

(5) After attaining V_{TOSS} and a positive rate of a climb, the landing gear may be retracted.

(b) During the takeoff path determination made in accordance with paragraph (a) of this section and after attaining V_{TOSS} and a positive rate of climb, the climb must be continued at a speed as close as practicable to, but not less than, V_{TOSS} until the rotorcraft is 200 feet above the takeoff surface. During this interval, the climb performance must meet or exceed that required by § 29.67(a)(1).

(c) During the continued takeoff, the rotorcraft shall not descend below 15 feet above the takeoff surface when the takeoff decision point is above 15 feet.

(d) From 200 feet above the takeoff surface, the rotorcraft takeoff path must be level or positive until a height 1,000 feet above the takeoff surface is attained with not less than the rate of climb required by § 29.67(a)(2). Any secondary or auxiliary control may be used after attaining 200 feet above the takeoff surface.

(e) Takeoff distance will be determined in accordance with § 29.61.

[Doc. No. 24802, 61 FR 21899, May 10, 1996; 61 FR 33963, July 1, 1996, as amended by Amdt. 29-44, 64 FR 45337, Aug. 19, 1999]

§ 29.60 Elevated heliport takeoff path: Category A.

(a) The elevated heliport takeoff path extends from the point of commencement of the takeoff procedure to a point in the takeoff path at which the rotorcraft is 1,000 feet above the takeoff surface and compliance with § 29.67(a)(2) is shown. In addition—

(1) The requirements of § 29.59(a) must be met;

(2) While attaining V_{TOSS} and a positive rate of climb, the rotorcraft may descend below the level of the takeoff surface if, in so doing and when clearing the elevated heliport edge, every part of the rotorcraft clears all obstacles by at least 15 feet;

(3) The vertical magnitude of any descent below the takeoff surface must be determined; and

(4) After attaining V_{TOSS} and a positive rate of climb, the landing gear may be retracted.

(b) The scheduled takeoff weight must be such that the climb requirements of § 29.67 (a)(1) and (a)(2) will be met.

(c) Takeoff distance will be determined in accordance with § 29.61.

[Doc. No. 24802, 61 FR 21899, May 10, 1996; 61 FR 33963, July 1, 1996]

§ 29.61 Takeoff distance: Category A.

(a) The normal takeoff distance is the horizontal distance along the takeoff path from the start of the takeoff to the point at which the rotorcraft attains and remains at least 35 feet above the takeoff surface, attains and maintains a speed of at least V_{TOSS} , and establishes a positive rate of climb, assuming the critical engine failure occurs at the engine failure point prior to the takeoff decision point.

(b) For elevated heliports, the takeoff distance is the horizontal distance along the takeoff path from the start of the takeoff to the point at which the rotorcraft attains and maintains a speed of at least V_{TOSS} and establishes a positive rate of climb, assuming the critical engine failure occurs at the engine failure point prior to the takeoff decision point.

[Doc. No. 24802, 61 FR 21899, May 10, 1996]

§ 29.62 Rejected takeoff: Category A.

The rejected takeoff distance and procedures for each condition where takeoff is approved will be established with—

(a) The takeoff path requirements of §§ 29.59 and 29.60 being used up to the TDP where the critical engine failure is recognized and the rotorcraft is landed and brought to a complete stop on the takeoff surface;

(b) The remaining engines operating within approved limits;

(c) The landing gear remaining extended throughout the entire rejected takeoff; and

(d) The use of only the primary controls until the rotorcraft is on the ground. Secondary controls located on the primary control may not be used until the rotorcraft is on the ground. Means other than wheel brakes may be used to stop the rotorcraft if the means

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are safe and reliable and consistent results can be expected under normal operating conditions.

[Doc. No. 24802, 61 FR 21899, May 10, 1996, as amended by Amdt. 29-44, 64 FR 45337, Aug. 19, 1999]

§ 29.63 Takeoff: Category B.

The horizontal distance required to take off and climb over a 50-foot obstacle must be established with the most unfavorable center of gravity. The takeoff may be begun in any manner if—

- (a) The takeoff surface is defined;
- (b) Adequate safeguards are maintained to ensure proper center of gravity and control positions; and
- (c) A landing can be made safely at any point along the flight path if an engine fails.

[Doc. No. 5084, 29 FR 16150, Dec. 3, 1964, as amended by Amdt. 29-12, 41 FR 55471, Dec. 20, 1976]

§ 29.64 Climb: General.

Compliance with the requirements of §§ 29.65 and 29.67 must be shown at each weight, altitude, and temperature within the operational limits established for the rotorcraft and with the most unfavorable center of gravity for each configuration. Cowl flaps, or other means of controlling the engine-cooling air supply, will be in the position that provides adequate cooling at the temperatures and altitudes for which certification is requested.

[Doc. No. 24802, 61 FR 21900, May 10, 1996]

§ 29.65 Climb: All engines operating.

(a) The steady rate of climb must be determined—

- (1) With maximum continuous power;
- (2) With the landing gear retracted; and
- (3) At V_y for standard sea level conditions and at speeds selected by the applicant for other conditions.

(b) For each Category B rotorcraft except helicopters, the rate of climb determined under paragraph (a) of this section must provide a steady climb

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gradient of at least 1:6 under standard sea level conditions.

(Secs. 313(a), 601, 603, 604, and 605 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1423, 1424, and 1425); and sec. 6(c), Dept. of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 5084, 29 FR 16150, Dec. 3, 1964, as amended by Amdt. 29-15, 43 FR 2326, Jan. 16, 1978; Amdt. 29-39, 61 FR 21900, May 10, 1996; 61 FR 33963, July 1, 1996]

§ 29.67 Climb: One engine inoperative (OEI).

(a) For Category A rotorcraft, in the critical takeoff configuration existing along the takeoff path, the following apply:

(1) The steady rate of climb without ground effect, 200 feet above the takeoff surface, must be at least 100 feet per minute for each weight, altitude, and temperature for which takeoff data are to be scheduled with—

(i) The critical engine inoperative and the remaining engines within approved operating limitations, except that for rotorcraft for which the use of 30-second/2-minute OEI power is requested, only the 2-minute OEI power may be used in showing compliance with this paragraph;

(ii) The landing gear extended; and

(iii) The takeoff safety speed selected by the applicant.

(2) The steady rate of climb without ground effect, 1000 feet above the takeoff surface, must be at least 150 feet per minute, for each weight, altitude, and temperature for which takeoff data are to be scheduled with—

(i) The critical engine inoperative and the remaining engines at maximum continuous power including continuous OEI power, if approved, or at 30-minute OEI power for rotorcraft for which certification for use of 30-minute OEI power is requested;

(ii) The landing gear retracted; and

(iii) The speed selected by the applicant.

(3) The steady rate of climb (or descent) in feet per minute, at each altitude and temperature at which the rotorcraft is expected to operate and at any weight within the range of weights for which certification is requested, must be determined with—