(2) For jacking by other airplane structure at maximum approved jacking weight:

(i) The airplane structure must be designed for a vertical load of 1.33 times the vertical reaction at each jacking point acting singly and in combination with a horizontal load of 0.33 times the vertical static reaction applied in any direction.

(ii) The jacking pads and local structure must be designed for a vertical load of 2.0 times the vertical static reaction at each jacking point, acting singly and in combination with a horizontal load of 0.33 times the vertical static reaction applied in any direction.

(c) Tie-down. If tie-down points are provided, the main tie-down points and local structure must withstand the limit loads resulting from a 65-knot horizontal wind from any direction.

[Doc. No. 26129, 59 FR 22102, Apr. 28, 1994]

WATER LOADS

§ 25.521 General.

(a) Seaplanes must be designed for the water loads developed during takeoff and landing, with the seaplane in any attitude likely to occur in normal operation, and at the appropriate forward and sinking velocities under the most severe sea conditions likely to be encountered.

(b) Unless a more rational analysis of the water loads is made, or the standards in ANC–3 are used, §§ 25.523 through 25.537 apply.

(c) The requirements of this section and §§ 25.523 through 25.537 apply also to amphibians.

§ 25.523 Design weights and center of gravity positions.

(a) *Design weights.* The water load requirements must be met at each operating weight up to the design landing weight except that, for the takeoff condition prescribed in § 25.531, the design water takeoff weight (the maximum weight for water taxi and takeoff run) must be used.

(b) *Center of gravity positions.* The critical centers of gravity within the limits for which certification is requested must be considered to reach maximum design loads for each part of the seaplane structure.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Amdt. 25–23, 35 FR 5673, Apr. 8, 1970]

§ 25.525 Application of loads.

(a) Unless otherwise prescribed, the seaplane as a whole is assumed to be subjected to the loads corresponding to the load factors specified in § 25.527.

(b) In applying the loads resulting from the load factors prescribed in § 25.527, the loads may be distributed over the hull or main float bottom (in order to avoid excessive local shear loads and bending moments at the location of water load application) using pressures not less than those prescribed in § 25.533(c).

(c) For twin float seaplanes, each float must be treated as an equivalent hull on a fictitious seaplane with a weight equal to one-half the weight of the twin float seaplane.

(d) Except in the takeoff condition of § 25.531, the aerodynamic lift on the seaplane during the impact is assumed to be ⅔ of the weight of the seaplane.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Doc. No. FAA–2022–1355, Amdt. 25–146, 87 FR 75710, Dec. 9, 2022]

§ 25.527 Hull and main float load factors.

(a) Water reaction load factors n_w must be computed in the following manner:

(1) For the step landing case

$$n_w = \frac{C_1 V_{S0}{}^2}{\left(\mathrm{Tan}^{\frac{2}{3}}\beta\right) W^{\frac{1}{3}}}$$

(2) For the bow and stern landing cases

$$n_w = \frac{C_1 V_{S0}{}^2}{\left(\mathrm{Tan}^{\frac{2}{3}}\beta\right) W^{\frac{1}{3}}} \times \frac{K_1}{\left(1 + r_x{}^2\right)^{\frac{2}{3}}}$$

(b) The following values are used:

(1) n_W = water reaction load factor (that is, the water reaction divided by seaplane weight).

(2) C_1 = empirical seaplane operations factor equal to 0.012 (except that this