able to power loads that are essential for continued safe flight and landing. Also, the availability of emergency electrical power sources, including any credit taken for APU start reliability, must be validated in a manner acceptable to the FAA.

The emergency electrical power system must be designed to supply:

—Electrical power required for immediate safety, which must continue to operate without the need for crew action following the loss of the normal electrical power system;

—Electrical power required for continued safe-flight and landing;

—Electrical power required to restart the engines.

For compliance purposes:

1. A test demonstration of the loss of normal engine generated power is to be established such that:

a. The failure condition should be assumed to occur during night instrument meteorological conditions (IMC) at the most critical phase of flight relative to the electrical power system design and distribution of equipment loads on the system.

b. After the unrestorable loss of the source of normal electrical power, the airplane engines must be capable of being restarted and operations continued in IMC until visual meteorological conditions (VMC) can be reached. (A reasonable assumption can be made that turbine engine driven transport category airplanes will not have to remain in IMC for more than 30 minutes after experiencing the loss of normal electrical power).

c. After 30 minutes of operation in IMC, the airplane should be demonstrated to be capable of continuous safe flight and landing in VMC conditions. The length of time in VMC conditions must be computed based on the maximum flight duration capability for which the airplane is being certified. Consideration for speed reductions resulting from the associated failure must be made.

2. Since the availability of the emergency electrical power system operation is necessary for safe-flight, this system must be available before each flight.

3. The emergency electrical power system must be shown to be satisfactorily operational in all flight regimes.

2. *Command Signal Integrity*. In addition to compliance with § 25.671 of the FAR, it must be shown that for the elevator Electronic Flight Control System (EFCS):

(a) Signals cannot be altered unintentionally, or that the altered signal characteristics are such that the control authority characteristics will not be degraded to a level that will prevent continued safe-flight and landing; and

(b) Routing of wire EFCS wires and wire hundles must provide separation and redundancy to ensure maximum protection from damage due to common cause.

Discussion: The Saab 2000 will be using fly-by-wire (FBW) as a means to command and control the elevator surface actuators. In the FBW design being presented, command and control of the control surfaces will be achieved by electronic (AC, DC, or digital) interfaces. These interfaces involve not only the direct commands to the elevator control surfaces, but feedback and sensor signals as well.

Malfunctions could cause system instabilities, loss of function or freeze-up of the control actuator. It is imperative that after failure at least one path of the command signal, that is capable of providing safe flight and landing, remains continuous and unaltered.

The current regulations, which primarily address hydro-mechanical flight control systems, §§ 25.671 and 25.672, make no specific or implied reference that command and control signals remain unaltered from external interferences. Present designs feature steel cables and pushrods as a means to control hydraulic surface actuators. These designs are easily identifiable relative to the understanding that they are necessary for safe flight and landing and thus should be protected and continually inspected. However, the FBW designs are not easily discernible from non-essential electronics where placement of equipment and wire runs is not critical. Therefore, FBW requires additional attention when locating the equipment and wire runs.

It should be noted that:

—The proposed wording ''signals cannot be altered unintentionally'' is used in the Special Condition to emphasize the need for design measures to protect the FBW control system from the effects of the fluctuations in electrical power, accidental damage, environmental factors such as temperature, local fires, exposure to reactive fluids, etc. and any disruptions that may affect the command signals as they are being transmitted from their source of origin to the Power Control Actuators.

3. *Design Maneuver Requirements*. (a) In lieu of compliance with § 25.331(c)(1) of the FAR, the airplane is assumed to be flying in steady level flight (point A1 within the maneuvering envelope of § 25.333(b) and, except as limited by pilot effort in accordance with § 25.397(b), the cockpit pitching control device is suddenly moved to obtain extreme positive pitching acceleration (nose up). In defining the tail load condition, the response of the airplane must be taken into account. Airplane loads which occur subsequent to the point at which the normal acceleration at the center of gravity exceeds the maximum positive limit maneuvering factor, n, need not be considered.

(b) In addition to the requirements of § 25.331(c), it must be established that pitch maneuver loads induced by the system itself (e.g. abrupt changes in orders made possible by electrical rather than mechanical combination of different inputs) are acceptably accounted for.

Issued in Renton, Washington, on January 24, 1995.

Ronald T. Wojnar,

Manager, Transport Airplane Directorate, Aircraft Certification Service, ANM–100.

[FR Doc. 95–2565 Filed 2–1–95; 8:45 am]

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14 CFR Part 39

[Docket No. 94–CE–29–AD]

Airworthiness Directives; Twin Commander Aircraft Corporation Models 690C and 695 Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This document proposes to adopt a new airworthiness directive (AD) that would apply to certain Twin Commander Aircraft Corporation (Twin Commander) Models 690C and 695 airplanes. The proposed action would require initially inspecting the wing structure for cracks, modifying any cracked wing structure, and, if not cracked, either repetitively inspecting or modifying the wing structure. Results of full-scale fatigue testing that indicated areas in the wing that are subject to fatigue cracks prompted the proposed action. The actions specified by the proposed AD are intended to prevent wing damage caused by fatigue cracking, which, if not detected and corrected, could progress to the point of structural failure.

DATES: Comments must be received on or before April 9, 1995.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), Central Region, Office of the Assistant Chief Counsel, Attention: Rules Docket No. 94–CE–29–AD, Room 1558, 601 E. 12th Street, Kansas City, Missouri 64106. Comments may be inspected at this location between 8 a.m. and 4 p.m., Monday through Friday, holidays excepted.

Service information that applies to the proposed AD may be obtained from the Twin Commander Aircraft Corporation, 19010 59th Drive, NE, Arlington, Washington 98223. This information also may be examined at the Rules Docket at the address above.

FOR FURTHER INFORMATION CONTACT: Mr. Mike Pasion, Aerospace Engineer, FAA, Northwest Mountain Region, 1601 Lind Avenue S.W., Renton, Washington 98055–4056; telephone (206) 227–2594; facsimile (206) 227–1181.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the making of the proposed rule by submitting such written data, views, or arguments as they may desire. Communications should identify the Rules Docket number and be submitted in triplicate to the address specified above. All