

Docket No. NM-105. Comments may be inspected in the Rule Docket weekdays, except Federal holidays, between 7:30 and 4:00 p.m.

FOR FURTHER INFORMATION CONTACT: Mark I. Quam, FAA, Standardization Branch, ANM-113, Transport Standards Staff, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055-4056; telephone (206) 227-2145, facsimile (206) 227-1320.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the making of these proposed special conditions by submitting such written data, views, or arguments as they may desire. Communications should identify the regulatory docket or notice number and be submitted in duplicate to the address specified above. All communications received on or before the closing date of comments will be considered by the Administrator before further rulemaking action on this proposal is taken. The proposals contained in this notice may be changed in light of the comments received. All comments received will be available in the Rules Docket, both before and after the closing date for comments, for examination by interested parties. A report summarizing such substantive public contact with FAA personnel concerning this rulemaking will be filed in the docket. Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must include a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. NM-105." The postcard will be date stamped and return to the commenter.

Background

Special conditions are prescribed under the provisions of § 21.16 of the FAR when the applicable regulations for type certification do not contain adequate or appropriate standards because of novel or unusual design features. The new Saab 2000 incorporates a number of such design features.

The Saab 2000, certified on April 29, 1994, is a twin-engined, low-wing, pressurized turboprop aircraft that is configured for approximately 50 passengers. The airplane has two Allison Engine Company AE 2100A engines rated at 3650 shp. The propeller is a 6 bladed Dowty Rotol swept shaped propeller. A single lever controls each prop/engine combination. An Auxiliary

Power Unit (APU) will be installed in the tail. The airplane has provisions for two pilots, an observer, two flight attendants, overhead bins, a toilet, and provisions for the installation of a galley. There is a forward and aft stowage compartment and an aft cargo compartment. The airplane has a maximum operating altitude of 31,000 feet.

The Saab 2000 has a fully hydraulically powered electronically controlled rudder and will have fully hydraulically powered electronically controlled elevators as a follow-on design modification. The Powered Elevator Control System (PECS) provides control and power actuation of the left and right elevator surfaces. The PECS also provides aircraft stability augmentation and trim functions.

The proposed elevator system is in many respects similar to the rudder design and is comprised of a mix of analog and digital circuitry and has no mechanical backup. Control columns are connected to Linear Variable Differential Transducers (LVDT), stick damper(s), auto pilot servo, linear springs with break-outs and are interconnected with an electronic disconnect unit.

The position transducers (LVDT), connected to the control columns, provide signals to two Powered Elevator Control Units (PECU). Each PECU controls two Elevator Servo Actuators (ESA) through two separate Servo Actuator Channels (SAC). Each SAC is subdivided into a primary control lane and a monitor lane. Two of the four ESAs, controlled by one PECU, positions one elevator side.

The ESAs have two modes of operation, active and damped. The active mode will result when mode control current from the PECU and hydraulic pressure are available. One active servo actuator is sufficient to operate the elevator surface.

Elevator Servo Actuators value and actuator ram position feedback are provided by position transducers (LVDT). The PECUs are connected to one Flight Control Computer via the trim relay and two Digital Air Data Computers. The flight control computer also provides a signal to the auto pilot servo.

Stick to elevator gearing is a function of Indicated Airspeed (IAS). Trim and stability augmentation are based on IAS, vertical acceleration and flap position. Stick, trim and elevator position and status information are fed to the Engine Indicating and Crew Alerting System (EICAS).

Each PECU has built in Automatic Preflight Built in Test (PBIT) and

Continuous Built In Test (CBIT) circuitry and utilizing cross channel monitoring.

The elevator's actuators are supplied by three hydraulic circuits that are physically separated, isolated, fused and located to minimize common cause failures. The Number 1 hydraulic circuit is powered by the left engine and a backup DC pump and accumulators. The Number 2 hydraulic circuit is powered by the right engine and a backup AC pump and accumulators. The Number 3 hydraulic circuit is powered by an AC driven pump.

The Number 1 hydraulic circuit powers the left hand (LH) and right hand (RH) outboard servo actuators. The Number 2 hydraulic circuit powers the RH inboard servo actuator. The Number 3 hydraulic circuit powers the LH inboard servo actuator.

Hydraulic warnings and cautions in the event of hydraulic supply failure are provided by the EICAS.

The elevator system is electrically supported by two system sides, a LH and a RH side. The electrical system is normally powered by two AC generators, each driven by a propeller gear box. An APU equipped with a standby generator is installed. When only one of the three generators is working, it supplies power to both LH and RH sides.

Each LH and RH AC system side is connected via a Transformer Rectifier Unit (TRU) to a LH and RH DC system made up of a network of DC buses. A third center TRU is connected to a center circuit. The LH, RH and center buses can be supplied from batteries or from the TRUs. The center TRU will replace a failed RH or LH TRU. When only one TRU unit is working, the LH and RH buses are tied together with power being received from the remaining TRU.

Two DC feeders in addition to two AC feeders provide power aft of the debris zone. The LH side is routed through the ceiling and the RH side is routed through the floor.

Type Certification Basis

The applicable requirements for U.S. type certification must be established in accordance with §§ 21.16, 21.17, 21.19, 21.29, and 21.101 of the FAR. Accordingly, based on the application date of June 9, 1989, and Saab Aircraft AB volunteering for certain later regulations, the TC basis for the Saab 2000 airplane is as follows:

Part 25 as amended by Amendments 25-1 through 25-71.