Federal Aviation Administration, DOT

§ 27.175 Demonstration of static longitudinal stability.

(a) Climb. Static longitudinal stability must be shown in the climb condition at speeds from Vy – 10 kt to Vy + 10 kt with—

(1) Critical weight;
(2) Critical center of gravity;
(3) Maximum continuous power;
(4) The landing gear retracted; and
(5) The rotorcraft trimmed at VY.

(b) Cruise. Static longitudinal stability must be shown in the cruise condition at speeds from 0.8 VNE – 10 kt to 1.1 VNE – 10 kt.

§ 27.173 Static longitudinal stability.

The longitudinal control must be designed so that a rearward movement of the control is necessary to obtain an airspeed less than the trim speed, and a forward movement of the control is necessary to obtain an airspeed more than the trim speed.

(b) Throughout the full range of altitude for which certification is requested, with the throttle and collective pitch held constant during the maneuvers specified in § 27.175(a) through (d), the slope of the control position versus airspeed curve must be positive. However, in limited flight conditions or modes of operation determined by the Administrator to be acceptable, the slope of the control position versus airspeed curve may be neutral or negative if the rotorcraft possesses flight characteristics that allow the pilot to maintain airspeed within ±5 knots of the desired trim airspeed without exceptional piloting skill or alertness.

§ 27.171 Stability: general.

The rotorcraft must be able to be flown, without undue pilot fatigue or strain, in any normal maneuver for a period of time as long as that expected in normal operation. At least three landings and takeoffs must be made during this demonstration.