14 CFR Part 39

[Docket No. 95–NM–22–AD]

Airworthiness Directives; Boeing Model 747–100, –200, –300, and SP Series Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This document proposes the adoption of a new airworthiness directive (AD) that is applicable to certain Boeing Model 747–100, –200, –300, and SP series airplanes. This proposal would require revising the Airplane Flight Manual (AFM) to prohibit the use of the autoland function. This proposed AD would also require installation of a diode and a marker on shelves, making wiring changes to the flight mode annunciator (FMA) of the autopilot/flight director system, which would terminate the requirements for the AFM revision; and follow-on operational tests. This proposal is prompted by a report indicating that, during a triple channel approach, the autoland system failed to flare a Model 747–200 series airplane for landing, which resulted in a hard landing. The actions specified by the proposed AD are intended to prevent failure of the autoland system to flare the airplane for landing, which could subsequently result in a hard landing.

DATES: Comments must be received by August 22, 1995.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), Transport Airplane Directorate, ANM–103, Attention: Rules Docket No. 95–NM–22–AD, 1601 Lind Avenue, SW., Renton, Washington 98055–4056. Comments may be inspected at this location between 9:00 a.m. and 3:00 p.m., Monday through Friday, except Federal holidays.

The service information referenced in the proposed rule may be obtained from Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124–2207. This information may be examined at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington.

FOR FURTHER INFORMATION CONTACT: Hania Younis, Aerospace Engineer, Systems and Equipment Branch, ANM–130S, FAA, Transport Airplane Directorate, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055–4056; telephone (206) 227–2764; fax (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 shall identify the Rules Docket number and be submitted in triplicate to the address specified above. All communications received on or before the closing date for comments, specified above, will be considered before taking action on the proposed rule. The proposals contained in this notice may be changed in light of the comments received.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the proposed rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each FAA-public contact concerned with the substance of this proposal will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must submit a self-addressed, stamped postcard on which the following statement is made: ''Comments to Docket Number 95–NM–22–AD.'' The postcard will be date stamped and returned to the commenter.

Availability of NPRMs

Any person may obtain a copy of this NPRM by submitting a request to the FAA, Transport Airplane Directorate, ANM–103, Attention: Rules Docket No. 95–NM–22–AD, 1601 Lind Avenue, SW., Renton, Washington 98055–4056.

Discussion

The FAA has received a report indicating that, during a triple channel approach, the autoland system failed to flare a Boeing Model 747–200 series airplane for landing, which resulted in a hard landing. Investigation revealed that the approach was initiated with an inoperative number 3 NAV receiver (thereby making the channel ''C'' autopilot inoperative). Investigation also revealed that a separate failure caused the channel ''B'' autopilot to automatically disengage at the start of the flare. This resulted in loss of the autopilot function due to the disagreement between channel ''A'' and channel ''C.''

The integrity of the autoland system depends on a fault annunciator system. An invalid discrete signal from the number 3 NAV receiver should cause the glideslope (G/S) flag located on the P2 panel to illuminate. Along with this G/S flag on the P2 panel, the channel ''C'' autopilot system should have annunciated a steady amber autopilot warning light on the captain's and first officer's flight mode annunciator (FMA). This warning light would alert the flightcrew that the autopilot had changed from fail-operational to fail-passive mode. The subsequent dual channel autopilot failure should have been annunciated by a steady red warning light, warning the flightcrew that the autopilot had changed from fail-passive mode to complete autopilot disconnect.

Further investigation revealed that the autopilot warning light on the captain's and first officer's FMA did not illuminate during this dual channel fault incident. The cause of this lack of annunciation has been attributed to the faulty logic of the autopilot/flight director system.

This condition, if not corrected, could result in failure of the autoland system to flare the airplane for landing, which may result in a hard landing.

The FAA has reviewed and approved Boeing Alert Service Bulletin 747–22A2212, Revision 1, dated April 27, 1995, and Boeing Alert Service Bulletin 747–22A2213, Revision 1, dated April 27, 1995, which describe procedures for installing a diode and a marker on the E1–4, E1–5, and E1–6 shelves, and making wiring changes to the FMA of the autopilot/flight director system. These service bulletins also describe procedures for performing operational tests of the newly installed diodes. This installation and wiring change will ensure the illumination of a steady amber autopilot warning light on the captain's and the first officer's FMA's when a sensor fails after commencement of a triple autopilot approach.

The autopilot/flight director system installed on Boeing Model 747–200 series airplanes is similar in design to the autopilot/flight director system installed on Model 747–100, –300, and SP series airplanes; therefore, the FAA finds that Model 747–100, –300, and SP series airplanes are subject to the same unsafe condition identified in this proposal.

Since an unsafe condition has been identified that is likely to exist or develop on other products of this same type design, the proposed AD would require revising the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) to prohibit the use of the LAND mode, if there is a flag on any channel. This proposed AD would also require installing a diode and a marker on certain shelves, and making wiring