requerido nem de aviões categoria normal certificados pelo RBAC 23 ou de aviões categoria transporte certificados pelo RBAC 25.

(b) [Reserved] (c) If smoking is to be prohibited, there must be a placard so stating, and if smoking is to be allowed— (1) There must be an adequate number of self-contained, removable ashtrays; and (2) Where the crew compartment is separated from the passenger compartment, there must be at least one illuminated sign (using either letters or symbols) notifying all passengers when smoking is prohibited. Signs which notify when smoking is prohibited must— (i) When illuminated, be legible to each passenger seated in the passenger cabin under all probable lighting conditions; and (ii) Be so constructed that the crew can turn the illumination on and off; and (d) In addition, for commuter category airplanes the following requirements apply: (1) Each disposal receptacle for towels, paper, or waste must be fully enclosed and constructed of at least fire resistant materials and must contain fires likely to occur in it under normal use. The ability of the disposal receptacle to contain those fires under	(b) [Reserved] (c) If smoking is to be prohibited, there must be a placard so stating, and if smoking is to be allowed: (1) There must be an adequate number of self-contained, removable ashtrays; and (2) Where the crew compartment is separated from the passenger compartment, there must be at least one illuminated sign (using either letters or symbols) notifying all passengers when smoking is prohibited. Signs which notify when smoking is prohibited must— (i) When illuminated, be legible to each passenger seated in the passenger cabin under all probable lighting conditions; and (ii) Be so constructed that the crew can turn the illumination on and off; and (d) In addition, for commuter category airplanes the following requirements apply: (1) Each disposal receptacle for towels, paper, or waste must be fully enclosed and constructed of at least fire resistant materials and must contain fires likely to occur in it under normal use. The ability of the disposal receptacle to contain those fires under	Também foi removido o requisito sobre cinzeiros desta seção uma vez que fumar não é mais permitido em operações de acordo com os RBAC 121 e 135. O parágrafo 23.853(d)(2) foi alterado para introduzir placares “Proibido fumar” ou “Proibido fumar nos lavatórios” de maneira conspícua em ambos os lados da porta de entrada do lavatório.

all probable conditions of wear, misalignment, and ventilation expected in service must be demonstrated by test. A placard containing the legible words “No Cigarette Disposal” must be located on or near each disposal receptacle door. (2) Lavatories must have “No Smoking” or “No Smoking in Lavatory” placards located conspicuously on each side of the entry door and self-contained, removable ashtrays located conspicuously on or near the entry side of each lavatory door, except that one ashtray may serve more than one lavatory door if it can be seen from the cabin side of each lavatory door served. The placards must have red letters at least 1/2 inch high on a white background at least 1 inch high (a “No Smoking” symbol may be included on the placard). (3) Materials (including finishes or decorative surfaces applied to the materials) used in each compartment occupied by the crew or passengers must meet the following test criteria as applicable: (i) Interior ceiling panels, interior wall panels, partitions, galley structure, large cabinet walls, structural flooring, and materials used in the construction of stowage compartments (other than underseat stowage compartments and compartments for stowing small items such as magazines and maps) must be self-extinguishing when tested	all probable conditions of wear, misalignment, and ventilation expected in service must be demonstrated by test. A placard containing the legible words “No Cigarette Disposal” must be located on or near each disposal receptacle door. (2) Lavatories must have “No Smoking” or “No Smoking in Lavatory” placards located conspicuously on each side of the entry door. (3) Materials (including finishes or decorative surfaces applied to the materials) used in each compartment occupied by the crew or passengers must meet the following test criteria as applicable: (i) Interior ceiling panels, interior wall panels, partitions, galley structure, large cabinet walls, structural flooring, and materials used in the construction of stowage compartments (other than underseat stowage compartments and compartments for stowing small items such as magazines and maps) must be self-extinguishing when tested vertically in accordance with the applicable portions of appendix F of this RBAC or by other equivalent methods. The average burn length may not exceed 6 inches (0,15 m) and the average flame time after removal of the flame source may not exceed 15 seconds. Drippings from the test specimen may not continue to flame for more than an average of 3 seconds after falling.	

vertically in accordance with the applicable portions of appendix F of this part or by other equivalent methods. The average burn length may not exceed 6 inches and the average flame time after removal of the flame source may not exceed 15 seconds. Drippings from the test specimen may not continue to flame for more than an average of 3 seconds after falling. (ii) Floor covering, textiles (including draperies and upholstery), seat cushions, padding, decorative and nondecorative coated fabrics, leather, trays and galley furnishings, electrical conduit, thermal and acoustical insulation and insulation covering, air ducting, joint and edge covering, cargo compartment liners, insulation blankets, cargo covers and transparencies, molded and thermoformed parts, air ducting joints, and trim strips (decorative and chafing), that are constructed of materials not covered in paragraph (d)(3)(iv) of this section must be self extinguishing when tested vertically in accordance with the applicable portions of appendix F of this part or other approved equivalent methods. The average burn length may not exceed 8 inches and the average flame time after removal of the flame source may not exceed 15 seconds. Drippings from the test specimen may not continue to flame for more than an average of 5 seconds after falling.	(ii) Floor covering, textiles (including draperies and upholstery), seat cushions, padding, decorative and nondecorative coated fabrics, leather, trays and galley furnishings, electrical conduit, thermal and acoustical insulation and insulation covering, air ducting, joint and edge covering, cargo compartment liners, insulation blankets, cargo covers and transparencies, molded and thermoformed parts, air ducting joints, and trim strips (decorative and chafing), that are constructed of materials not covered in paragraph (d)(3)(iv) of this section must be self extinguishing when tested vertically in accordance with the applicable portions of appendix F of this RBAC or other approved equivalent methods. The average burn length may not exceed 8 inches (0,20 m) and the average flame time after removal of the flame source may not exceed 15 seconds. Drippings from the test specimen may not continue to flame for more than an average of 5 seconds after falling. (iii) Motion picture film must be safety film meeting the Standard Specifications for Safety Photographic Film PH1.25 (available from the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018, USA) or an ANAC approved equivalent. If the film travels through ducts, the ducts must meet the requirements of paragraph (d)(3)(ii) of this section.	

(iii) Motion picture film must be safety film meeting the Standard Specifications for Safety Photographic Film PH1.25 (available from the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018) or an FAA approved equivalent. If the film travels through ducts, the ducts must meet the requirements of paragraph (d)(3)(ii) of this section. (iv) Acrylic windows and signs, parts constructed in whole or in part of elastomeric materials, edge-lighted instrument assemblies consisting of two or more instruments in a common housing, seatbelts, shoulder harnesses, and cargo and baggage tiedown equipment, including containers, bins, pallets, etc., used in passenger or crew compartments, may not have an average burn rate greater than 2.5 inches per minute when tested horizontally in accordance with the applicable portions of appendix F of this part or by other approved equivalent methods. (v) Except for electrical wire cable insulation, and for small parts (such as knobs, handles, rollers, fasteners, clips, grommets, rub strips, pulleys, and small electrical parts) that the Administrator finds would not contribute significantly to the propagation of a fire, materials in items not specified in paragraphs (d)(3)(i), (ii), (iii), or (iv) of this section may not have a burn rate greater than 4.0 inches per minute when tested horizontally in accordance with	(iv) Acrylic windows and signs, parts constructed in whole or in part of elastomeric materials, edge-lighted instrument assemblies consisting of two or more instruments in a common housing, seatbelts, shoulder harnesses, and cargo and baggage tiedown equipment, including containers, bins, pallets, etc., used in passenger or crew compartments, may not have an average burn rate greater than 2,5 inches per minute (0,06 m/min) when tested horizontally in accordance with the applicable portions of appendix F of this RBAC or by other approved equivalent methods. (v) Except for electrical wire cable insulation, and for small parts (such as knobs, handles, rollers, fasteners, clips, grommets, rub strips, pulleys, and small electrical parts) that the Administrator finds would not contribute significantly to the propagation of a fire, materials in items not specified in paragraphs (d)(3)(i), (ii), (iii), or (iv) of this section may not have a burn rate greater than 4,0 inches per minute (0,10 m/min) when tested horizontally in accordance with the applicable portions of appendix F of this RBAC or by other approved equivalent methods. (e) Lines, tanks, or equipment containing fuel, oil, or other flammable fluids may not be installed in such compartments unless adequately shielded, isolated,	

the applicable portions of appendix F of this part or by other approved equivalent methods. (e) Lines, tanks, or equipment containing fuel, oil, or other flammable fluids may not be installed in such compartments unless adequately shielded, isolated, or otherwise protected so that any breakage or failure of such an item would not create a hazard. (f) Airplane materials located on the cabin side of the firewall must be self-extinguishing or be located at such a distance from the firewall, or otherwise protected, so that ignition will not occur if the firewall is subjected to a flame temperature of not less than 2,000 degrees F for 15 minutes. For self-extinguishing materials (except electrical wire and cable insulation and small parts that the Administrator finds would not contribute significantly to the propagation of a fire), a vertifical self-extinguishing test must be conducted in accordance with appendix F of this part or an equivalent method approved by the Administrator. The average burn length of the material may not exceed 6 inches and the average flame time after removal of the flame source may not exceed 15 seconds. Drippings from the material test specimen may not continue to flame for more than an average of 3 seconds after falling.	or otherwise protected so that any breakage or failure of such an item would not create a hazard. (f) Airplane materials located on the cabin side of the firewall must be self-extinguishing or be located at such a distance from the firewall, or otherwise protected, so that ignition will not occur if the firewall is subjected to a flame temperature of not less than 2.000 °F (1.093,33 °C) for 15 minutes. For self-extinguishing materials (except electrical wire and cable insulation and small parts that the Administrator finds would not contribute significantly to the propagation of a fire), a vertifical self-extinguishing test must be conducted in accordance with appendix F of this RBAC or an equivalent method approved by the Administrator. The average burn length of the material may not exceed 6 inches (0,15 m) and the average flame time after removal of the flame source may not exceed 15 seconds. Drippings from the material test specimen may not continue to flame for more than an average of 3 seconds after falling.	
	23.856 Thermal/acoustic insulation materials.	A introdução desta seção foi proposta para atualizar os padrões

	Thermal/acoustic insulation material installed in the fuselage must meet the flame propagation test requirements of part II of Appendix F to this RBAC, or other approved equivalent test requirements. This requirement does not apply to ‘‘small parts,’’ as defined in paragraph 23.853(d)(3)(v).	de inflamabilidade para os materiais de isolamento térmico e acústico. Os padrões anteriores não tratavam realisticamente situações onde materiais de isolamento térmico ou acústico poderiam contribuir para a produção de fogo. As mudanças foram baseadas nos requisitos do parágrafo 25.856(a) que foi adotado após acidentes envolvendo aviões certificados de acordo com o RBAC 25, como o MD-11 da Swissair. Os novos padrões propostos aumentam a segurança ao reduzir a incidência e severidade de incêndios na cabine, particularmente aqueles em áreas inacessíveis onde materiais de isolamento térmico e acústico são instalados. Os novos padrões propostos também incluem testes de inflamabilidade e critérios para tratar da propagação de chama.
23.903 Engines.	**23.903 Engines.**	As alterações desta seção visam proteger os passageiros e manter a habilidade um voo e pouso seguro

(a) Engine type certificate. (1) Each engine must have a type certificate and must meet the applicable requirements of part 34 of this chapter. (2) Each turbine engine and its installation must comply with one of the following: (i) Sections 33.76, 33.77 and 33.78 of this chapter in effect on December 13, 2000, or as subsequently amended; or (ii) Sections 33.77 and 33.78 of this chapter in effect on April 30, 1998, or as subsequently amended before December 13, 2000; or (iii) Section 33.77 of this chapter in effect on October 31, 1974, or as subsequently amended before April 30, 1998, unless that engine's foreign object ingestion service history has resulted in an unsafe condition; or (iv) Be shown to have a foreign object ingestion service history in similar installation locations which has not resulted in any unsafe condition. Note: §33.77 of this chapter in effect on October 31, 1974, was published in 14 CFR parts 1 to 59, Revised as of January 1, 1975. See 39 FR 35467, October 1, 1974.	(a) Engine type certificate. (1) Each engine must have a type certificate and must meet the applicable requirements of RBAC 34. (2) Each turbine engine and its installation must comply with one of the following: (i) Sections 33.76, 33.77 and 33.78 of the RBHA 33 in effect on December 13, 2000, or as subsequently amended; or (ii) Sections 33.77 and 33.78 of the RBHA 33 in effect on April 30, 1998, or as subsequently amended before December 13, 2000; or (iii) Section 33.77 of the RBHA 33 in effect on October 31, 1974, or as subsequently amended before April 30, 1998, unless that engine's foreign object ingestion service history has resulted in an unsafe condition; or (iv) Be shown to have a foreign object ingestion service history in similar installation locations which has not resulted in any unsafe condition. (b) Turbine engine installations. For turbine engine installations:	continuado após um evento de desconexão do *fan* em instalações de motores a jato incorporadas na fuselagem. Para cada avião com um motor incorporado, a ANAC fornecerá orientações específicas ao projeto para estabelecer um meio de cumprimento aceitável relacionado a preocupações de desconexão do *fan*. Se o motor não possuir um modo de falha que resulta em um evento de desconexão do *fan*, então o cumprimento básico precisaria demonstrar que esta falha não pode ocorrer. Neste caso, nenhuma atividade adicional de demonstração seria requerida.

(b) Turbine engine installations. For turbine engine installations— (1) Design precautions must be taken to minimize the hazards to the airplane in the event of an engine rotor failure or of a fire originating inside the engine which burns through the engine case. (2) The powerplant systems associated with engine control devices, systems, and instrumentation must be designed to give reasonable assurance that those operating limitations that adversely affect turbine rotor structural integrity will not be exceeded in service. (c) Engine isolation. The powerplants must be arranged and isolated from each other to allow operation, in at least one configuration, so that the failure or malfunction of any engine, or the failure or malfunction (including destruction by fire in the engine compartment) of any system that can affect an engine (other than a fuel tank if only one fuel tank is installed), will not: (1) Prevent the continued safe operation of the remaining engines; or	(1) Design precautions must be taken to minimize the hazards to the airplane in the event of an engine rotor failure or of a fire originating inside the engine which burns through the engine case. (2) The powerplant systems associated with engine control devices, systems, and instrumentation must be designed to give reasonable assurance that those operating limitations that adversely affect turbine rotor structural integrity will not be exceeded in service. (3) For engines embedded in the fuselage behind the cabin, the effects of a fan exiting forward of the inlet case (fan disconnect) must be addressed, the passengers must be protected, and the airplane must be controllable to allow for continued safe flight and landing. (c) Engine isolation. The powerplants must be arranged and isolated from each other to allow operation, in at least one configuration, so that the failure or malfunction of any engine, or the failure or malfunction (including destruction by fire in the engine compartment) of any system that can affect an engine (other than a fuel tank if only one fuel tank is installed), will not:	

(2) Require immediate action by any crewmember for continued safe operation of the remaining engines. (d) Starting and stopping (piston engine). (1) The design of the installation must be such that risk of fire or mechanical damage to the engine or airplane, as a result of starting the engine in any conditions in which starting is to be permitted, is reduced to a minimum. Any techniques and associated limitations for engine starting must be established and included in the Airplane Flight Manual, approved manual material, or applicable operating placards. Means must be provided for— (i) Restarting any engine of a multiengine airplane in flight, and (ii) Stopping any engine in flight, after engine failure, if continued engine rotation would cause a hazard to the airplane. (2) In addition, for commuter category airplanes, the following apply: (i) Each component of the stopping system on the engine side of the firewall that might be exposed to fire must be at least fire resistant.	(1) Prevent the continued safe operation of the remaining engines; or (2) Require immediate action by any crewmember for continued safe operation of the remaining engines. (d) Starting and stopping (piston engine). (1) The design of the installation must be such that risk of fire or mechanical damage to the engine or airplane, as a result of starting the engine in any conditions in which starting is to be permitted, is reduced to a minimum. Any techniques and associated limitations for engine starting must be established and included in the Airplane Flight Manual, approved manual material, or applicable operating placards. Means must be provided for: (i) Restarting any engine of a multiengine airplane in flight, and (ii) Stopping any engine in flight, after engine failure, if continued engine rotation would cause a hazard to the airplane. (2) In addition, for commuter category airplanes, the following apply:	

(ii) If hydraulic propeller feathering systems are used for this purpose, the feathering lines must be at least fire resistant under the operating conditions that may be expected to exist during feathering. (e) Starting and stopping (turbine engine). Turbine engine installations must comply with the following: (1) The design of the installation must be such that risk of fire or mechanical damage to the engine or the airplane, as a result of starting the engine in any conditions in which starting is to be permitted, is reduced to a minimum. Any techniques and associated limitations must be established and included in the Airplane Flight Manual, approved manual material, or applicable operating placards. (2) There must be means for stopping combustion within any engine and for stopping the rotation of any engine if continued rotation would cause a hazard to the airplane. Each component of the engine stopping system located in any fire zone must be fire resistant. If hydraulic propeller feathering systems are used for stopping the engine, the hydraulic feathering lines or hoses must be fire resistant. (3) It must be possible to restart an engine in flight. Any techniques and associated limitations must be established and included in the Airplane Flight	(i) Each component of the stopping system on the engine side of the firewall that might be exposed to fire must be at least fire resistant. (ii) If hydraulic propeller feathering systems are used for this purpose, the feathering lines must be at least fire resistant under the operating conditions that may be expected to exist during feathering. (e) Starting and stopping (turbine engine). Turbine engine installations must comply with the following: (1) The design of the installation must be such that risk of fire or mechanical damage to the engine or the airplane, as a result of starting the engine in any conditions in which starting is to be permitted, is reduced to a minimum. Any techniques and associated limitations must be established and included in the Airplane Flight Manual, approved manual material, or applicable operating placards. (2) There must be means for stopping combustion within any engine and for stopping the rotation of any engine if continued rotation would cause a hazard to the airplane. Each component of the engine stopping system located in any fire zone must be fire resistant. If hydraulic propeller feathering systems are used for stopping the engine, the hydraulic feathering lines or hoses must be fire resistant.	

Manual, approved manual material, or applicable operating placards. (4) It must be demonstrated in flight that when restarting engines following a false start, all fuel or vapor is discharged in such a way that it does not constitute a fire hazard. (f) Restart envelope. An altitude and airspeed envelope must be established for the airplane for in-flight engine restarting and each installed engine must have a restart capability within that envelope. (g) Restart capability. For turbine engine powered airplanes, if the minimum windmilling speed of the engines, following the in-flight shutdown of all engines, is insufficient to provide the necessary electrical power for engine ignition, a power source independent of the engine-driven electrical power generating system must be provided to permit in-flight engine ignition for restarting.	(3) It must be possible to restart an engine in flight. Any techniques and associated limitations must be established and included in the Airplane Flight Manual, approved manual material, or applicable operating placards. (4) It must be demonstrated in flight that when restarting engines following a false start, all fuel or vapor is discharged in such a way that it does not constitute a fire hazard. (f) Restart envelope. An altitude and airspeed envelope must be established for the airplane for in-flight engine restarting and each installed engine must have a restart capability within that envelope. (g) Restart capability. For turbine engine powered airplanes, if the minimum windmilling speed of the engines, following the in-flight shutdown of all engines, is insufficient to provide the necessary electrical power for engine ignition, a power source independent of the engine-driven electrical power generating system must be provided to permit in-flight engine ignition for restarting.	
23.1165 Engine ignition systems. (a) Each battery ignition system must be supplemented by a generator that is automatically available as an alternate source of electrical energy	**23.1165 Engine ignition systems.** (a) Each battery ignition system must be supplemented by a generator that is automatically available as an alternate source of electrical energy	A revisão do parágrafo 23.1165(f) expande sua aplicabilidade para todas as instalações de motor a turbina em aviões categoria transporte regional.

to allow continued engine operation if any battery becomes depleted. (b) The capacity of batteries and generators must be large enough to meet the simultaneous demands of the engine ignition system and the greatest demands of any electrical system components that draw from the same source. (c) The design of the engine ignition system must account for— (1) The condition of an inoperative generator; (2) The condition of a completely depleted battery with the generator running at its normal operating speed; and (3) The condition of a completely depleted battery with the generator operating at idling speed, if there is only one battery. (d) There must be means to warn appropriate crewmembers if malfunctioning of any part of the electrical system is causing the continuous discharge of any battery used for engine ignition. (e) Each turbine engine ignition system must be independent of any electrical circuit that is not used	to allow continued engine operation if any battery becomes depleted. (b) The capacity of batteries and generators must be large enough to meet the simultaneous demands of the engine ignition system and the greatest demands of any electrical system components that draw from the same source. (c) The design of the engine ignition system must account for: (1) The condition of an inoperative generator; (2) The condition of a completely depleted battery with the generator running at its normal operating speed; and (3) The condition of a completely depleted battery with the generator operating at idling speed, if there is only one battery. (d) There must be means to warn appropriate crewmembers if malfunctioning of any part of the electrical system is causing the continuous discharge of any battery used for engine ignition. (e) Each turbine engine ignition system must be independent of any electrical circuit that is not used	Ao longo dos anos, motores de aviões, incluindo turbinas, geravam sua própria energia elétrica requerida para o seu sistema ignição de forma separada do sistema de geração elétrica. Mesmo após uma falha elétrica completa do sistema elétrico primário, os motores ainda continuariam rodando e completamente funcionais. No entanto, novos motores não são projetos com capacidade de geração elétrica própria. Alguns novos modelos de motores dependem do sistema elétrico do avião. De acordo com a revisão proposta, o sistema de ignição do motor é identificado como uma carga essencial o que garante que tais motores tenham energia durante emergências.

for assisting, controlling, or analyzing the operation of that system. (f) In addition, for commuter category airplanes, each turbopropeller ignition system must be an essential electrical load.	for assisting, controlling, or analyzing the operation of that system. (f) In addition, for commuter category airplanes, each turbine engine ignition system must be an essential electrical load.	
23.1193 Cowling and nacelle. (a) Each cowling must be constructed and supported so that it can resist any vibration, inertia, and air loads to which it may be subjected in operation. (b) There must be means for rapid and complete drainage of each part of the cowling in the normal ground and flight attitudes. Drain operation may be shown by test, analysis, or both, to ensure that under normal aerodynamic pressure distribution expected in service each drain will operate as designed. No drain may discharge where it will cause a fire hazard. (c) Cowling must be at least fire resistant. (d) Each part behind an opening in the engine compartment cowling must be at least fire resistant for a distance of at least 24 inches aft of the opening. (e) Each part of the cowling subjected to high temperatures due to its nearness to exhaust sytem	**23.1193 Cowling and nacelle.** (a) Each cowling must be constructed and supported so that it can resist any vibration, inertia, and air loads to which it may be subjected in operation. (b) There must be means for rapid and complete drainage of each part of the cowling in the normal ground and flight attitudes. Drain operation may be shown by test, analysis, or both, to ensure that under normal aerodynamic pressure distribution expected in service each drain will operate as designed. No drain may discharge where it will cause a fire hazard. (c) Cowling must be at least fire resistant. (d) Each part behind an opening in the engine compartment cowling must be at least fire resistant for a distance of at least 24 inches (61 cm) aft of the opening.	Para aviões equipados com motores incorporados na fuselagem ou em pilones na fuselagem traseira, as consequências de um incêndio são mais variadas, adversas e difíceis de serem previstas do que em um avião convencional. Um motor incorporado fuselagem ou em pilones na fuselagem traseira oferece uma oportunidade mínima de se realmente ver o fogo. Desta forma, a localização do motor é crítica para a habilidade de ver e extinguir um incêndio no motor. Em motores incorporados na fuselagem, um incêndio no motor poderia afetar tanto a fuselagem do avião quanto a estrutura da cauda, que inclui os controles de arfagem e guinada. Um incêndio poderia ainda resultar na perda de controle antes que o piloto pudesse realizar um pouso de emergência.

ports or exhaust gas impingement, must be fire proof. (f) Each nacelle of a multiengine airplane with supercharged engines must be designed and constructed so that with the landing gear retracted, a fire in the engine compartment will not burn through a cowling or nacelle and enter a nacelle area other than the engine compartment. (g) In addition, for commuter category airplanes, the airplane must be designed so that no fire originating in any engine compartment can enter, either through openings or by burn-through, any other region where it would create additional hazards.	(e) Each part of the cowling subjected to high temperatures due to its nearness to exhaust sytem ports or exhaust gas impingement, must be fire proof. (f) Each nacelle of a multiengine airplane with supercharged engines must be designed and constructed so that with the landing gear retracted, a fire in the engine compartment will not burn through a cowling or nacelle and enter a nacelle area other than the engine compartment. (g) In addition, for all airplanes with engine(s) embedded in the fuselage or in pylons on the aft fuselage, the airplane must be designed so that no fire originating in any engine compartment can enter, either through openings or by burn-through, any other region where it would create additional hazards.	Desta forma, o parágrafo 23.1193(g) foi revisto para esclarecer a aplicabilidade da preocupação para aviões com este tipo de configuração de instalação de motor.
23.1195 Fire extinguishing systems. (a) For commuter category airplanes, fire extinguishing systems must be installed and compliance shown with the following: (1) Except for combustor, turbine, and tailpipe sections of turbine-engine installations that contain lines or components carrying flammable fluids or gases for which a fire originating in these sections is	**23.1195 Fire extinguishing systems.** (a) For commuter category airplanes, and all airplanes with engine(s) embedded in the fuselage or in pylons on the aft fuselage, fire extinguishing systems must be installed and compliance shown with the following: (1) Except for combustor, turbine, and tailpipe sections of turbine-engine installations that contain lines or components carrying flammable fluids or gases for which a fire originating in these sections is	A aplicabilidade do parágrafo 23.1195(a) foi revista para incluir todos aviões com motores incorporados na fuselagem ou em pilones na fuselagem traseira, uma vez que o problema é mais relacionado com a localização do motor do que com a categoria do avião. Para instalações de motores incorporados na fuselagem, um sistema com dois disparos é necessário devido a presença de

shown to be controllable, a fire extinguisher system must serve each engine compartment; (2) The fire extinguishing system, the quantity of the extinguishing agent, the rate of discharge, and the discharge distribution must be adequate to extinguish fires. An individual “one shot” system may be used. (3) The fire extinguishing system for a nacelle must be able to simultaneously protect each compartment of the nacelle for which protection is provided. (b) If an auxiliary power unit is installed in any airplane certificated to this part, that auxiliary power unit compartment must be served by a fire extinguishing system meeting the requirements of paragraph (a)(2) of this section.	shown to be controllable, a fire extinguisher system must serve each engine compartment; (2) The fire extinguishing system, the quantity of the extinguishing agent, the rate of discharge, and the discharge distribution must be adequate to extinguish fires. An individual “one shot” system may be used, except for engine(s) embedded in the fuselage, where a ‘‘two shot’’ system is required. (3) The fire extinguishing system for a nacelle must be able to simultaneously protect each compartment of the nacelle for which protection is provided. (b) If an auxiliary power unit is installed in any airplane certificated to this RBAC, that auxiliary power unit compartment must be served by a fire extinguishing system meeting the requirements of paragraph (a)(2) of this section.	componentes metálicos na zona de fogo que podem ficar quentes suficiente para reignitar vapores inflamáveis após a extinção do primeiro incêndio.
23.1197 Fire extinguishing agents. For commuter category airplanes, the following applies: (a) Fire extinguishing agents must— (1) Be capable of extinguishing flames emanating from any burning of fluids or other combustible	**23.1197 Fire extinguishing agents.** For commuter category airplanes, and all airplanes with engine(s) embedded in the fuselage or in pylons on the aft fuselage the following applies: (a) Fire extinguishing agents must: (1) Be capable of extinguishing flames emanating from any burning of fluids or other combustible	Revisada aplicabilidade para incluir todos aviões com motores incorporados na fuselagem ou em pilones na fuselagem traseira harmonizando a abordagem com as alterações das seções 23.1165, 23.1193 e 23.1195.

materials in the area protected by the fire extinguishing system; and (2) Have thermal stability over the temperature range likely to be experienced in the compartment in which they are stored. (b) If any toxic extinguishing agent is used, provisions must be made to prevent harmful concentrations of fluid or fluid vapors (from leakage during normal operation of the airplane or as a result of discharging the fire extinguisher on the ground or in flight) from entering any personnel compartment, even though a defect may exist in the extinguishing system. This must be shown by test except for built-in carbon dioxide fuselage compartment fire extinguishing systems for which— (1) Five pounds or less of carbon dioxide will be discharged, under established fire control procedures, into any fuselage compartment; or (2) Protective breathing equipment is available for each flight crewmember on flight deck duty.	materials in the area protected by the fire extinguishing system; and (2) Have thermal stability over the temperature range likely to be experienced in the compartment in which they are stored. (b) If any toxic extinguishing agent is used, provisions must be made to prevent harmful concentrations of fluid or fluid vapors (from leakage during normal operation of the airplane or as a result of discharging the fire extinguisher on the ground or in flight) from entering any personnel compartment, even though a defect may exist in the extinguishing system. This must be shown by test except for built-in carbon dioxide fuselage compartment fire extinguishing systems for which: (1) Five pounds (2,3 kg) or less of carbon dioxide will be discharged, under established fire control procedures, into any fuselage compartment; or (2) Protective breathing equipment is available for each flight crewmember on flight deck duty.	
23.1199 Extinguishing agent containers. For commuter category airplanes, the following applies:	**23.1199 Extinguishing agent containers.** For commuter category airplanes, and all airplanes with engine(s) embedded in the fuselage or in pylons on the aft fuselage the following applies:	Revisada aplicabilidade para incluir todos aviões com motores incorporados na fuselagem ou em pilones na fuselagem traseira harmonizando a abordagem com

(a) Each extinguishing agent container must have a pressure relief to prevent bursting of the container by excessive internal pressures. (b) The discharge end of each discharge line from a pressure relief connection must be located so that discharge of the fire extinguishing agent would not damage the airplane. The line must also be located or protected to prevent clogging caused by ice or other foreign matter. (c) A means must be provided for each fire extinguishing agent container to indicate that the container has discharged or that the charging pressure is below the established minimum necessary for proper functioning. (d) The temperature of each container must be maintained, under intended operating conditions, to prevent the pressure in the container from— (1) Falling below that necessary to provide an adequate rate of discharge; or (2) Rising high enough to cause premature discharge. (e) If a pyrotechnic capsule is used to discharge the extinguishing agent, each container must be installed	(a) Each extinguishing agent container must have a pressure relief to prevent bursting of the container by excessive internal pressures. (b) The discharge end of each discharge line from a pressure relief connection must be located so that discharge of the fire extinguishing agent would not damage the airplane. The line must also be located or protected to prevent clogging caused by ice or other foreign matter. (c) A means must be provided for each fire extinguishing agent container to indicate that the container has discharged or that the charging pressure is below the established minimum necessary for proper functioning. (d) The temperature of each container must be maintained, under intended operating conditions, to prevent the pressure in the container from: (1) Falling below that necessary to provide an adequate rate of discharge; or (2) Rising high enough to cause premature discharge. (e) If a pyrotechnic capsule is used to discharge the extinguishing agent, each container must be installed so that temperature conditions will not cause hazardous deterioration of the pyrotechnic capsule.	as alterações das seções 23.1165, 23.1193 e 23.1195.

so that temperature conditions will not cause hazardous deterioration of the pyrotechnic capsule.		
23.1201 Fire extinguishing systems materials. For commuter category airplanes, the following apply: (a) No material in any fire extinguishing system may react chemically with any extinguishing agent so as to create a hazard. (b) Each system component in an engine compartment must be fireproof.	**23.1201 Fire extinguishing systems materials.** For commuter category airplanes, and all airplanes with engine(s) embedded in the fuselage or in pylons on the aft fuselage the following applies: (a) No material in any fire extinguishing system may react chemically with any extinguishing agent so as to create a hazard. (b) Each system component in an engine compartment must be fireproof.	Revisada aplicabilidade para incluir todos aviões com motores incorporados na fuselagem ou em pilones na fuselagem traseira harmonizando a abordagem com as alterações das seções 23.1165, 23.1193 e 23.1195.
23.1301 Function and installation. Each item of installed equipment must— (a) Be of a kind and design appropriate to its intended function. (b) Be labeled as to its identification, function, or operating limitations, or any applicable combination of these factors; (c) Be installed according to limitations specified for that equipment; and (d) Function properly when installed.	**23.1301 Function and installation.** Each item of installed equipment must: (a) Be of a kind and design appropriate to its intended function. (b) Be labeled as to its identification, function, or operating limitations, or any applicable combination of these factors; and (c) Be installed according to limitations specified for that equipment.	Foi removido o parágrafo 23.1301(d) para aumentar a padronização para certificação de sistemas e equipamentos, em especial para equipamentos não-requeridos e funções não-essenciais incorporadas em sistemas aviônicos complexos. Os requisitos do parágrafo 23.1309(a) substituem o 23.1301(d), e se o 23.1301(d) fosse mantido, haveria uma duplicação de requisitos.

23.1303 Flight and navigation instruments. The following are the minimum required flight and navigation instruments: (a) An airspeed indicator. (b) An altimeter. (c) A direction indicator (nonstabilized magnetic compass). (d) For reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight and turbine engine powered airplanes, a free air temperature indicator or an air-temperature indicator which provides indications that are convertible to free-air. (e) A speed warning device for— (1) Turbine engine powered airplanes; and (2) Other airplanes for whichVmo/MmoandVd/Mdare established under §§23.335(b)(4) and 23.1505(c) ifVmo/Mmois greater than 0.8Vd/Md. The speed warning device must give effective aural warning (differing distinctively from aural warnings	**23.1303 Flight and navigation instruments.** The following are the minimum required flight and navigation instruments: (a) An airspeed indicator. (b) An altimeter. (c) A magnetic direction indicator. (d) For reciprocating engine-powered airplanes of more than 6.000 pounds (2.722 kg) maximum weight and turbine engine powered airplanes, a free air temperature indicator or an air-temperature indicator which provides indications that are convertible to free-air. (e) A speed warning device for: (1) Turbine engine powered airplanes; and (2) Other airplanes for which VMO/MMO and Vd/Md are established under paragraphs 23.335(b)(4) and 23.1505(c) if VMO/MMO is greater than 0,8 Vd/Md. The speed warning device must give effective aural warning (differing distinctively from aural warnings used for other purposes) to the pilots whenever the	As alterações introduzidas têm o objetivo de acomodar novas tecnologias e eliminar a necessidade de emitir ELOS para programas de certificação do RBAC 23. O parágrafo 23.1303(c) foi revisado pois a versão atual não permite um indicador de direção que não uma bússola não-estabilizada. Conforme novas tecnologias se tornam mais acessíveis para aviões mais leves, muitos sistemas de instrumentos de voo eletrônicos usarão indicadores de direção estabilizados (ou sistemas de bússola elétricos) para medir e indicar a direção do avião para fornecer um desempenho melhor como já é verificado hoje em aviões categoria transporte.

used for other purposes) to the pilots whenever the speed exceedsVmoplus 6 knots orMmo+0.01. The upper limit of the production tolerance for the warning device may not exceed the prescribed warning speed. The lower limit of the warning device must be set to minimize nuisance warning; (f) When an attitude display is installed, the instrument design must not provide any means, accessible to the flightcrew, of adjusting the relative positions of the attitude reference symbol and the horizon line beyond that necessary for parallax correction. (g) In addition, for commuter category airplanes: (1) If airspeed limitations vary with altitude, the airspeed indicator must have a maximum allowable airspeed indicator showing the variation of $V_{MO}$with altitude. (2) The altimeter must be a sensitive type. (3) Having a passenger seating configuration of 10 or more, excluding the pilot's seats and that are approved for IFR operations, a third attitude instrument must be provided that:	speed exceeds VMO plus 6 knots or MMO+0.01. The upper limit of the production tolerance for the warning device may not exceed the prescribed warning speed. The lower limit of the warning device must be set to minimize nuisance warning; (f) When an attitude display is installed, the instrument design must not provide any means, accessible to the flightcrew, of adjusting the relative positions of the attitude reference symbol and the horizon line beyond that necessary for parallax correction. (g) In addition, for commuter category airplanes: (1) If airspeed limitations vary with altitude, the airspeed indicator must have a maximum allowable airspeed indicator showing the variation of VMO with altitude. (2) The altimeter must be a sensitive type. (3) Having a passenger seating configuration of 10 or more, excluding the pilot's seats and that are approved for IFR operations, a third attitude instrument must be provided that: (i) Is powered from a source independent of the electrical generating system;	

(i) Is powered from a source independent of the electrical generating system; (ii) Continues reliable operation for a minimum of 30 minutes after total failure of the electrical generating system; (iii) Operates independently of any other attitude indicating system; (iv) Is operative without selection after total failure of the electrical generating system; (v) Is located on the instrument panel in a position acceptable to the Administrator that will make it plainly visible to and usable by any pilot at the pilot's station; and (vi) Is appropriately lighted during all phases of operation.	(ii) Continues reliable operation for a minimum of 30 minutes after total failure of the electrical generating system; (iii) Operates independently of any other attitude indicating system; (iv) Is operative without selection after total failure of the electrical generating system; (v) Is located on the instrument panel in a position acceptable to the Administrator that will make it plainly visible to and usable by any pilot at the pilot's station; and (vi) Is appropriately lighted during all phases of operation.	
23.1309 Equipment, systems, and installations. (a) Each item of equipment, each system, and each installation: (1) When performing its intended function, may not adversely affect the response, operation, or accuracy of any—	**23.1309 Equipment, systems, and installations.** The requirements of this section, except as identified in paragraphs (a) through (d), are applicable, in addition to specific design requirements of RBAC 23, to any equipment or system as installed in the airplane. This section is a regulation of general requirements and does not supersede any	A proposta altera os requisitos para dois tipos diferentes de equipamentos e sistemas instalados no avião. A seção também descreve duas ações para os requerentes. Primeiro, o requerente deve considerar o envelope completo de operação normal do avião, como definido pelo Manual de Voo do Avião,

(i) Equipment essential to safe operation; or (ii) Other equipment unless there is a means to inform the pilot of the effect. (2) In a single-engine airplane, must be designed to minimize hazards to the airplane in the event of a probable malfunction or failure. (3) In a multiengine airplane, must be designed to prevent hazards to the airplane in the event of a probable malfunction or failure. (4) In a commuter category airplane, must be designed to safeguard against hazards to the airplane in the event of their malfunction or failure. (b) The design of each item of equipment, each system, and each installation must be examined separately and in relationship to other airplane systems and installations to determine if the airplane is dependent upon its function for continued safe flight and landing and, for airplanes not limited to VFR conditions, if failure of a system would significantly reduce the capability of the airplane or the ability of the crew to cope with adverse operating conditions. Each item of equipment, each system, and each installation identified by this examination as one upon which the airplane is dependent for proper functioning to ensure continued safe flight	requirements contained in another section of RBAC 23. (a) The airplane equipment and systems must be designed and installed so that: (1) Those required for type certification or by operating rules perform as intended under the airplane operating and environmental conditions, including the indirect effects of lightning strikes. (2) Any equipment and system does not adversely affect the safety of the airplane or its occupants, or the proper functioning of those covered by paragraph (a)(1) of this section. (b) Minor, major, hazardous, or catastrophic failure condition(s), which occur during Type Inspection Authorization or ANAC flight-certification testing, must have root cause analysis and corrective action. (c) The airplane systems and associated components considered separately and in relation to other systems, must be designed and installed so that: (1) Each catastrophic failure condition is extremely improbable and does not result from a single failure;	com qualquer modificação para aquele envelope associada com procedimentos anormais ou de emergência e qualquer ação antecipada da tripulação. Depois, o requerente deve considerar as condições ambientais externas e internas antecipadas, assim como qualquer condição adicional onde possa se assumir que os equipamentos e sistemas “desempenham como pretendido”. O parágrafo 23.1309(a)(2) requer uma análise de qualquer equipamento ou sistema instalado com uma condição de falha que seja potencialmente catastrófica, *hazardous*, *major* ou *minor* para determinar seu impacto na operação segura do avião. O requerente deve demonstrar que eles não afetam adversamente o funcionamento adequado dos equipamentos, sistemas ou instalações cobertas pela seção 23.1309 e não influenciam adversamente a segurança do avião ou dos seus ocupantes. O parágrafo 23.1309(a)(2) não

and landing, or whose failure would significantly reduce the capability of the airplane or the ability of the crew to cope with adverse operating conditions, must be designed to comply with the following additional requirements: (1) It must perform its intended function under any foreseeable operating condition. (2) When systems and associated components are considered separately and in relation to other systems— (i) The occurrence of any failure condition that would prevent the continued safe flight and landing of the airplane must be extremely improbable; and (ii) The occurrence of any other failure condition that would significantly reduce the capability of the airplane or the ability of the crew to cope with adverse operating conditions must be improbable. (3) Warning information must be provided to alert the crew to unsafe system operating conditions and to enable them to take appropriate corrective action. Systems, controls, and associated monitoring and warning means must be designed to minimize crew errors that could create additional hazards.	(2) Each hazardous failure condition is extremely remote; and (3) Each major failure condition is remote. (d) Information concerning an unsafe system operating condition must be provided in a timely manner to the crew to enable them to take appropriate corrective action. An appropriate alert must be provided if immediate pilot awareness and immediate or subsequent corrective action is required. Systems and controls, including indications and annunciations, must be designed to minimize crew errors which could create additional hazards.	requer que equipamentos e sistemas não-requeridos funcionem apropriadamente durante todas as operações uma vez em serviço desde que todos as condições de falha em potencial não tenham qualquer efeito na operação segura do avião. O equipamento ou sistema deve funcionar da maneira especificada pelo manual de operação do fabricante para aquele equipamento ou sistema. A declaração do requerente da função pretendida deve ser suficientemente específica e detalhada para que a ANAC possa avaliar se aquele sistema é apropriado para sua(s) função(ões) pretendida(s). O parágrafo 23.1309(b) foi introduzido e é aplicável à Autorização de Inspeção de Tipo (AIT) e ensaios em voo de certificação. A ANAC espera que o requerente demonstre que o sistema não exibe condições de falha indesejáveis que sejam classificadas como *minor*, *major*, *hazardous* ou catastróficas.

(4) Compliance with the requirements of paragraph (b)(2) of this section may be shown by analysis and, where necessary, by appropriate ground, flight, or simulator tests. The analysis must consider— (i) Possible modes of failure, including malfunctions and damage from external sources; (ii) The probability of multiple failures, and the probability of undetected faults.; (iii) The resulting effects on the airplane and occupants, considering the stage of flight and operating conditions; and (iv) The crew warning cues, corrective action required, and the crew's capability of determining faults. (c) Each item of equipment, each system, and each installation whose functioning is required by this chapter and that requires a power supply is an “essential load” on the power supply. The power sources and the system must be able to supply the following power loads in probable operating combinations and for probable durations: (1) Loads connected to the power distribution system with the system functioning normally.		Os requisitos relacionados a fontes de energia foram movidos para a nova seção 23.1310. O antigo parágrafo 23.1309(a)(3) foi alterado – e designado 23.1309(d) devido às alterações em outros parágrafos – para compatibilizá-lo com a seção 23.1322 que distingue entre alertas *caution*, *warning* e *advisory*. Em vez de apenas requerer um alerta para a tripulação de voo, o novo parágrafo 23.1309(d) requer que informações sobre condições operacionais inseguras de sistemas seja fornecida para a tripulação de voo. O parágrafo 23.1309(d) também especifica que o projeto de sistemas e controles, incluindo indicações e anúncios, devem reduzir erros da tripulação que poderiam criar novos perigos.

(2) Essential loads after failure of— (i) Any one engine on two-engine airplanes; or (ii) Any two engines on an airplane with three or more engines; or (iii) Any power converter or energy storage device. (3) Essential loads for which an alternate source of power is required, as applicable, by the operating rules of this chapter, after any failure or malfunction in any one power supply system, distribution system, or other utilization system. (d) In determining compliance with paragraph (c)(2) of this section, the power loads may be assumed to be reduced under a monitoring procedure consistent with safety in the kinds of operations authorized. Loads not required in controlled flight need not be considered for the two-engine-inoperative condition on airplanes with three or more engines. (e) In showing compliance with this section with regard to the electrical power system and to equipment design and installation, critical environmental and atmospheric conditions, including radio frequency energy and the effects (both direct and indirect) of lightning strikes, must be considered. For electrical generation, distribution,		

and utilization equipment required by or used in complying with this chapter, the ability to provide continuous, safe service under forseeable environmental conditions may be shown by environmental tests, design analysis, or reference to previous comparable service experience on other airplanes. (f) As used in this section, “system” refers to all pneumatic systems, fluid systems, electrical systems, mechanical systems, and powerplant systems included in the airplane design, except for the following: (1) Powerplant systems provided as part of the certificated engine. (2) The flight structure (such a wing, empennage, control surfaces and their systems, the fuselage, engine mounting, and landing gear and their related primary attachments) whose requirements are specific in subparts C and D of this part.		
	23.1310 Power source capacity and distribution. (a) Each installation whose functioning is required for type certification or under operating rules and that requires a power supply is an "essential load" on the power supply. The power sources and the system must be able to supply the following power loads in	A nova seção 23.1310 incorpora conceitos que eram anteriormente parte da seção 23.109. Esta alteração não altera os requisitos técnicos, mas apenas a localização no regulamento. No passado, as seções 23.1309 e 25.139 tinham os mesmos requisitos de fonte de

	probable operating combinations and for probable durations: (1) Loads connected to the system with the system functioning normally. (2) Essential loads, after failure of any one prime mover, power converter, or energy storage device. (3) Essential loads after failure of-- (i) Any one engine on two-engine airplanes; and (ii) Any two engines on airplanes with three or more engines. (4) Essential loads for which an alternate source of power is required, after any failure or malfunction in any one power supply system, distribution system, or other utilization system. (b) In determining compliance with paragraphs (a)(2) and (3) of this section, the power loads may be assumed to be reduced under a monitoring procedure consistent with safety in the kinds of operation authorized. Loads not required in controlled flight need not be considered for the two-engine-inoperative condition on airplanes with three or more engines.	energia, no entanto, a emenda 123 do RBAC 25 moveu estes requisitos da seção 25.1309 para a 25.1310 sem alteração do conteúdo. Esta alteração fornece consistência entre ambos os padrões.

23.1311 Electronic display instrument systems. (a) Electronic display indicators, including those with features that make isolation and independence between powerplant instrument systems impractical, must: (1) Meet the arrangement and visibility requirements of §23.1321. (2) Be easily legible under all lighting conditions encountered in the cockpit, including direct sunlight, considering the expected electronic display brightness level at the end of an electronic display indictor's useful life. Specific limitations on display system useful life must be contained in the Instructions for Continued Airworthiness required by §23.1529. (3) Not inhibit the primary display of attitude, airspeed, altitude, or powerplant parameters needed by any pilot to set power within established limitations, in any normal mode of operation. (4) Not inhibit the primary display of engine parameters needed by any pilot to properly set or monitor powerplant limitations during the engine starting mode of operation.	**23.1311 Electronic display instrument systems.** (a) Electronic display indicators, including those with features that make isolation and independence between powerplant instrument systems impractical, must: (1) Meet the arrangement and visibility requirements of section 23.1321 of this RBAC. (2) Be easily legible under all lighting conditions encountered in the cockpit, including direct sunlight, considering the expected electronic display brightness level at the end of an electronic display indictor's useful life. Specific limitations on display system useful life must be contained in the Instructions for Continued Airworthiness required by section 23.1529 of this RBAC. (3) Not inhibit the primary display of attitude, airspeed, altitude, or powerplant parameters needed by any pilot to set power within established limitations, in any normal mode of operation. (4) Not inhibit the primary display of engine parameters needed by any pilot to properly set or monitor powerplant limitations during the engine starting mode of operation.	Os requisitos de redundância para alguns instrumentos ou indicadores de voo podiam ser muito restritivos para operações apenas VFR. Isto levou vários requerentes a solicitar um ELOS para o 23.1311(a)(5) para aprovações de instalações de displays eletrônicos em aviões certificados pelo RBAC 23. Isto levou a proposta de alterar o parágrafo 23.1311(a)(5) para esclarecer que os instrumentos de atitude são requeridos apenas para operações IFR. O parágrafo 23.1311(a)(6) foi alterado para esclarecer os requisitos para "*sensory cues*". Também foi alterado o 23.1311(a)(7) para tornar aceitável a marcação de instrumentos em displays eletrônicos equivalentes aquelas em instrumentos convencionais mecânicos e eletromecânicos. O parágrafo 23.1311(b) foi alterado para substituir a frase "*remain available to the crew, without need for immediate action*" por "*be available within*

(5) Have an independent magnetic direction indicator and either an independent secondary mechanical altimeter, airspeed indicator, and attitude instrument or individual electronic display indicators for the altitude, airspeed, and attitude that are independent from the airplane's primary electrical power system. These secondary instruments may be installed in panel positions that are displaced from the primary positions specified by §23.1321(d), but must be located where they meet the pilot's visibility requirements of §23.1321(a). (6) Incorporate sensory cues for the pilot that are equivalent to those in the instrument being replaced by the electronic display indicators. (7) Incorporate visual displays of instrument markings, required by §§23.1541 through 23.1553, or visual displays that alert the pilot to abnormal operational values or approaches to established limitation values, for each parameter required to be displayed by this part. (b) The electronic display indicators, including their systems and installations, and considering other airplane systems, must be designed so that one display of information essential for continued safe flight and landing will remain available to the crew, without need for immediate action by any pilot for	(5) For certification for Instrument Flight Rules (IFR) operations, have an independent magnetic direction indicator and either an independent secondary mechanical altimeter, airspeed indicator, and attitude instrument or an electronic display parameters for the altitude, airspeed, and attitude that are independent from the airplane's primary electrical power system. These secondary instruments may be installed in panel positions that are displaced from the primary positions specified by paragraph 23.1321(d) of this RBAC, but must be located where they meet the pilot's visibility requirements of paragraph 23.1321(a) of this RBAC. (6) Incorporate sensory cues that provide a quick glance sense of rate and, where appropriate, trend information to the parameter being displayed to the pilot. (7) Incorporate equivalent visual displays of the instrument markings required by section 23.1541 through 23.1553 of this RBAC, or visual displays that alert the pilot to abnormal operational values or approaches to established limitation values, for each parameter required to be displayed by this part. (b) The electronic display indicators, including their systems and installations, and considering other airplane systems, must be designed so that one display of information essential for continued safe	*one second to the crew by a single pilot action or by automatic means*”. Esta proposta permite um requerente tomar crédito de displays de voo reversionários ou secundários que fornece um meio secundário de informações primários de voo.

continued safe operation, after any single failure or probable combination of failures. (c) As used in this section, "instrument" includes devices that are physically contained in one unit, and devices that are composed of two or more physically separate units or components connected together (such as a remote indicating gyroscopic direction indicator that includes a magnetic sensing element, a gyroscopic unit, an amplifier, and an indicator connected together). As used in this section, "primary" display refers to the display of a parameter that is located in the instrument panel such that the pilot looks at it first when wanting to view that parameter.	flight and landing will be available within one second to the crew by a single pilot action or by automatic means for continued safe operation, after any single failure or probable combination of failures. (c) As used in this section, "instrument" includes devices that are physically contained in one unit, and devices that are composed of two or more physically separate units or components connected together (such as a remote indicating gyroscopic direction indicator that includes a magnetic sensing element, a gyroscopic unit, an amplifier, and an indicator connected together). As used in this section, "primary" display refers to the display of a parameter that is located in the instrument panel such that the pilot looks at it first when wanting to view that parameter.	
23.1323 Airspeed indicating system. (a) Each airspeed indicating instrument must be calibrated to indicate true airspeed (at sea level with a standard atmosphere) with a minimum practicable instrument calibration error when the corresponding pitot and static pressures are applied. (b) Each airspeed system must be calibrated in flight to determine the system error. The system error, including position error, but excluding the airspeed indicator instrument calibration error, may not	**23.1323 Airspeed indicating system.** (a) Each airspeed indicating instrument must be calibrated to indicate true airspeed (at sea level with a standard atmosphere) with a minimum practicable instrument calibration error when the corresponding pitot and static pressures are applied. (b) Each airspeed system must be calibrated in flight to determine the system error. The system error, including position error, but excluding the airspeed indicator instrument calibration error, may not	Para satisfazer os requisitos de desempenho de jatos da Subparte B, o piloto precisa de indicadores precisos de velocidade enquanto acelera na pista. A revisão proposta adiciona requisitos para calibrar o sistema de velocidade do ar em a partir de 0,8 vezes o valor mínimo da V1. Também foi proposta a adoção da linguagem adotada no RBAC 25 para este mesmo requisito uma vez que ele

exceed three percent of the calibrated airspeed or five knots, whichever is greater, throughout the following speed ranges: (1) 1.3 $V_{S1}$to V_{MO}/M_{MO}or V_{NE}, whichever is appropriate with flaps retracted. (2) 1.3 V_S 1 to $V_{FE}$with flaps extended. (c) The design and installation of each airspeed indicating system must provide positive drainage of moisture from the pitot static plumbing. (d) If certification for instrument flight rules or flight in icing conditions is requested, each airspeed system must have a heated pitot tube or an equivalent means of preventing malfunction due to icing. (e) In addition, for commuter category airplanes, the airspeed indicating system must be calibrated to determine the system error during the accelerate-takeoff ground run. The ground run calibration must be obtained between 0.8 of the minimum value of V1, and 1.2 times the maximum value of V1considering the approved ranges of altitude and weight. The ground run calibration must be determined assuming an engine failure at the minimum value of V1.	exceed three percent of the calibrated airspeed or five knots (9,25 km/h), whichever is greater, throughout the following speed ranges: (1) 1,3 VS1 to VMO/MMO or VNE, whichever is appropriate with flaps retracted. (2) 1.3 VS 1 to VFE with flaps extended. (c) The design and installation of each airspeed indicating system must provide positive drainage of moisture from the pitot static plumbing. (d) If certification for instrument flight rules or flight in icing conditions is requested, each airspeed system must have a heated pitot tube or an equivalent means of preventing malfunction due to icing. (e) In addition, for normal, utility, and acrobatic category multiengine jets of more than 6.000 pounds (2.722 kg) maximum weight and commuter category airplanes, each system must be calibrated to determine the system error during the accelerate-takeoff ground run. The ground run calibration must be determined: (1) From 0,8 of the minimum value of V1 to the maximum value of V2, considering the approved ranges of altitude and weight; and	está mais em linha com as características dos novos jatos certificados de acordo com o RBAC 23. O parágrafo 23.1323(e) na emenda anterior era aplicável apenas para aviões categoria transporte regional porque apenas para estes aviões eram requeridos ensaios de aceleração e parada. A proposta de alteração do 23.55, como discutido naquela seção, amplia sua aplicabilidade para todos jatos multimotores pesando mais que 6.000 libras (2.722 kg). De forma análoga, esta proposta requer a calibração do sistema de velocidade do ar a partir de 0,8 vezes a V1 para estes aviões.

(f) For commuter category airplanes, where duplicate airspeed indicators are required, their respective pitot tubes must be far enough apart to avoid damage to both tubes in a collision with a bird.	(2) The ground run calibration must be determined assuming an engine failure at the minimum value of V1. (f) For commuter category airplanes, where duplicate airspeed indicators are required, their respective pitot tubes must be far enough apart to avoid damage to both tubes in a collision with a bird.	
23.1331 Instruments using a power source. For each instrument that uses a power source, the following apply: (a) Each instrument must have an integral visual power annunciator or separate power indicator to indicate when power is not adequate to sustain proper instrument performance. If a separate indicator is used, it must be located so that the pilot using the instruments can monitor the indicator with minimum head and eye movement. The power must be sensed at or near the point where it enters the instrument. For electric and vacuum/pressure instruments, the power is considered to be adequate when the voltage or the vacuum/pressure, respectively, is within approved limits. (b) The installation and power supply systems must be designed so that—	**23.1331 Instruments using a power source.** For each instrument that uses a power source, the following apply: (a) Each instrument must have an integral visual power annunciator or separate power indicator to indicate when power is not adequate to sustain proper instrument performance. If a separate indicator is used, it must be located so that the pilot using the instruments can monitor the indicator with minimum head and eye movement. The power must be sensed at or near the point where it enters the instrument. For electric and vacuum/pressure instruments, the power is considered to be adequate when the voltage or the vacuum/pressure, respectively, is within approved limits. (b) The installation and power supply systems must be designed so that:	A proposta de alteração do 23.1311 estabelece que instrumentos que precisam de uma fonte de energia para fornecer informações de voo requeridas para operações IFR devem contar com duas fontes independentes de energia ou um display separado que tenha uma fonte de energia independente do sistema primário de energia do avião.

(1) The failure of one instrument will not interfere with the proper supply of energy to the remaining instrument; and (2) The failure of the energy supply from one source will not interfere with the proper supply of energy from any other source. (c) There must be at least two independent sources of power (not driven by the same engine on multiengine airplanes), and a manual or an automatic means to select each power source.	(1) The failure of one instrument will not interfere with the proper supply of energy to the remaining instrument; and (2) The failure of the energy supply from one source will not interfere with the proper supply of energy from any other source. (c) For certification for Instrument Flight Rules (IFR) operations and for the heading, altitude, airspeed, and attitude, there must be at least: (1) Two independent sources of power (not driven by the same engine on multiengine airplanes), and a manual or an automatic means to select each power source; or (2) A separate display of parameters for heading, altitude, airspeed, and attitude that has a power source independent from the airplane's primary electrical power system.	
23.1353 Storage battery design and installation. (a) Each storage battery must be designed and installed as prescribed in this section. (b) Safe cell temperatures and pressures must be maintained during any probable charging and discharging condition. No uncontrolled increase in	**23.1353 Storage battery design and installation.** (a) Each storage battery must be designed and installed as prescribed in this section. (b) Safe cell temperatures and pressures must be maintained during any probable charging and discharging condition. No uncontrolled increase in	As propostas de alteração do 23.1353 acrescentam requisitos adicionais de duração de bateria para aumentar a segurança baseado no desempenho de altitude do avião. A proposta tratou das necessidades de energia de novos instrumentos, equipamentos de comunicação e

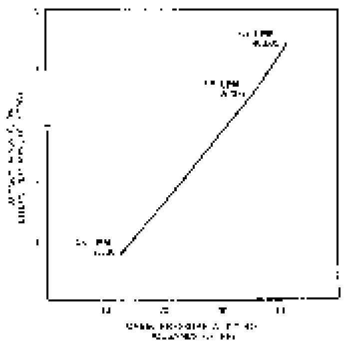
cell temperature may result when the battery is recharged (after previous complete discharge)— (1) At maximum regulated voltage or power; (2) During a flight of maximum duration; and (3) Under the most adverse cooling condition likely to occur in service. (c) Compliance with paragraph (b) of this section must be shown by tests unless experience with similar batteries and installations has shown that maintaining safe cell temperatures and pressures presents no problem. (d) No explosive or toxic gases emitted by any battery in normal operation, or as the result of any probable malfunction in the charging system or battery installation, may accumulate in hazardous quantities within the airplane. (e) No corrosive fluids or gases that may escape from the battery may damage surrounding structures or adjacent essential equipment. (f) Each nickel cadmium battery installation capable of being used to start an engine or auxiliary power unit must have provisions to prevent any hazardous effect on structure or essential systems that may be	cell temperature may result when the battery is recharged (after previous complete discharge): (1) At maximum regulated voltage or power; (2) During a flight of maximum duration; and (3) Under the most adverse cooling condition likely to occur in service. (c) Compliance with paragraph (b) of this section must be shown by tests unless experience with similar batteries and installations has shown that maintaining safe cell temperatures and pressures presents no problem. (d) No explosive or toxic gases emitted by any battery in normal operation, or as the result of any probable malfunction in the charging system or battery installation, may accumulate in hazardous quantities within the airplane. (e) No corrosive fluids or gases that may escape from the battery may damage surrounding structures or adjacent essential equipment. (f) Each nickel cadmium battery installation capable of being used to start an engine or auxiliary power unit must have provisions to prevent any hazardous effect on structure or essential systems that may be	navegação e controles de motor que requerem energia elétrica para seu funcionamento. Quando estes requisitos foram inicialmente adotados, os aviões que eram certificados de acordo com o RBAC 23 usavam basicamente sistemas mecânicos. Aviões com grande dependência de sistemas elétricos não eram vislumbrados. Anteriormente, ANAC e FAA requeriam 30 minutos de energia elétrica suficiente para um grupo reduzido de equipamentos e instrumentos. Os 30 minutos eram considerados adequados para alcançar condições VFR para continuar o voo para um aeroporto adequado e completar um pouso seguro em aviões tradicionalmente certificados de acordo com o RBAC 23. Cockpits eletrônicos integrados não eram vislumbrados durante o desenvolvimento inicial destes requisitos. Atualmente, novos aviões são certificados de acordo com o RBAC 23 com instrumentos totalmente elétricos,

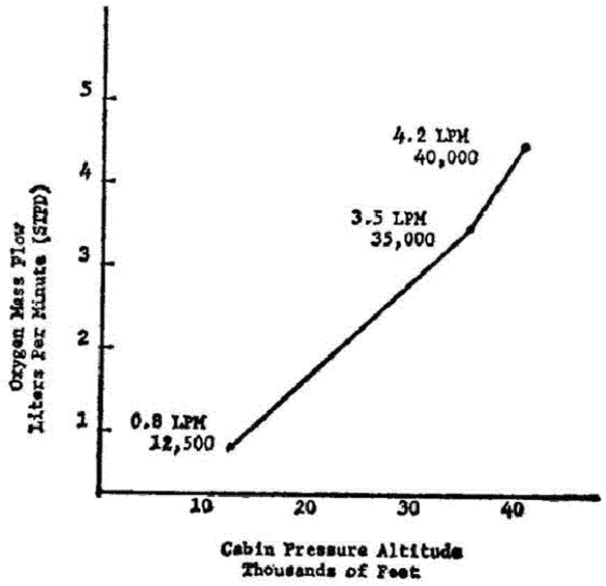
caused by the maximum amount of heat the battery can generate during a short circuit of the battery or of its individual cells. (g) Nickel cadmium battery installations capable of being used to start an engine or auxiliary power unit must have— (1) A system to control the charging rate of the battery automatically so as to prevent battery overheating; (2) A battery temperature sensing and over-temperature warning system with a means for disconnecting the battery from its charging source in the event of an over-temperature condition; or (3) A battery failure sensing and warning system with a means for disconnecting the battery from its charging source in the event of battery failure. (h) In the event of a complete loss of the primary electrical power generating system, the battery must be capable of providing at least 30 minutes of electrical power to those loads that are essential to continued safe flight and landing. The 30 minute time period includes the time needed for the pilots to recognize the loss of generated power and take appropriate load shedding action.	caused by the maximum amount of heat the battery can generate during a short circuit of the battery or of its individual cells. (g) Nickel cadmium battery installations capable of being used to start an engine or auxiliary power unit must have: (1) A system to control the charging rate of the battery automatically so as to prevent battery overheating; (2) A battery temperature sensing and over-temperature warning system with a means for disconnecting the battery from its charging source in the event of an over-temperature condition; or (3) A battery failure sensing and warning system with a means for disconnecting the battery from its charging source in the event of battery failure. (h)(1) In the event of a complete loss of the primary electrical power generating system, the battery must be capable of providing electrical power to those loads that are essential to continued safe flight and landing for:	incluindo os instrumentos *stand-by*. A dependência da energia elétrica aumentou a importância de garantir energia de bateria adequada até que o piloto possa descer e pousar em segurança. A maioria dos novos aviões a turbina, e alguns turbohélice e a pistão, opera em altas altitudes sob regras IFR. Nestas condições, 30 minutos podem não ser adequados uma vez que pode ser necessário mais tempo para descer da máxima altitude até encontrar condições meteorológicas visuais (VMC) e pousar, ou realizar uma aproximação por instrumentos. Por estas razões, a proposta de alteração estende o requisito de tempo de bateria de 60 minutos para aviões aprovados com uma altitude operacional máxima acima de 25.000 pés. Os 30 minutos foram mantidos para aviões com altitude operacional máxima de 25.000 pés ou menos.

	(i) At least 30 minutes for airplanes that are certificated with a maximum altitude of 25.000 feet or less; and (ii) At least 60 minutes for airplanes that are certificated with a maximum altitude over 25.000 feet. (2) The time period includes the time to recognize the loss of generated power and to take appropriate load shedding action.	
23.1431 Electronic equipment. (a) In showing compliance with §23.1309(b)(1) and (2) with respect to radio and electronic equipment and their installations, critical environmental conditions must be considered. (b) Radio and electronic equipment, controls, and wiring must be installed so that operation of any unit or system of units will not adversely affect the simultaneous operation of any other radio or electronic unit, or system of units, required by this chapter. (c) For those airplanes required to have more than one flightcrew member, or whose operation will require more than one flightcrew member, the cockpit must be evaluated to determine if the flightcrew members, when seated at their duty	**23.1431 Electronic equipment.** (a) In showing compliance with paragraphs 23.1309(a), (b), and (c) of this RBAC with respect to radio and electronic equipment and their installations, critical environmental conditions must be considered. (b) Radio and electronic equipment, controls, and wiring must be installed so that operation of any unit or system of units will not adversely affect the simultaneous operation of any other radio or electronic unit, or system of units, required by this RBAC. (c) For those airplanes required to have more than one flightcrew member, or whose operation will require more than one flightcrew member, the cockpit must be evaluated to determine if the	As alterações da seção 23.1431 são apenas editorias referentes às alterações dos parágrafos da seção 23.1309.

station, can converse without difficulty under the actual cockpit noise conditions when the airplane is being operated. If the airplane design includes provision for the use of communication headsets, the evaluation must also consider conditions where headsets are being used. If the evaluation shows conditions under which it will be difficult to converse, an intercommunication system must be provided. (d) If installed communication equipment includes transmitter "off-on" switching, that switching means must be designed to return from the "transmit" to the "off" position when it is released and ensure that the transmitter will return to the off (non transmitting) state. (e) If provisions for the use of communication headsets are provided, it must be demonstrated that the flightcrew members will receive all aural warnings under the actual cockpit noise conditions when the airplane is being operated when any headset is being used.	flightcrew members, when seated at their duty station, can converse without difficulty under the actual cockpit noise conditions when the airplane is being operated. If the airplane design includes provision for the use of communication headsets, the evaluation must also consider conditions where headsets are being used. If the evaluation shows conditions under which it will be difficult to converse, an intercommunication system must be provided. (d) If installed communication equipment includes transmitter "off-on" switching, that switching means must be designed to return from the "transmit" to the "off" position when it is released and ensure that the transmitter will return to the off (non transmitting) state. (e) If provisions for the use of communication headsets are provided, it must be demonstrated that the flightcrew members will receive all aural warnings under the actual cockpit noise conditions when the airplane is being operated when any headset is being used.	
23.1443 Minimum mass flow of supplemental oxygen. (a) If continuous flow oxygen equipment is installed, an applicant must show compliance with	**23.1443 Minimum mass flow of supplemental oxygen.**	As alterações feitas nesta seção abordam os sistemas de oxigênio para aviões que operam acima de 41.000 pés usando condições especiais derivadas do RBAC 25. Foram certificados recentemente

the requirements of either paragraphs (a)(1) and (a)(2) or paragraph (a)(3) of this section: (1) For each passenger, the minimum mass flow of supplemental oxygen required at various cabin pressure altitudes may not be less than the flow required to maintain, during inspiration and while using the oxygen equipment (including masks) provided, the following mean tracheal oxygen partial pressures: (i) At cabin pressure altitudes above 10,000 feet up to and including 18,500 feet, a mean tracheal oxygen partial pressure of 100 mm. Hg when breathing 15 liters per minute, Body Temperature, Pressure, Saturated (BTPS) and with a tidal volume of 700 cc. with a constant time interval between respirations. (ii) At cabin pressure altitudes above 18,500 feet up to and including 40,000 feet, a mean tracheal oxygen partial pressure of 83.8 mm. Hg when breathing 30 liters per minute, BTPS, and with a tidal volume of 1,100 cc. with a constant time interval between respirations. (2) For each flight crewmember, the minimum mass flow may not be less than the flow required to maintain, during inspiration, a mean tracheal oxygen partial pressure of 149 mm. Hg when breathing 15 liters per minute, BTPS, and with a maximum tidal	(a) If the airplane is to be certified above 41.000 feet (12.497 meters), a continuous flow oxygen system must be provided for each passenger. (b) If continuous flow oxygen equipment is installed, an applicant must show compliance with the requirements of either paragraphs (b)(1) and (b)(2) or paragraph (b)(3) of this section: (1) For each passenger, the minimum mass flow of supplemental oxygen required at various cabin pressure altitudes may not be less than the flow required to maintain, during inspiration and while using the oxygen equipment (including masks) provided, the following mean tracheal oxygen partial pressures: (i) At cabin pressure altitudes above 10.000 feet (3.048 meters) up to and including 18.500 feet (5.639 meters), a mean tracheal oxygen partial pressure of 100 mm Hg when breathing 15 liters per minute, Body Temperature, Pressure, Saturated (BTPS) and with a tidal volume of 700 cc with a constant time interval between respirations; (ii) At cabin pressure altitudes above 18.500 feet (5.639 meters) up to and including 40.000 feet (12.192 meters), a mean tracheal oxygen partial pressure of 83,8 mm Hg when breathing 30 liters per	diversos modelos de aviões de alto desempenho de acordo com o RBAC 23 que operam a altitudes mais altas que aquelas anteriormente vislumbradas para aviões desta categoria. As alterações propostas estabelecem requisitos para tais sistemas de oxigênio. Estas alterações eliminam a necessidade de emissão de condições especiais para aviões com altitudes operacionais máximas maiores que 41.000 pés.

volume of 700 cc. with a constant time interval between respirations. (3) The minimum mass flow of supplemental oxygen supplied for each user must be at a rate not less than that shown in the following figure for each altitude up to and including the maximum operating altitude of the airplane.  (b) If demand equipment is installed for use by flight crewmembers, the minimum mass flow of supplemental oxygen required for each flight crewmember may not be less than the flow required to maintain, during inspiration, a mean tracheal oxygen partial pressure of 122 mm. Hg up to and including a cabin pressure altitude of 35,000 feet, and 95 percent oxygen between cabin pressure altitudes of 35,000 and 40,000 feet, when breathing 20 liters per minute BTPS. In addition, there must be	minute, BTPS, and with a tidal volume of 1.100 cc with a constant time interval between respirations. (2) For each flight crewmember, the minimum mass flow may not be less than the flow required to maintain, during inspiration, a mean tracheal oxygen partial pressure of 149 mm Hg when breathing 15 liters per minute, BTPS, and with a maximum tidal volume of 700 cc with a constant time interval between respirations; (3) The minimum mass flow of supplemental oxygen supplied for each user must be at a rate not less than that shown in the following figure for each altitude up to and including the maximum operating altitude of the airplane.	

means to allow the crew to use undiluted oxygen at their discretion. (c) If first-aid oxygen equipment is installed, the minimum mass flow of oxygen to each user may not be less than 4 liters per minute, STPD. However, there may be a means to decrease this flow to not less than 2 liters per minute, STPD, at any cabin altitude. The quantity of oxygen required is based upon an average flow rate of 3 liters per minute per person for whom first-aid oxygen is required. (d) As used in this section: (1) BTPS means Body Temperature, and Pressure, Saturated (which is, 37 °C, and the ambient pressure to which the body is exposed, minus 47 mm. Hg, which is the tracheal pressure displaced by water vapor pressure when the breathed air becomes saturated with water vapor at 37 °C). (2) STPD means Standard, Temperature, and Pressure, Dry (which is, 0 °C at 760 mm. Hg with no water vapor).	Cabin Pressure Altitude Thousands of Feet.  FIGURE 1--Cabin Pressure Altitude (c) If demand equipment is installed for use by flight crewmembers, the minimum mass flow of supplemental oxygen required for each flight crewmember may not be less than the flow required to maintain, during inspiration, a mean tracheal oxygen partial pressure of 122 mm Hg up to and including a cabin pressure altitude of 35.000 feet (10.668 meters), and 95 percent oxygen between cabin pressure altitudes of 35.000 and 40.000 feet	

	(10.668 and 12.192 meters), when breathing 20 liters per minute BTPS. In addition, there must be means to allow the flight crew to use undiluted oxygen at their discretion. (d) If first-aid oxygen equipment is installed, the minimum mass flow of oxygen to each user may not be less than 4 liters per minute, STPD. However, there may be a means to decrease this flow to not less than 2 liters per minute, STPD, at any cabin altitude. The quantity of oxygen required is based upon an average flow rate of 3 liters per minute per person for whom first-aid oxygen is required. (e) As used in this section: (1) BTPS means Body Temperature, and Pressure, Saturated (which is 37 °C, and the ambient pressure to which the body is exposed, minus 47 mm Hg, which is the tracheal pressure displaced by water vapor pressure when the breathed air becomes saturated with water vapor at 37 °C); (2) STPD means Standard, Temperature, and Pressure, Dry (which is 0 °C at 760 mm Hg with no water vapor).	
23.1445 Oxygen distribution system. (a) Except for flexible lines from oxygen outlets to the dispensing units, or where shown to be otherwise	**23.1445 Oxygen distribution system.** (a) Except for flexible lines from oxygen outlets to the dispensing units, or where shown to be otherwise	A alteração visa compatibilizar esta seção com mudanças feitas em outras seções, como a 23.1443, para permitir um tratamento

suitable to the installation, nonmetallic tubing must not be used for any oxygen line that is normally pressurized during flight. (b) Nonmetallic oxygen distribution lines must not be routed where they may be subjected to elevated temperatures, electrical arcing, and released flammable fluids that might result from any probable failure.	suitable to the installation, nonmetallic tubing must not be used for any oxygen line that is normally pressurized during flight. (b) Nonmetallic oxygen distribution lines must not be routed where they may be subjected to elevated temperatures, electrical arcing, and released flammable fluids that might result from any probable failure. (c) If the flight crew and passengers share a common source of oxygen, a means to separately reserve the minimum supply required by the flight crew must be provided.	adequado de aviões que operam acima de 40.000 pés sem necessidade de emissão de condições especiais.
23.1447 Equipment standards for oxygen dispensing units. If oxygen dispensing units are installed, the following apply: (a) There must be an individual dispensing unit for each occupant for whom supplemental oxygen is to be supplied. Each dispensing unit must: (1) Provide for effective utilization of the oxygen being delivered to the unit. (2) Be capable of being readily placed into position on the face of the user.	**23.1447 Equipment standards for oxygen dispensing units.** If oxygen dispensing units are installed, the following apply: (a) There must be an individual dispensing unit for each occupant for whom supplemental oxygen is to be supplied. Each dispensing unit must: (1) Provide for effective utilization of the oxygen being delivered to the unit; (2) Be capable of being readily placed into position on the face of the user;	A alteração visa compatibilizar esta seção com mudanças feitas em outras seções, como a 23.1443, para permitir um tratamento adequado de aviões que operam acima de 40.000 pés sem necessidade de emissão de condições especiais.

(3) Be equipped with a suitable means to retain the unit in position on the face. (4) If radio equipment is installed, the flightcrew oxygen dispensing units must be designed to allow the use of that equipment and to allow communication with any other required crew member while at their assigned duty station. (b) If certification for operation up to and including 18,000 feet (MSL) is requested, each oxygen dispensing unit must: (1) Cover the nose and mouth of the user; or (2) Be a nasal cannula, in which case one oxygen dispensing unit covering both the nose and mouth of the user must be available. In addition, each nasal cannula or its connecting tubing must have permanently affixed— (i) A visible warning against smoking while in use; (ii) An illustration of the correct method of donning; and (iii) A visible warning against use with nasal obstructions or head colds with resultant nasal congestion.	(3) Be equipped with a suitable means to retain the unit in position on the face; (4) If radio equipment is installed, the flightcrew oxygen dispensing units must be designed to allow the use of that equipment and to allow communication with any other required crew member while at their assigned duty station. (b) If certification for operation up to and including 18,000 feet (5.486 meters) (MSL) is requested, each oxygen dispensing unit must: (1) Cover the nose and mouth of the user; or (2) Be a nasal cannula, in which case one oxygen dispensing unit covering both the nose and mouth of the user must be available. In addition, each nasal cannula or its connecting tubing must have permanently affixed: (i) A visible warning against smoking while in use; (ii) An illustration of the correct method of donning; and (iii) A visible warning against use with nasal obstructions or head colds with resultant nasal congestion.	

(c) If certification for operation above 18,000 feet (MSL) is requested, each oxygen dispensing unit must cover the nose and mouth of the user. (d) For a pressurized airplane designed to operate at flight altitudes above 25,000 feet (MSL), the dispensing units must meet the following: (1) The dispensing units for passengers must be connected to an oxygen supply terminal and be immediately available to each occupant wherever seated. (2) The dispensing units for crewmembers must be automatically presented to each crewmember before the cabin pressure altitude exceeds 15,000 feet, or the units must be of the quick-donning type, connected to an oxygen supply terminal that is immediately available to crewmembers at their station. (e) If certification for operation above 30,000 feet is requested, the dispensing units for passengers must be automatically presented to each occupant before the cabin pressure altitude exceeds 15,000 feet. (f) If an automatic dispensing unit (hose and mask, or other unit) system is installed, the crew must be provided with a manual means to make the	(c) If certification for operation above 18.000 feet (5.486 meters) (MSL) is requested, each oxygen dispensing unit must cover the nose and mouth of the user. (d) For a pressurized airplane designed to operate at flight altitudes above 25.000 feet (7.620 meters) (MSL), the dispensing units must meet the following: (1) The dispensing units for passengers must be connected to an oxygen supply terminal and be immediately available to each occupant wherever seated; (2) The dispensing units for crewmembers must be automatically presented to each crewmember before the cabin pressure altitude exceeds 15.000 feet (4.572 meters), or the units must be of the quick-donning type, connected to an oxygen supply terminal that is immediately available to crewmembers at their duty station. (e) If certification for operation above 30.000 feet (9.144 meters) is requested, the dispensing units for passengers must be automatically presented to each occupant before the cabin pressure altitude exceeds 15.000 feet (4.572 meters).	

dispensing units immediately available in the event of failure of the automatic system.	(f) If an automatic dispensing unit (hose and mask, or other unit) system is installed, the crew must be provided with a manual means to make the dispensing units immediately available in the event of failure of the automatic system. (g) If the airplane is to be certified for operation above 41.000 feet (12.497 meters), a quickdonning oxygen mask system, with a pressure demand, mask mounted regulator must be provided for the flight crew. This dispensing unit must be immediately available to the flight crew when seated at their station and installed so that it: (1) Can be placed on the face from its ready position, properly secured, sealed, and supplying oxygen upon demand, with one hand, within five seconds and without disturbing eyeglasses or causing delay in proceeding with emergency duties; and (2) Allows, while in place, the performance of normal communication functions.	
23.1505 Airspeed limitations. (a) The never-exceed speed VNE must be established so that it is— (1) Not less than 0.9 times the minimum value of VD allowed under §23.335; and	**23.1505 Airspeed limitations.** (a) The never-exceed speed VNE must be established so that it is: (1) Not less than 0,9 times the minimum value of VD allowed under section 23.335; and	Foram propostas alterações para as limitações de velocidades do ar no parágrafo 23.1505(v) que incluem *V-speeds* específicas para jatos. Esta proposta também baseia limites de velocidade do ar em uma combinação de velocidades de mergulhos

(2) Not more than the lesser of— (i) 0.9 VD established under §23.335; or (ii) 0.9 times the maximum speed shown under §23.251. (b) The maximum structural cruising speed VNO must be established so that it is— (1) Not less than the minimum value of VC allowed under §23.335; and (2) Not more than the lesser of— (i) VC established under §23.335; or (ii) 0.89 VNE established under paragraph (a) of this section. (c) Paragraphs (a) and (b) of this section do not apply to turbine airplanes or to airplanes for which a design diving speed VD/MD is established under §23.335(b)(4). For those airplanes, a maximum operating limit speed (VMO/MMO-airspeed or Mach number, whichever is critical at a particular altitude) must be established as a speed that may not be deliberately exceeded in any regime of flight (climb, cruise, or descent) unless a higher speed is authorized for flight test or pilot training operations.	(2) Not more than the lesser of: (i) 0,9 VD established under section 23.335; or (ii) 0,9 times the maximum speed shown under section 23.251. (b) The maximum structural cruising speed VNO must be established so that it is: (1) Not less than the minimum value of VC allowed under section 23.335; and (2) Not more than the lesser of: (i) VC established under section 23.335; or (ii) 0,89 VNE established under paragraph (a) of this section. (c)(1) Paragraphs (a) and (b) of this section do not apply to turbine airplanes or to airplanes for which a design diving speed VD/MD is established under paragraph 23.335(b)(4). For those airplanes, a maximum operating limit speed (VMO/MMO airspeed or Mach number, whichever is critical at a particular altitude) must be established as a speed that may not be deliberately exceeded in any regime of flight (climb, cruise, or descent) unless a higher	analíticas (VD/MD) e demonstradas (VDF/MDF) para jatos.

VMO/MMO must be established so that it is not greater than the design cruising speed VC/MC and so that it is sufficiently below VD/MD and the maximum speed shown under §23.251 to make it highly improbable that the latter speeds will be inadvertently exceeded in operations. The speed margin between VMO/MMO and VD/MD or the maximum speed shown under §23.251 may not be less than the speed margin established between VC /MC and VD/MD under §23.335(b), or the speed margin found necessary in the flight test conducted under §23.253.	speed is authorized for flight test or pilot training operations. (2) VMO/MMO must be established so that it is not greater than the design cruising speed VC/MC and so that it is sufficiently below VD/MD, or VDF/MDF for jets, and the maximum speed shown under section 23.251 to make it highly improbable that the latter speeds will be inadvertently exceeded in operations. (3) The speed margin between VMO/MMO and VD/MD, or VDF/MDF for jets, may not be less than that determined under paragraph 23.335(b), or the speed margin found necessary in the flight tests conducted under section 23.253.	
23.1527 Maximum operating altitude. (a) The maximum altitude up to which operation is allowed, as limited by flight, structural, powerplant, functional or equipment characteristics, must be established. (b) A maximum operating altitude limitation of not more than 25,000 feet must be established for pressurized airplanes unless compliance with §23.775(e) is shown.	**23.1527 Maximum operating altitude.** (a) The maximum altitude up to which operation is allowed, as limited by flight, structural, powerplant, functional or equipment characteristics, must be established. (b) A maximum operating altitude limitation of not more than 25.000 feet (7.620 m) must be established for pressurized airplanes unless compliance with paragraph 23.775(d) is shown.	A alteração é meramente editorial e corrige uma referência ao parágrafo 23.775(d).
23.1545 Airspeed indicator.	**23.1545 Airspeed indicator.**	Alteração editorial para substituir "*aircraft*" por "*airplanes*". Além disso, a aplicabilidade foi alterada

(a) Each airspeed indicator must be marked as specified in paragraph (b) of this section, with the marks located at the corresponding indicated airspeeds. (b) The following markings must be made: (1) For the never-exceed speed V NE,a radial red line. (2) For the caution range, a yellow arc extending from the red line specified in paragraph (b)(1) of this section to the upper limit of the green arc specified in paragraph (b)(3) of this section. (3) For the normal operating range, a green arc with the lower limit at V S1with maximum weight and with landing gear and wing flaps retracted, and the upper limit at the maximum structural cruising speed VNO established under §23.1505(b). (4) For the flap operating range, a white arc with the lower limit at VS0 at the maximum weight, and the upper limit at the flaps-extended speed VFE established under §23.1511. (5) For reciprocating multiengine-powered airplanes of 6,000 pounds or less maximum weight, for the speed at which compliance has been shown with	(a) Each airspeed indicator must be marked as specified in paragraph (b) of this section, with the marks located at the corresponding indicated airspeeds. (b) The following markings must be made: (1) For the never-exceed speed VNE,a radial red line. (2) For the caution range, a yellow arc extending from the red line specified in paragraph (b)(1) of this section to the upper limit of the green arc specified in paragraph (b)(3) of this section. (3) For the normal operating range, a green arc with the lower limit at VS1 with maximum weight and with landing gear and wing flaps retracted, and the upper limit at the maximum structural cruising speed VNO established under paragraph 23.1505(b). (4) For the flap operating range, a white arc with the lower limit at VS0 at the maximum weight, and the upper limit at the flaps-extended speed VFE established under section 23.1511. (5) For reciprocating multiengine-powered airplanes of 6.000 pounds (2.722 kg) or less maximum weight, for the speed at which compliance has been shown	devido a alteração feita no parágrafo 23.1505(c).

§23.69(b) relating to rate of climb at maximum weight and at sea level, a blue radial line. (6) For reciprocating multiengine-powered airplanes of 6,000 pounds or less maximum weight, for the maximum value of minimum control speed, V_{MC}, (one-engine-inoperative) determined under §23.149(b), a red radial line. (c) If VNE or VNO vary with altitude, there must be means to indicate to the pilot the appropriate limitations throughout the operating altitude range. (d) Paragraphs (b)(1) through (b)(3) and paragraph (c) of this section do not apply to aircraft for which a maximum operating speed VMO/MMO is established under §23.1505(c). For those aircraft there must either be a maximum allowable airspeed indication showing the variation of VMO/MMO with altitude or compressibility limitations (as appropriate), or a radial red line marking for VMO/ MMO must be made at lowest value of VMO/MMO established for any altitude up to the maximum operating altitude for the airplane.	with paragraph 23.69(b) relating to rate of climb at maximum weight and at sea level, a blue radial line. (6) For reciprocating multiengine-powered airplanes of 6.000 pounds (2.722 kg) or less maximum weight, for the maximum value of minimum control speed, VMC, (one-engine-inoperative) determined under paragraph 23.149(b), a red radial line. (c) If VNE or VNO vary with altitude, there must be means to indicate to the pilot the appropriate limitations throughout the operating altitude range. (d) Paragraphs (b)(1) through (b)(3) and paragraph (c) of this section do not apply to airplanes for which a maximum operating speed VMO/MMO is established under paragraph 23.1505(c). For those airplanes, there must either be a maximum allowable airspeed indication showing the variation of VMO/MMO with altitude or compressibility limitations (as appropriate), or a radial red line marking for VMO/MMO must be made at lowest value of VMO/MMO established for any altitude up to the maximum operating altitude for the airplane.	
23.1555 Control markings. (a) Each cockpit control, other than primary flight controls and simple push button type starter	**23.1555 Control markings.** (a) Each cockpit control, other than primary flight controls and simple push button type starter	O parágrafo 23.1555(d)(3) foi modificado para requerer que sistemas de combustível com um sistema de indicação de quantidade de combustível calibrada cumpram o parágrafo

switches, must be plainly marked as to its function and method of operation. (b) Each secondary control must be suitably marked. (c) For powerplant fuel controls— (1) Each fuel tank selector control must be marked to indicate the position corresponding to each tank and to each existing cross feed position; (2) If safe operation requires the use of any tanks in a specific sequence, that sequence must be marked on or near the selector for those tanks; (3) The conditions under which the full amount of usable fuel in any restricted usage fuel tank can safely be used must be stated on a placard adjacent to the selector valve for that tank; and (4) Each valve control for any engine of a multiengine airplane must be marked to indicate the position corresponding to each engine controlled. (d) Usable fuel capacity must be marked as follows: (1) For fuel systems having no selector controls, the usable fuel capacity of the system must be indicated at the fuel quantity indicator.	switches, must be plainly marked as to its function and method of operation. (b) Each secondary control must be suitably marked. (c) For powerplant fuel controls: (1) Each fuel tank selector control must be marked to indicate the position corresponding to each tank and to each existing cross feed position; (2) If safe operation requires the use of any tanks in a specific sequence, that sequence must be marked on or near the selector for those tanks; (3) The conditions under which the full amount of usable fuel in any restricted usage fuel tank can safely be used must be stated on a placard adjacent to the selector valve for that tank; and (4) Each valve control for any engine of a multiengine airplane must be marked to indicate the position corresponding to each engine controlled. (d) Usable fuel capacity must be marked as follows: (1) For fuel systems having no selector controls, the usable fuel capacity of the system must be indicated at the fuel quantity indicator.	23.1337(b)(1) ao mesmo tempo que remove os requisitos de placares atuais. A maioria dos aviões modernos à turbina tem um sistema de indicação de quantidade de combustível calibrada que é compensado pela densidade e indica com acurácia a quantidade real de combustível utilizável disponível em cada tanque. Quando usando estes tipos de sistemas de indicação de condição, consideram-se redundantes os placares antes requeridos pelos parágrafos 23.1555(d)(1) e (2). Estes placares ou marcações indicam a máxima capacidade do tanque. Por estas razões, foi proposta a remoção do requisito de placares para estes sistemas de indicação de quantidade de combustível.

(2) For fuel systems having selector controls, the usable fuel capacity available at each selector control position must be indicated near the selector control. (e) For accessory, auxiliary, and emergency controls— (1) If retractable landing gear is used, the indicator required by §23.729 must be marked so that the pilot can, at any time, ascertain that the wheels are secured in the extreme positions; and (2) Each emergency control must be red and must be marked as to method of operation. No control other than an emergency control, or a control that serves an emergency function in addition to its other functions, shall be this color.	(2) For fuel systems having selector controls, the usable fuel capacity available at each selector control position must be indicated near the selector control. (3) For fuel systems having a calibrated fuel quantity indication system complying with paragraph 23.1337(b)(1) and accurately displaying the actual quantity of usable fuel in each selectable tank, no fuel capacity placards outside of the fuel quantity indicator are required. (e) For accessory, auxiliary, and emergency controls: (1) If retractable landing gear is used, the indicator required by section 23.729 of this RBAC must be marked so that the pilot can, at any time, ascertain that the wheels are secured in the extreme positions; and (2) Each emergency control must be red and must be marked as to method of operation. No control other than an emergency control, or a control that serves an emergency function in addition to its other functions, shall be this color.	
23.1559 Operating limitations placard. (a) There must be a placard in clear view of the pilot stating—	**23.1559 Operating limitations placard.** (a) There must be a placard in clear view of the pilot stating:	Os requisitos contidos na seção 23.1559 são referentes a placares para planejamento pré-voo e este placar não é normalmente verificado durante o voo. Estando o placar na visão direta do piloto e

(1) That the airplane must be operated in accordance with the Airplane Flight Manual; and (2) The certification category of the airplane to which the placards apply. (b) For airplanes certificated in more than one category, there must be a placard in clear view of the pilot stating that other limitations are contained in the Airplane Flight Manual. (c) There must be a placard in clear view of the pilot that specifies the kind of operations to which the operation of the airplane is limited or from which it is prohibited under §23.1525.	(1) That the airplane must be operated in accordance with the Airplane Flight Manual; and (2) The certification category of the airplane to which the placards apply. (b) For airplanes certificated in more than one category, there must be a placard in clear view of the pilot stating that other limitations are contained in the Airplane Flight Manual. (c) There must be a placard in clear view of the pilot that specifies the kind of operations to which the operation of the airplane is limited or from which it is prohibited under section 23.1525. (d) The placard(s) required by this section need not be lighted.	o piloto sendo capaz de vê-lo a noite usando uma lanterna ou outros meios, a intenção da regra está satisfeita. Este requisito tem sido objeto de dúvidas e confusão e esta proposta esclarece, através da introdução do novo parágrafo 23.1559(d) que estes placares não precisam ser iluminados.
23.1563 Airspeed placards. There must be an airspeed placard in clear view of the pilot and as close as practicable to the airspeed indicator. This placard must list— (a) The operating maneuvering speed, V_O; and (b) The maximum landing gear operating speed V LO.	**23.1563 Airspeed placard.** There must be an airspeed placard in clear view of the pilot and as close as practicable to the airspeed indicator. This placard must list: (a) The operating maneuvering speed, VO; and (b) The maximum landing gear operating speed VLO.	A proposta esclarece os requisitos da seção 23.1563 para iluminação noturna de placares. A velocidade de manobra é aplicável para operações que possam envolver grandes *inputs* intencionais de controle e não é portanto aplicável para operações noturnas normais. A maioria dos aviões modernos tem meios para apresentar a velocidade de extensão do trem de pouso no indicador de velocidade

(c) For reciprocating multiengine-powered airplanes of more than 6,000 pounds maximum weight, and turbine engine-powered airplanes, the maximum value of the minimum control speed, V_{MC}(one-engine-inoperative) determined under §23.149(b).	(c) For reciprocating multiengine-powered airplanes of more than 6.000 pounds (2.722 kg) maximum weight, and turbine engine-powered airplanes, the maximum value of the minimum control speed, VMC (one-engine-inoperative) determined under paragraph 23.149(b). (d) The airspeed placard(s) required by this section need not be lighted if the landing gear operating speed is indicated on the airspeed indicator or other lighted area such as the landing gear control and the airspeed indicator has features such as low speed awareness that provide ample warning prior to VMC.	do ar ou em uma porção iluminada do controle do trem de pouso. Eles possuem os meios para que o indicador de velocidade de ar indique um alerta de baixa velocidade ou outra informação de referência de velocidade do ar para garantir a segurança acima de VMC. A iluminação deste placar é desnecessária para a segurança de voo e fornece outra fonte de reflexos luminosos indesejáveis no cockpit.
23.1567 Flight maneuver placard. (a) For normal category airplanes, there must be a placard in front of and in clear view of the pilot stating: "No acrobatic maneuvers, including spins, approved." (b) For utility category airplanes, there must be— (1) A placard in clear view of the pilot stating: "Acrobatic maneuvers are limited to the following ___________;" (list approved maneuvers and the recommended entry speed for each); and (2) For those airplanes that do not meet the spin requirements for acrobatic category airplanes, an	**23.1567 Flight maneuver placard.** (a) For normal category airplanes, there must be a placard in front of and in clear view of the pilot stating: "No acrobatic maneuvers, including spins, approved." (b) For utility category airplanes, there must be: (1) A placard in clear view of the pilot stating: "Acrobatic maneuvers are limited to the following ___________;" (list approved maneuvers and the recommended entry speed for each); and (2) For those airplanes that do not meet the spin requirements for acrobatic category airplanes, an	Os requisitos contidos na seção 23.1567 são relacionados com informações de manobras e giros acrobáticos relacionados com o planejamento pré-voo. Uma vez que estas manobras não são normalmente conduzidas em operações noturnas, a informação do placar não é requerida para voos noturnos. Estando o placar na visão direta do piloto e o piloto sendo capaz de vê-lo a noite usando uma lanterna ou outros meios, a intenção da regra está satisfeita. A introdução do novo parágrafo 23.1567(e) esclarece

additional placard in clear view of the pilot stating: "Spins Prohibited." (c) For acrobatic category airplanes, there must be a placard in clear view of the pilot listing the approved acrobatic maneuvers and the recommended entry airspeed for each. If inverted flight maneuvers are not approved, the placard must bear a notation to this effect. (d) For acrobatic category airplanes and utility category airplanes approved for spinning, there must be a placard in clear view of the pilot— (1) Listing the control actions for recovery from spinning maneuvers; and (2) Stating that recovery must be initiated when spiral characteristics appear, or after not more than six turns or not more than any greater number of turns for which the airplane has been certificated.	additional placard in clear view of the pilot stating: "Spins Prohibited." (c) For acrobatic category airplanes, there must be a placard in clear view of the pilot listing the approved acrobatic maneuvers and the recommended entry airspeed for each. If inverted flight maneuvers are not approved, the placard must bear a notation to this effect. (d) For acrobatic category airplanes and utility category airplanes approved for spinning, there must be a placard in clear view of the pilot: (1) Listing the control actions for recovery from spinning maneuvers; and (2) Stating that recovery must be initiated when spiral characteristics appear, or after not more than six turns or not more than any greater number of turns for which the airplane has been certificated. (e) The placard(s) required by this section need not be lighted.	que estes placares não precisam ser iluminados.
23.1583 Operating limitations. The Airplane Flight Manual must contain operating limitations determined under this part 23, including the following—	**23.1583 Operating limitations.** The Airplane Flight Manual must contain operating limitations determined under this RBAC 23, including the following:	As alterações introduzidas tornam aplicáveis os critérios da categoria transporte regional para todos os jatos pesando mais que 6.000 libras. Estas alterações garantem consistência com os requisitos de

(a) Airspeed limitations. The following information must be furnished: (1) Information necessary for the marking of the airspeed limits on the indicator as required in §23.1545, and the significance of each of those limits and of the color coding used on the indicator. (2) The speeds V_{MC}, V_{O}, V_{LE}, and V_{LO}, if established, and their significance. (3) In addition, for turbine powered commuter category airplanes— (i) The maximum operating limit speed, $V_{MO}/M_{MO}$and a statement that this speed must not be deliberately exceeded in any regime of flight (climb, cruise or descent) unless a higher speed is authorized for flight test or pilot training; (ii) If an airspeed limitation is based upon compressibility effects, a statement to this effect and information as to any symptoms, the probable behavior of the airplane, and the recommended recovery procedures; and (iii) The airspeed limits must be shown in terms of V_{MO}/M_{MO}instead of $V_{NO}$and V_{NE}.	(a) Airspeed limitations. The following information must be furnished: (1) Information necessary for the marking of the airspeed limits on the indicator as required in section 23.1545, and the significance of each of those limits and of the color coding used on the indicator. (2) The speeds VMC, VO, VLE, and VLO, if established, and their significance. (3) In addition, for turbine powered commuter category airplanes: (i) The maximum operating limit speed, VMO/MMO and a statement that this speed must not be deliberately exceeded in any regime of flight (climb, cruise or descent) unless a higher speed is authorized for flight test or pilot training; (ii) If an airspeed limitation is based upon compressibility effects, a statement to this effect and information as to any symptoms, the probable behavior of the airplane, and the recommended recovery procedures; and (iii) The airspeed limits must be shown in terms of VMO/MMO instead of VNO and VNE.	desempenho propostos na Subparte B.

(b) Powerplant limitations. The following information must be furnished: (1) Limitations required by §23.1521. (2) Explanation of the limitations, when appropriate. (3) Information necessary for marking the instruments required by §23.1549 through §23.1553. (c) Weight. The airplane flight manual must include— (1) The maximum weight; and (2) The maximum landing weight, if the design landing weight selected by the applicant is less than the maximum weight. (3) For normal, utility, and acrobatic category reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight and for turbine engine-powered airplanes in the normal, utility, and acrobatic category, performance operating limitations as follows— (i) The maximum takeoff weight for each airport altitude and ambient temperature within the range selected by the applicant at which the airplane	(b) Powerplant limitations. The following information must be furnished: (1) Limitations required by section 23.1521. (2) Explanation of the limitations, when appropriate. (3) Information necessary for marking the instruments required by sections 23.1549 through 23.1553. (c) Weight. The airplane flight manual must include: (1) The maximum weight; and (2) The maximum landing weight, if the design landing weight selected by the applicant is less than the maximum weight. (3) For each of the following normal, utility, and acrobatic category airplanes: (1) reciprocating engine-powered airplanes of more than 6.000 pounds (2.722 kg) maximum weight, (2) single-engine turbines, and (3) multiengine turbines of 6.000 pounds (2.722 kg) or less maximum weight, performance operating limitations as follows: (i) The maximum takeoff weight for each airport altitude and ambient temperature within the range selected by the applicant at which the airplane	

complies with the climb requirements of §23.63(c)(1). (ii) The maximum landing weight for each airport altitude and ambient temperature within the range selected by the applicant at which the airplane complies with the climb requirements of §23.63(c)(2). (4) For commuter category airplanes, the maximum takeoff weight for each airport altitude and ambient temperature within the range selected by the applicant at which— (i) The airplane complies with the climb requirements of §23.63(d)(1); and (ii) The accelerate-stop distance determined under §23.55 is equal to the available runway length plus the length of any stopway, if utilized; and either: (iii) The takeoff distance determined under §23.59(a) is equal to the available runway length; or (iv) At the option of the applicant, the takeoff distance determined under §23.59(a) is equal to the available runway length plus the length of any clearway and the takeoff run determined under §23.59(b) is equal to the available runway length.	complies with the climb requirements of paragraphs 23.63(c)(1)(i), (c)(2)(i), or (c)(3)(i), as appropriate. (ii) The maximum landing weight for each airport altitude and ambient temperature within the range selected by the applicant at which the airplane complies with the climb requirements of paragraphs 23.63(c)(1)(ii), (c)(2)(ii), or (c)(3)(ii), as appropriate. (4) For normal, utility, and acrobatic category multiengine turbines over 6.000 pounds (2.722 kg) and commuter category airplanes, the maximum takeoff weight for each airport altitude and ambient temperature within the range selected by the applicant at which: (i) The airplane complies with the climb requirements of paragraphs 23.63(d)(1)(i), or (d)(2)(i), as appropriate; and (ii) The accelerate-stop distance determined under section 23.55 is equal to the available runway length plus the length of any stopway, if utilized; and either: (iii) The takeoff distance determined under paragraph 23.59(a) is equal to the available runway length; or (iv) At the option of the applicant, the takeoff distance determined under paragraph 23.59(a) is	

(5) For commuter category airplanes, the maximum landing weight for each airport altitude within the range selected by the applicant at which— (i) The airplane complies with the climb requirements of §23.63(d)(2) for ambient temperatures within the range selected by the applicant; and (ii) The landing distance determined under §23.75 for standard temperatures is equal to the available runway length. (6) The maximum zero wing fuel weight, where relevant, as established in accordance with §23.343. (d) Center of gravity. The established center of gravity limits. (e) Maneuvers. The following authorized maneuvers, appropriate airspeed limitations, and unauthorized maneuvers, as prescribed in this section. (1) Normal category airplanes. No acrobatic maneuvers, including spins, are authorized. (2) Utility category airplanes. A list of authorized maneuvers demonstrated in the type flight tests, together with recommended entry speeds and any	equal to the available runway length plus the length of any clearway and the takeoff run determined under paragraph 23.59(b) is equal to the available runway length. (5) For normal, utility, and acrobatic category multiengine turbines over 6.000 pounds (2.722 kg) and commuter category airplanes, the maximum landing weight for each airport altitude within the range selected by the applicant at which: (i) The airplane complies with the climb requirements of paragraphs 23.63(d)(1)(ii) or (d)(2)(ii), as appropriate for ambient temperatures within the range selected by the applicant; and (ii) The landing distance determined under section 23.75 for standard temperatures is equal to the available runway length. (6) The maximum zero wing fuel weight, where relevant, as established in accordance with section 23.343. (d) Center of gravity. The established center of gravity limits. (e) Maneuvers. The following authorized maneuvers, appropriate airspeed limitations, and	

other associated limitations. No other maneuver is authorized. (3) Acrobatic category airplanes. A list of approved flight maneuvers demonstrated in the type flight tests, together with recommended entry speeds and any other associated limitations. (4) Acrobatic category airplanes and utility category airplanes approved for spinning. Spin recovery procedure established to show compliance with §23.221(c). (5) Commuter category airplanes. Maneuvers are limited to any maneuver incident to normal flying, stalls, (except whip stalls) and steep turns in which the angle of bank is not more than 60 degrees. (f) Maneuver load factor. The positive limit load factors in g's, and, in addition, the negative limit load factor for acrobatic category airplanes. (g) Minimum flight crew. The number and functions of the minimum flight crew determined under §23.1523. (h) Kinds of operation. A list of the kinds of operation to which the airplane is limited or from which it is prohibited under §23.1525, and also a list of installed equipment that affects any operating	unauthorized maneuvers, as prescribed in this section. (1) Normal category airplanes. No acrobatic maneuvers, including spins, are authorized. (2) Utility category airplanes. A list of authorized maneuvers demonstrated in the type flight tests, together with recommended entry speeds and any other associated limitations. No other maneuver is authorized. (3) Acrobatic category airplanes. A list of approved flight maneuvers demonstrated in the type flight tests, together with recommended entry speeds and any other associated limitations. (4) Acrobatic category airplanes and utility category airplanes approved for spinning. Spin recovery procedure established to show compliance with paragraph 23.221(c). (5) Commuter category airplanes. Maneuvers are limited to any maneuver incident to normal flying, stalls, (except whip stalls) and steep turns in which the angle of bank is not more than 60 degrees.	

limitation and identification as to the equipment's required operational status for the kinds of operation for which approval has been given. (i) Maximum operating altitude. The maximum altitude established under §23.1527. (j) Maximum passenger seating configuration. The maximum passenger seating configuration. (k) Allowable lateral fuel loading. The maximum allowable lateral fuel loading differential, if less than the maximum possible. (l) Baggage and cargo loading. The following information for each baggage and cargo compartment or zone— (1) The maximum allowable load; and (2) The maximum intensity of loading. (m) Systems. Any limitations on the use of airplane systems and equipment. (n) Ambient temperatures. Where appropriate, maximum and minimum ambient air temperatures for operation.	(f) Maneuver load factor. The positive limit load factors in g's, and, in addition, the negative limit load factor for acrobatic category airplanes. (g) Minimum flight crew. The number and functions of the minimum flight crew determined under section 23.1523. (h) Kinds of operation. A list of the kinds of operation to which the airplane is limited or from which it is prohibited under section 23.1525, and also a list of installed equipment that affects any operating limitation and identification as to the equipment's required operational status for the kinds of operation for which approval has been given. (i) Maximum operating altitude. The maximum altitude established under section 23.1527. (j) Maximum passenger seating configuration. The maximum passenger seating configuration. (k) Allowable lateral fuel loading. The maximum allowable lateral fuel loading differential, if less than the maximum possible. (l) Baggage and cargo loading. The following information for each baggage and cargo compartment or zone:	

(o) Smoking. Any restrictions on smoking in the airplane. (p) Types of surface. A statement of the types of surface on which operations may be conducted. (See §23.45(g) and §23.1587 (a)(4), (c)(2), and (d)(4)).	(1) The maximum allowable load; and (2) The maximum intensity of loading. (m) Systems. Any limitations on the use of airplane systems and equipment. (n) Ambient temperatures. Where appropriate, maximum and minimum ambient air temperatures for operation. (o) Smoking. Any restrictions on smoking in the airplane. (p) Types of surface. A statement of the types of surface on which operations may be conducted. (See paragraphs 23.45(g) and 23.1587 (a)(4), (c)(2), and (d)(4)).	
23.1585 Operating procedures. (a) For all airplanes, information concerning normal, abnormal (if applicable), and emergency procedures and other pertinent information necessary for safe operation and the achievement of the scheduled performance must be furnished, including— (1) An explanation of significant or unusual flight or ground handling characteristics;	**23.1585 Operating procedures.** (a) For all airplanes, information concerning normal, abnormal (if applicable), and emergency procedures and other pertinent information necessary for safe operation and the achievement of the scheduled performance must be furnished, including: (1) An explanation of significant or unusual flight or ground handling characteristics;	As alterações introduzidas tornam aplicáveis os critérios da categoria transporte regional para todos os jatos pesando mais que 6.000 libras. Estas alterações garantem consistência com os requisitos de desempenho propostos na Subparte B.

(2) The maximum demonstrated values of crosswind for takeoff and landing, and procedures and information pertinent to operations in crosswinds; (3) A recommended speed for flight in rough air. This speed must be chosen to protect against the occurrence, as a result of gusts, of structural damage to the airplane and loss of control (for example, stalling); (4) Procedures for restarting any turbine engine in flight, including the effects of altitude; and (5) Procedures, speeds, and configuration(s) for making a normal approach and landing, in accordance with §§23.73 and 23.75, and a transition to the balked landing condition. (6) For seaplanes and amphibians, water handling procedures and the demonstrated wave height. (b) In addition to paragraph (a) of this section, for all single-engine airplanes, the procedures, speeds, and configuration(s) for a glide following engine failure, in accordance with §23.71 and the subsequent forced landing, must be furnished.	(2) The maximum demonstrated values of crosswind for takeoff and landing, and procedures and information pertinent to operations in crosswinds; (3) A recommended speed for flight in rough air. This speed must be chosen to protect against the occurrence, as a result of gusts, of structural damage to the airplane and loss of control (for example, stalling); (4) Procedures for restarting any turbine engine in flight, including the effects of altitude; and (5) Procedures, speeds, and configuration(s) for making a normal approach and landing, in accordance with sections 23.73 and 23.75, and a transition to the balked landing condition. (6) For seaplanes and amphibians, water handling procedures and the demonstrated wave height. (b) In addition to paragraph (a) of this section, for all single-engine airplanes, the procedures, speeds, and configuration(s) for a glide following engine failure, in accordance with section 23.71 and the subsequent forced landing, must be furnished.	

(c) In addition to paragraph (a) of this section, for all multiengine airplanes, the following information must be furnished: (1) Procedures, speeds, and configuration(s) for making an approach and landing with one engine inoperative; (2) Procedures, speeds, and configuration(s) for making a balked landing with one engine inoperative and the conditions under which a balked landing can be performed safely, or a warning against attempting a balked landing; (3) The V_{SSE} determined in §23.149; and (4) Procedures for restarting any engine in flight including the effects of altitude. (d) In addition to paragraphs (a) and either (b) or (c) of this section, as appropriate, for all normal, utility, and acrobatic category airplanes, the following information must be furnished: (1) Procedures, speeds, and configuration(s) for making a normal takeoff, in accordance with §23.51 (a) and (b), and §23.53 (a) and (b), and the subsequent climb, in accordance with §23.65 and §23.69(a).	(c) In addition to paragraph (a) of this section, for all multiengine airplanes, the following information must be furnished: (1) Procedures, speeds, and configuration(s) for making an approach and landing with one engine inoperative; (2) Procedures, speeds, and configuration(s) for making a balked landing with one engine inoperative and the conditions under which a balked landing can be performed safely, or a warning against attempting a balked landing; (3) The VSSE determined in section 23.149; and (4) Procedures for restarting any engine in flight including the effects of altitude. (d) In addition to paragraphs (a) and either (b) or (c) of this section, as appropriate, for all normal, utility, and acrobatic category airplanes, the following information must be furnished: (1) Procedures, speeds, and configuration(s) for making a normal takeoff, in accordance with paragraphs 23.51 (a) and (b), and 23.53 (a) and (b), and the subsequent climb, in accordance with section 23.65 and paragraph 23.69(a).	

(2) Procedures for abandoning a takeoff due to engine failure or other cause. (e) In addition to paragraphs (a), (c), and (d) of this section, for all normal, utility, and acrobatic category multiengine airplanes, the information must include the following: (1) Procedures and speeds for continuing a takeoff following engine failure and the conditions under which takeoff can safely be continued, or a warning against attempting to continue the takeoff. (2) Procedures, speeds, and configurations for continuing a climb following engine failure, after takeoff, in accordance with §23.67, or enroute, in accordance with §23.69(b). (f) In addition to paragraphs (a) and (c) of this section, for commuter category airplanes, the information must include the following: (1) Procedures, speeds, and configuration(s) for making a normal takeoff. (2) Procedures and speeds for carrying out an accelerate-stop in accordance with §23.55. (3) Procedures and speeds for continuing a takeoff following engine failure in accordance with	(2) Procedures for abandoning a takeoff due to engine failure or other cause. (e) In addition to paragraphs (a), (c), and (d) of this section, for all normal, utility, and acrobatic category multiengine airplanes, the information must include the following: (1) Procedures and speeds for continuing a takeoff following engine failure and the conditions under which takeoff can safely be continued, or a warning against attempting to continue the takeoff. (2) Procedures, speeds, and configurations for continuing a climb following engine failure, after takeoff, in accordance with section 23.67, or enroute, in accordance with paragraph 23.69(b). (f) In addition to paragraphs (a) and (c) of this section, for normal, utility, and acrobatic category multiengine jets weighing over 6.000 pounds (2.722 kg), and commuter category airplanes, the information must include the following: (1) Procedures, speeds, and configuration(s) for making a normal takeoff. (2) Procedures and speeds for carrying out an accelerate-stop in accordance with section 23.55.	

§23.59(a)(1) and for following the flight path determined under §23.57 and §23.61(a). (g) For multiengine airplanes, information identifying each operating condition in which the fuel system independence prescribed in §23.953 is necessary for safety must be furnished, together with instructions for placing the fuel system in a configuration used to show compliance with that section. (h) For each airplane showing compliance with §23.1353 (g)(2) or (g)(3), the operating procedures for disconnecting the battery from its charging source must be furnished. (i) Information on the total quantity of usable fuel for each fuel tank, and the effect on the usable fuel quantity, as a result of a failure of any pump, must be furnished. (j) Procedures for the safe operation of the airplane's systems and equipment, both in normal use and in the event of malfunction, must be furnished.	(3) Procedures and speeds for continuing a takeoff following engine failure in accordance with paragraph 23.59(a)(1) and for following the flight path determined under section 23.57 and paragraph 23.61(a). (g) For multiengine airplanes, information identifying each operating condition in which the fuel system independence prescribed in section 23.953 is necessary for safety must be furnished, together with instructions for placing the fuel system in a configuration used to show compliance with that section. (h) For each airplane showing compliance with paragraphs 23.1353(g)(2) or (g)(3), the operating procedures for disconnecting the battery from its charging source must be furnished. (i) Information on the total quantity of usable fuel for each fuel tank, and the effect on the usable fuel quantity, as a result of a failure of any pump, must be furnished. (j) Procedures for the safe operation of the airplane's systems and equipment, both in normal use and in the event of malfunction, must be furnished.	
23.1587 Performance information.	**23.1587 Performance information.**	As alterações introduzidas tornam aplicáveis os critérios da categoria transporte regional para todos os

Unless otherwise prescribed, performance information must be provided over the altitude and temperature ranges required by §23.45(b). (a) For all airplanes, the following information must be furnished— (1) The stalling speeds V_{SO} and $V_{S1}$with the landing gear and wing flaps retracted, determined at maximum weight under §23.49, and the effect on these stalling speeds of angles of bank up to 60 degrees; (2) The steady rate and gradient of climb with all engines operating, determined under §23.69(a); (3) The landing distance, determined under §23.75 for each airport altitude and standard temperature, and the type of surface for which it is valid; (4) The effect on landing distances of operation on other than smooth hard surfaces, when dry, determined under §23.45(g); and (5) The effect on landing distances of runway slope and 50 percent of the headwind component and 150 percent of the tailwind component. (b) In addition to paragraph (a) of this section, for all normal, utility, and acrobatic category reciprocating	Unless otherwise prescribed, performance information must be provided over the altitude and temperature ranges required by paragraph 23.45(b). (a) For all airplanes, the following information must be furnished: (1) The stalling speeds VSO and VS1 with the landing gear and wing flaps retracted, determined at maximum weight under section 23.49, and the effect on these stalling speeds of angles of bank up to 60 degrees; (2) The steady rate and gradient of climb with all engines operating, determined under paragraph 23.69(a); (3) The landing distance, determined under section 23.75 for each airport altitude and standard temperature, and the type of surface for which it is valid; (4) The effect on landing distances of operation on other than smooth hard surfaces, when dry, determined under paragraph 23.45(g); and (5) The effect on landing distances of runway slope and 50 percent of the headwind component and 150 percent of the tailwind component.	jatos pesando mais que 6.000 libras. Estas alterações garantem consistência com os requisitos de desempenho propostos na Subparte B.

engine-powered airplanes of 6,000 pounds or less maximum weight, the steady angle of climb/descent, determined under §23.77(a), must be furnished. (c) In addition to paragraphs (a) and (b) of this section, if appropriate, for normal, utility, and acrobatic category airplanes, the following information must be furnished— (1) The takeoff distance, determined under §23.53 and the type of surface for which it is valid. (2) The effect on takeoff distance of operation on other than smooth hard surfaces, when dry, determined under §23.45(g); (3) The effect on takeoff distance of runway slope and 50 percent of the headwind component and 150 percent of the tailwind component; (4) For multiengine reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight and multiengine turbine powered airplanes, the one-engine-inoperative takeoff climb/descent gradient, determined under §23.66; (5) For multiengine airplanes, the enroute rate and gradient of climb/descent with one engine inoperative, determined under §23.69(b); and	(b) In addition to paragraph (a) of this section, for all normal, utility, and acrobatic category reciprocating engine-powered airplanes of 6.000 pounds (2.722 kg) or less maximum weight, the steady angle of climb/descent, determined under paragraph 23.77(a), must be furnished. (c) In addition to paragraphs (a) and (b) of this section, if appropriate, for normal, utility, and acrobatic category airplanes, the following information must be furnished: (1) The takeoff distance, determined under section 23.53 and the type of surface for which it is valid. (2) The effect on takeoff distance of operation on other than smooth hard surfaces, when dry, determined under paragraph 23.45(g); (3) The effect on takeoff distance of runway slope and 50 percent of the headwind component and 150 percent of the tailwind component; (4) For multiengine reciprocating engine-powered airplanes of more than 6.000 pounds (2.722 kg) maximum weight and multiengine turbine powered airplanes, the one-engine-inoperative takeoff climb/descent gradient, determined under section 23.66;	

(6) For single-engine airplanes, the glide performance determined under §23.71. (d) In addition to paragraph (a) of this section, for commuter category airplanes, the following information must be furnished— (1) The accelerate-stop distance determined under §23.55; (2) The takeoff distance determined under §23.59(a); (3) At the option of the applicant, the takeoff run determined under §23.59(b); (4) The effect on accelerate-stop distance, takeoff distance and, if determined, takeoff run, of operation on other than smooth hard surfaces, when dry, determined under §23.45(g); (5) The effect on accelerate-stop distance, takeoff distance, and if determined, takeoff run, of runway slope and 50 percent of the headwind component and 150 percent of the tailwind component; (6) The net takeoff flight path determined under §23.61(b);	(5) For multiengine airplanes, the enroute rate and gradient of climb/descent with one engine inoperative, determined under paragraph 23.69(b); and (6) For single-engine airplanes, the glide performance determined under section 23.71. (d) In addition to paragraph (a) of this section, for normal, utility, and acrobatic category multiengine jets weighing over 6.000 pounds (2.722 kg), and commuter category airplanes, the following information must be furnished: (1) The accelerate-stop distance determined under section 23.55; (2) The takeoff distance determined under paragraph 23.59(a); (3) At the option of the applicant, the takeoff run determined under paragraph 23.59(b); (4) The effect on accelerate-stop distance, takeoff distance and, if determined, takeoff run, of operation on other than smooth hard surfaces, when dry, determined under paragraph 23.45(g); (5) The effect on accelerate-stop distance, takeoff distance, and if determined, takeoff run, of runway	

(7) The enroute gradient of climb/descent with one engine inoperative, determined under §23.69(b); (8) The effect, on the net takeoff flight path and on the enroute gradient of climb/descent with one engine inoperative, of 50 percent of the headwind component and 150 percent of the tailwind component; (9) Overweight landing performance information (determined by extrapolation and computed for the range of weights between the maximum landing and maximum takeoff weights) as follows— (i) The maximum weight for each airport altitude and ambient temperature at which the airplane complies with the climb requirements of §23.63(d)(2); and (ii) The landing distance determined under §23.75 for each airport altitude and standard temperature. (10) The relationship between IAS and CAS determined in accordance with §23.1323 (b) and (c). (11) The altimeter system calibration required by §23.1325(e).	slope and 50 percent of the headwind component and 150 percent of the tailwind component; (6) The net takeoff flight path determined under paragraph 23.61(b); (7) The enroute gradient of climb/descent with one engine inoperative, determined under paragraph 23.69(b); (8) The effect, on the net takeoff flight path and on the enroute gradient of climb/descent with one engine inoperative, of 50 percent of the headwind component and 150 percent of the tailwind component; (9) Overweight landing performance information (determined by extrapolation and computed for the range of weights between the maximum landing and maximum takeoff weights) as follows: (i) The maximum weight for each airport altitude and ambient temperature at which the airplane complies with the climb requirements of paragraph 23.63(d)(2); and (ii) The landing distance determined under section 23.75 for each airport altitude and standard temperature.	

	(10) The relationship between IAS and CAS determined in accordance with paragraphs 23.1323 (b) and (c). (11) The altimeter system calibration required by paragraph 23.1325(e).	
	Appendix F to RBAC 23 — Test Procedure **Part II -- Test Method To Determine the Flammability and Flame Propagation Characteristics of Thermal/Acoustic Insulation Materials**	A proposta introduz uma nova parte no Apêndice F para incluir novos ensaios e critérios de inflamabilidade que tratam de propagação de chama e que são aplicáveis para materiais de isolamento térmico e acústico instalados na fuselagem de aviões certificados de acordo com o RBAC 23. Os ensaios de certificação consistem em amostras de isolamento térmico e acústico que são expostos a uma fonte radiante de calor e uma chama de queima de propano por 15 segundos. O isolamento não deve propagar a chama mais que 2 polegadas além do queimador. O tempo de chama após remoção do queimador não deve exceder 3 segundos em qualquer amostra.