MAY 9 1962

Federal Aviation Agency
Washington, D.C.

Civil Aeronautics Manual 3

Airplane Airworthiness; Normal, Utility, and Acrobatic Categories

---

Supplement No. 4, CAM 3 dated Nov. 1, 1959 **October 1, 1961**

SUBJECT: Conversion to Use of Turboprop Engines in Normal, Utility, and Acrobatic Category Airplanes.

This supplement is issued to incorporate into CAM 3 Civil Air Regulations Amendment 3–6, which was issued September 7, 1961, to become effective September 13, 1961. This amendment revised section 3.11(e)(2) to delete the provision requiring the issuance of a new type certificate when reciprocating engines are replaced by turboprop engines, which employ the same principle of propulsion.

Revised material is enclosed in black brackets on the pages submitted with this supplement.

Remove the following pages:	*Insert the following new pages:*
3 and 4	3 and 4

George C. Prill

GEORGE C. PRILL, *Director,*
Flight Standards Service.

Attachments.

and ailerons, but excluding fillets or fairings) on a surface containing the wing chords. The outline is assumed to be extended through the nacelles and fuselage to the plane of symmetry in any reasonable manner.

(8) *Balancing tail load.* A balancing tail load is that load necessary to place the airplane in equilibrium with zero pitch acceleration.

(9) *Fitting.* A fitting is a part or terminal used to join one structural member to another. (See sec. 3.306.)

(f) *Power installation.*[1]

[1] For engine airworthiness requirements see Part 13 of this subchapter. For propeller airworthiness requirements see Part 14 of this subchapter.

(1) *Brake horsepower.* Brake horsepower is the power delivered at the propeller shaft of the engine.

(2) *Takeoff power.* Takeoff power is the brake horsepower developed under standard sea level conditions, under the maximum conditions of crankshaft rotational speed and engine manifold pressure approved for use in the normal takeoff, and limited in use to a maximum continuous period as indicated in the approved engine specifications.

(3) *Maximum continuous power.* Maximum continuous power is the brake horsepower developed in standard atmosphere at a specified altitude under the maximum conditions of crankshaft rotational speed and engine manifold pressure approved for use during periods of unrestricted duration.

(4) *Manifold pressure.* Manifold pressure is the absolute pressure measured at the appropriate point in the induction system, usually in inches of mercury.

(5) *Critical altitude.* The critical altitude is the maximum altitude at which in standard atmosphere it is possible to maintain at a specified rotational speed, a specified power or a specified manifold pressure. Unless otherwise stated, the critical altitude is the maximum altitude at which it is possible to maintain, at the maximum continuous rotational speed, one of the following:

(i) The maximum continuous power, in the case of engines for which this power rating is the same at sea level and at the rated altitude.

(ii) The maximum continuous rated manifold pressure, in the case of engines the maximum continuous power of which is governed by a constant manifold pressure.

(6) *Pitch setting.* Pitch setting is the propeller blade setting determined by the blade angle measured in a manner, and at a radius, specified in the instruction manual for the propeller.

(7) *Feathered pitch.* Feathered pitch is the pitch setting, which in flight, with the engines stopped, gives approximately the minimum drag and corresponds with a windmilling torque of approximately zero.

(8) *Reverse pitch.* Reverse pitch is the propeller pitch setting for any blade angle used beyond zero pitch (e.g., the negative angle used for reverse thrust).

(g) *Fire protection.*

(1) *Fireproof.* Fireproof material means material which will withstand heat at least as well as steel in dimensions appropriate for the purpose for which it is to be used. When applied to material and parts used to confine fires in designated fire zones, fireproof means that the material or part will perform this function under the most severe conditions of fire and duration likely to occur in such zones.

(2) *Fire - resistant.* When applied to sheet or structural members, fire-resistant material means a material which will withstand heat at least as well as aluminum alloy in dimensions appropriate for the purpose for which it is to be used. When applied to fluid-carrying lines, other flammable fluid system components, wiring, air ducts, fittings, and powerplant controls, this term refers to a line and fitting assembly, component, wiring, or duct, or controls which will perform the intended functions under the heat and other conditions likely to occur at the particular location.

(3) *Flame - resistant.* Flame - resistant material means material which will not support combustion to the point of propagating, beyond safe limits, a flame after the removal of the ignition source.

(4) *Flash-resistant.* Flash-resistant material means material which will not burn violently when ignited.

(5) *Flammable.* Flammable pertains to those fluids or gases which will ignite readily or explode.

Certification

3.10 *Eligibility for type certificate.* An airplane shall be eligible for type certification under the provisions of this part if it complies with the airworthiness provisions hereinafter established or if the Administrator finds that the provision or provisions not complied with are compensated for by factors which provide an equivalent level of safety: *Provided,* That the Administrator finds no feature or characteristic of the airplane which renders it unsafe for the category in which it is certificated.

3.11 *Designation of applicable regulations.* The provisions of this section shall apply to all airplane types certificated under this part irrespective of the date of application for type certificate.

(a) Unless otherwise established by the Administrator, the airplane shall comply with the provisions of this part together with all amendments thereto effective on the date of application for type certificate, except that compliance with later effective amendments may be elected or required pursuant to paragraphs (c), (d), and (e) of this section.

(b) If the interval between the date of application for type certificate and the issuance of the corresponding type certificate exceeds three years, a new application for type certificate shall be required, except that for applications pending on May 1, 1954, such three-year period shall commence on that date. At the option of the applicant, a new application may be filed prior to the expiration of the three-year period. In either instance the applicable regulations shall be those effective on the date of the new application in accordance with paragraph (a) of this section.

(c) During the interval between filing the application and the issuance of a type certificate, the applicant may elect to show compliance with any amendment of this part which becomes effective during that interval, in which case all other amendments found by the Administrator to be directly related shall be complied with.

(d) Except as otherwise provided by the Administrator pursuant to section 1.24 of this subchapter, a change to a type certificate (see sec. 3.13(b)) may be accomplished, at the option of the holder of the type certificate, either in accordance with the regulations incorporated by reference in the type certificate pursuant to section 3.13(c), or in accordance with subsequent amendments to such regulations in effect on the date of application for approval of the change, subject to the following provisions:

(1) When the applicant elects to show compliance with an amendment to the regulations in effect on the date of application for approval of a change, he shall show compliance with all amendments which the Administrator finds are directly related to the particular amendment selected by the applicant.

(2) When the change consists of a new design or a substantially complete redesign of a component, equipment installation, or system installation of the airplane, and the Administrator finds that the regulations incorporated by reference in the type certificate pursuant to section 3.13(c) do not provide complete standards with respect to such change, he shall require compliance with such provisions of the regulations in effect on the date of application for approval of the change as he finds will provide a level of safety equal to that established by the regulations incorporated by reference at the time of issuance of the type certificate.

NOTE: Examples of new or redesigned components and installations which might require compliance with regulations in effect on the date of application for approval, are: New powerplant installation which is likely to introduce additional fire or operational hazards unless additional protective measures are incorporated; the installation of an auto-pilot or a new electric power system.

(e) If changes listed in subparagraphs (1) through (3) of this paragraph are made, the airplane shall be considered as a new type, in which case a new application for type certificate shall be required and the regulations together with all amendments thereto effective on the date of the new application shall be made applicable in accordance with paragraphs (a), (b), (c), and (d) of this section.

(1) A change in the number of engines;

[(2) A change to engines employing different principles of propulsion;]

[(Amendment 3-6, published in 26 F.R. 8536, Sept. 13, 1961, effective Sept. 13, 1961.)]

(3) A change in design, configuration, power, or weight which the Administrator finds is so extensive as to require a substantially complete investigation of compliance with the regulations.

U.S. GOVERNMENT PRINTING OFFICE: 1961 O - 615468