

past, the FAA interpreted the words "maximum available takeoff power or thrust" to mean the maximum in-flight power or thrust, with the takeoff power or thrust setting not always being "available" in flight. In NPRM 94-15, the FAA proposed changing the nomenclature to "go-around power or thrust setting" for clarification and to reflect terminology commonly used in the operational environment. (The term "go-around" refers to a deliberate maneuver to abort a landing attempt prior to touchdown by applying the maximum available power or thrust, retracting flaps, and climbing to a safe level-off altitude.)

The go-around power or thrust setting may differ from the takeoff power or thrust setting, for example, due to the airspeed difference between the takeoff and go-around flight conditions. In addition, complying with the powerplant limitations of § 25.1521 may result in a lower power setting at the higher airspeeds associated with a go-around. As another example, the controllability requirements of §§ 25.145(b)(3), 25.145(b)(4), 25.145(b)(5), 25.149(f), and 25.149(g) may also limit the go-around power or thrust setting to less than that used for takeoff. Another reason to separate the takeoff and go-around power (or thrust) nomenclature is that certification practice has not required, and applicants have not always proposed, changing the go-around power or thrust setting when a previously approved takeoff power or thrust is increased.

The FAA proposed to substitute the term "go-around power or thrust setting" for "maximum available takeoff power or thrust" in §§ 25.119, 25.121(d), 25.145(b)(3), 25.145(b)(4), 25.145(c)(1), 25.149(f)(6), and 25.149(g)(7)(ii). (Note that the requirement of § 25.145(b)(5) also uses the power specified in § 25.145(b)(4).) In addition, the FAA proposed to define "go-around power or thrust setting" in part 1 as "the maximum allowable in-flight power or thrust setting identified in the performance data." By this revision, the FAA intended to clarify that the applicable controllability requirements should be based on the same power or thrust setting used to determine the approach and landing climb performance contained in the approved Airplane Flight Manual (AFM).

The proposed terminology referred to a power or thrust "setting" rather than a power or thrust to make it clear that existing engine ratings would be unaffected. The powerplant limitations of § 25.1521 would continue to apply at the go-around power (or thrust) setting. Existing certification practices would

also remain the same, including the relationship between the power or thrust values used to comply with the landing and approach climb requirements of §§ 25.119 and 25.121(d). For example, the thrust value used to comply with § 25.121(d) may be greater than that used for § 25.119, if the operating engine(s) do not reach the maximum allowable in-flight thrust by the end of the eight second time period specified in § 25.119.

Proposal 2. The FAA proposed to revise the table in § 25.143(c) to match the control force limits currently provided in JAR 25.143(c). This table prescribes the maximum control forces for the controllability and maneuverability flight testing required by §§ 25.143(a) and 25.143(b). For transient application of the pitch and roll control, the revised table would contain more restrictive maximum control force limits for those maneuvers in which the pilot might be using one hand to operate other controls, relative to those maneuvers in which both hands are normally available for applying pitch and roll control. The revised table would retain the current control force limits for transient application of the yaw control, and for sustained application of the pitch, roll, and yaw controls.

For maneuvers in which only one hand is assumed to be available, the FAA proposed to reduce the maximum permissible control forces from 75 pounds to 50 pounds for pitch control, and from 60 pounds to 25 pounds for roll control. These lower control forces would be more consistent with § 25.145(b), which states that a force of 50 pounds for longitudinal (pitch) control is "representative of the maximum temporary force that readily can be applied by one hand." In addition to adding more restrictive control force limits for maneuvers in which only one hand may be available to apply pitch and roll control, the FAA proposed to reduce the maximum permissible force for roll control from 60 pounds to 50 pounds for maneuvers in which the pilot normally has both hands available to operate the control.

The FAA proposed to further revise § 25.143(c) by specifying that the table of maximum permissible control forces applies only to conventional wheel type controls. This restriction, also specified in the current JAR 25.143(c), recognizes that different control force limits may be necessary when considering sidestick controllers or other types of control systems.

For clarification, the FAA proposed to replace the terms "temporary" and "prolonged," used in §§ 25.143(c),

25.143(d), 25.143(e), and 25.145(b), with "transient" and "sustained," respectively. "Transient" forces are those control forces resulting from maintaining the intended flight path during changes to the airplane configuration, normal transitions from one flight condition to another, or regaining control after a failure. The pilot is assumed to take immediate action to reduce or eliminate these forces by retrimming or by changing the airplane configuration or flight condition. "Sustained forces," on the other hand, are those control forces resulting from normal or failure conditions that cannot readily be trimmed out or eliminated. The FAA proposed adding these definitions of "transient" and "sustained" forces to AC 25-7.

In addition, the FAA proposed several minor editorial changes for §§ 25.143(c) through 25.143(e) to improve readability and correct grammatical errors. For example, the words "immediately preceding" were proposed to replace "next preceding" in § 25.143(d). These editorial changes were intended only to clarify the regulatory language, while retaining the existing interpretation of the affected sections.

Proposal 3. The FAA proposed to add the JAR 25.143(f) requirements regarding control force characteristics during maneuvering flight to part 25 as a new § 25.143(f). By adding these requirements, the FAA would ensure that the force to move the control column, or "stick," must not be so great as to make excessive demands on the pilot's strength when maneuvering the airplane, and must not be so low that the airplane can easily be overstressed inadvertently.

These harmonized requirements would apply up to the speed V_{FC}/M_{FC} (the maximum speed for stability characteristics) rather than the speed V_{MC}/M_{MC} (the maximum operating limit speed) specified by the current JAR 25.143(f). Requiring these maneuvering requirements to be met up to V_{FC}/M_{FC} is consistent with other part 25 stability requirements. Section 25.253, which defines V_{FC}/M_{FC} , would be revised to reference the use of this speed in the proposed § 25.143(f). An acceptable means of compliance with § 25.143(f), including detailed interpretations of the stick force characteristics that meet these requirements, would be added to AC 25-7.

Proposal 4. Section 25.149(f) requires that the minimum control speed be determined assuming the critical engine suddenly fails during (or just prior to) a go-around from an all-engines-operating approach. For airplanes with