

Federal Aviation Agency



AC NO: 121.195(d) -1

AIR CARRIER AND
COMMERCIAL OPERATIONS

EFFECTIVE :

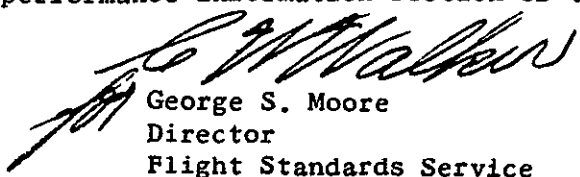
11/19/65

SUBJECT : ALTERNATE OPERATIONAL LANDING DISTANCES FOR WET RUNWAYS;
TURBOJET POWERED TRANSPORT CATEGORY AIRPLANES

1. PURPOSE. This circular sets forth an acceptable means, but not the only means, by which the alternate provision of Section 121.195(d) may be met. Any other method the applicant elects to present will be given due consideration.
2. REFERENCE REGULATIONS.
 - a. FAR 121.195(d) Landing Limitations (Wet or Slippery Runways).
 - b. FAR 25.125 Landing Distance
3. DISCUSSION.
 - a. In determining safe operational runway lengths that provide for operational variables not included in type certification tests, the regulations require a runway length adequate to allow a full-stop landing (based on the type certification tests) within 60 percent of the effective length of the runway. The operational variables include runway surface conditions, piloting techniques, tire/braking deterioration, atmospheric instability, crosswinds, approach to touchdown, flight path deviations, and others. Amendment 121-9 to Section 121.195 requires an additional 15 percent runway length for operations into wet or slippery runways. As an alternative to the additional 15 percent runway length, Section 121.195(d) allows alternate operational distances (not less than the factored dry runway distances) to be used if they are based "on a showing of actual operating landing techniques on wet runways".
 - b. Normally the operating environmental condition associated with a wet runway is an IFR condition requiring an ILS approach, and worn tires on the airplane. Although the preamble to Amendment 121-9 stated that this advisory circular would give credit for partial reverse thrust when available, the Agency has now

determined that such credit should not be given at this time. The Agency plans in the near future to consider this determination in a re-evaluation of operational landing distance requirements on dry as well as wet runways.

- c. Existing test data, available for the type of aircraft and operation involved, which is found to be acceptable by the Administrator, may be used in establishing basic wet distances in lieu of additional tests.
 - d. For new models, or where additional tests are required for existing models, tests must be conducted.
4. ACCEPTABLE MEANS OF COMPLIANCE. An acceptable method of obtaining approval under Section 121.195(d) for operating with less than the 15 percent margin is to establish runway distances representative of operational conditions that are 1.15 times the distances determined in the manner specified in Section 25.125 subject to the following:
- a. Paragraph 25.125(a)(2) Approach flight path to touchdown.
 - (1) The landing is preceded by a steady gliding approach not to exceed an angle of 3 degrees down to the 50-foot height and at a calibrated airspeed not less than $1.4V_S$.
 - (2) The time lapse between the 50-foot height and touchdown is not less than seven seconds.
 - b. Paragraph 25.125(b) Runway surface. The landing is made on a level, smooth, hard-surfaced, wet, well-soaked runway (with no major areas of measurable depth of water) which is representative of the runways used in typical operations.
 - c. Tire Condition. The wheels are fitted with tires that have been worn to a point where no more than 20 percent of the original tread remains.
 - d. Paragraph 25.125(b)(3) Decelerating devices. No credit is given for reverse thrust.
 - e. General. The average of not less than five tests may be used to establish basic distances. Tires may be changed between tests provided they are within the specified limits. Suitable time delays should be used for activating the decelerating devices. Alternate operational landing distances so determined must be made available to the pilot in the performance information section of the airplane flight manual.



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