

**14 CFR Part 39****[Docket No. 96-NM-151-AD]****RIN 2120-AA64****Airworthiness Directives; Boeing Model 737-100, -200, -300, -400, and -500 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 all Boeing Model 737-100, -200, -300, -400, and -500 series airplanes. This proposal would require repetitive tests to verify the integrity of the yaw damper coupler, and various follow-on actions. This proposal also would require a one-time inspection to determine the part number of the engage solenoid valve of the yaw damper, and replacement of the valve with a valve having a different part number, if necessary. This proposal is prompted by a review of the design of the flight control systems on Model 737 series airplanes. The actions specified by the proposed AD are intended to prevent sudden uncommanded yawing of the airplane due to potential failures within the yaw damper system, and consequent injury to passengers and crewmembers.

**DATES:** Comments must be received by October 24, 1996.

**ADDRESSES:** Submit comments in triplicate to the Federal Aviation Administration (FAA), Transport Airplane Directorate, ANM-103, Attention: Rules Docket No. 96-NM-151-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 Commercial Flight Systems Group, Air Transport Systems Division, Honeywell Inc., Box 21111, Phoenix, Arizona 85036; and 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 96-NM-151-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. 96-NM-151-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056.

**Discussion**

In October 1994, the FAA organized a team to conduct a Critical Design Review (CDR) of the flight control systems installed on Boeing Model 737 series airplanes in an effort to confirm the continued operational safety of these airplanes. The formation of the CDR team was prompted by questions that arose following an accident involving a Model 737-200 series airplane that occurred near Colorado Springs, Colorado, and one involving a Model 737-300 series airplane that occurred near Pittsburgh, Pennsylvania. The CDR team's analysis of the flight control systems was performed independent of the investigations of these accidents, which are conducted by the National Transportation Safety Board (NTSB). The cause of the accidents has not yet been determined.

The CDR team was composed of representatives from the FAA, the NTSB, other U.S. government organizations, and foreign airworthiness authorities. The team reviewed the service history and the design of the flight control systems of Model 737 series airplanes. The team completed its review in May 1995. The recommendations of the team include various changes to the design of the flight control systems of these airplanes, as well as correction of certain design deficiencies. This proposed AD is one of nine rulemaking actions being issued by the FAA to address the recommendations of the CDR team.

**Reports Received by FAA**

The FAA has received a number of reports of uncommanded yawing of Boeing Model 737 series airplanes. This condition may have been caused by one of two separate failures of the yaw damper system:

First, the rate gyroscope of the yaw damper coupler can fail as a result of wear of the rotor bearing. Such wear can cause increased vibration, which may be translated into brinnels (dents) in the gimbal bearings. This condition can cause faults in the gyroscope at certain input rates and consequent rudder kicks to the yaw damper authority.

Second, intermittent failures of the engage solenoid valve of the yaw damper on the rudder power control units (PCU's) could occur. Valves having certain part numbers have encapsulated electrical coils (i.e., the coils are coated with a thermoset epoxy moulding compound or similar material), which makes the valves less susceptible to damage and exposure to moisture. Corrosion could occur if the coils are exposed to moisture. Corrosion or damage of the coils could result in abrupt uncommanded rudder deflections.

These conditions, if not corrected, could result in sudden uncommanded yawing of the airplane and consequent injury to passengers and crewmembers.

**FAA's Determinations**

In light of this information, the FAA finds that certain procedures must be required to ensure the safety of the affected fleet. These procedures include tests to verify the integrity of the yaw damper coupler, and various follow-on actions (including tests to verify the integrity of the rate gyroscope of the yaw damper coupler; and removal, overhaul, replacement, repair, and reinstallation of the rate gyroscope), as necessary. The FAA has reviewed the procedures for accomplishment of these actions, which are contained in the documents described below:

1. Honeywell Component Maintenance Manual (CMM) 22-10-27, Revision 6, dated September 1, 1992. The CMM describes procedures for repetitive tests to verify the integrity of the yaw damper coupler; repair of the yaw damper coupler, if necessary; removal and reinstallation of the rate gyroscope of the yaw damper coupler; replacement of the rate gyroscope with a new part; and replacement of the yaw damper coupler with a new or serviceable coupler.

2. Sperry Overhaul Manual 24-09-20, RG1000 Miniature Rate Gyroscope, Part No. 2589124-902." The overhaul manual describes procedures for overhauling the rate gyroscope of the yaw damper coupler.

3. Honeywell Engineering Specification No. IT2589124, "Integrated Test Specification for Rate Gyroscope, Part Number 2589124-902," dated October 9, 1992. This document describes procedures for tests to verify the integrity of the rate gyroscope of the yaw damper coupler.

Additionally, the Boeing 737 Overhaul Manual specifies procedures for a one-time inspection of the engage solenoid valve of the yaw damper to determine the part number of the valve, and replacement of the valve with a valve having a different part number. The FAA finds that the accomplishment of these actions will adequately address intermittent failures of the engage solenoid valve. [Operators should note that Boeing In-Service Activities Report 95-03-2725-10, dated February 16, 1995 (for Model 737-100 and -200 series airplanes), or 95-04-2725-10, dated February 24, 1995 (for Model 737-300, -400, and -500 series airplanes), provide additional information concerning interchangeability of solenoid valve part numbers.]

#### Explanation of Requirements of Proposed Rule

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 repetitive tests to verify the integrity of the yaw damper coupler, and various follow-on actions. These actions would be required to be accomplished in accordance with the Honeywell CMM, the Honeywell engineering specification document, and the Sperry overhaul manual described previously.

The proposed AD also would require a one-time inspection to determine the part number of the engage solenoid valve of the yaw damper, and replacement of the valve with a valve having a different part number, if

necessary. These actions would be required to be accomplished in accordance with the Boeing 737 Overhaul Manual discussed previously.

#### Explanation of Proposed Compliance Times

In developing appropriate compliance times for the proposed actions, the FAA's intent is that they be performed during a regularly scheduled maintenance visit for the majority of the affected fleet, when the airplanes would be located at a base where special equipment and trained personnel would be readily available, if necessary. In addition, the FAA considered the availability of necessary parts. In light of these considerations, the FAA has specified compliance times of 3,000 hours time-in-service for accomplishment of the initial tests (and 6,000 hours time-in-service for the repetitive tests), and 18 months for accomplishment of the one-time inspection. The FAA finds that these intervals correspond closely to the intervals representative of most of the affected operators' normal maintenance schedules. The FAA considers that the proposed compliance times will provide an acceptable level of safety.

#### Interim Action

This proposed AD is considered to be interim action. The manufacturer has advised that it currently is developing a modification that will positively address the unsafe condition addressed by this AD. Once this modification is developed, approved, and available, the FAA may consider additional rulemaking.

#### Cost Impact

There are approximately 2,675 Model 737 series airplanes of the affected design in the worldwide fleet. The FAA estimates that 1,091 airplanes of U.S. registry would be affected by this proposed AD.

The FAA estimates that it would take approximately 4 work hours per airplane to accomplish the proposed tests of the yaw damper coupler, and that the average labor rate is \$60 per work hour. Based on these figures, the cost impact of the proposed tests on U.S. operators is estimated to be \$261,840, or \$240 per airplane, per test.

The FAA estimates that it would take approximately 1 work hour per airplane to accomplish the proposed one-time inspection of the engage solenoid valve, at an average labor rate of \$60 per work hour. Based on these figures, the cost impact of the proposed inspection on U.S. operators is estimated to be \$65,460, or \$60 per airplane.

The cost impact figures discussed above are based on assumptions that no operator has yet accomplished any of the proposed requirements of this AD action, and that no operator would accomplish those actions in the future if this AD were not adopted.

Should an operator be required to replace an engage solenoid valve of the yaw damper, it would take approximately 3 work hours to accomplish the replacement, at an average labor rate of \$60 per work hour. Required parts would cost approximately \$1,688 per airplane. Based on these figures, the cost impact of any necessary replacement of an engage solenoid valve is estimated to be \$1,868 per airplane.

#### Regulatory Impact

The regulations proposed herein would not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this proposal would not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

For the reasons discussed above, I certify that this proposed regulation (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) if promulgated, will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A copy of the draft regulatory evaluation prepared for this action is contained in the Rules Docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption "ADDRESSES."

#### List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

#### The Proposed Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration proposes to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

#### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

**§ 39.13 [Amended]**

2. Section 39.13 is amended by adding the following new airworthiness directive:

Boeing: Docket 96-NM-151-AD.

*Applicability:* All Model 737-100, -200, -300, -400, and -500 series airplanes, certificated in any category.

Note 1: This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been otherwise modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (c) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

*Compliance:* Required as indicated, unless accomplished previously.

To prevent sudden uncommanded yawing of the airplane due to potential failures within the yaw damper system, and consequent injury to passengers and crewmembers, accomplish the following:

(a) Within 3,000 hours time-in-service after the effective date of this AD, and thereafter at intervals not to exceed 6,000 hours time-in-service: Perform tests to verify the integrity of the yaw damper coupler, in accordance with procedures specified in the Honeywell Component Maintenance Manual 22-10-27, Revision 6, dated September 1, 1992.

(1) If the yaw damper coupler passes the tests, prior to further flight, remove the rate gyroscope in accordance with Section 4E, page 103, of the Honeywell Component Maintenance Manual; and perform tests to verify the integrity of the rate gyroscope, in accordance with procedures specified in Honeywell Engineering Specification No. IT2589124, "Integrated Test Specification for Rate Gyroscope, Part Number 2589124-902," dated October 9, 1992.

(i) If the rate gyroscope passes the tests, reinstall the rate gyroscope in accordance with Section 3F, page 504, of the Honeywell Component Maintenance Manual.

(ii) If the rate gyroscope fails the tests, prior to further flight, accomplish either paragraph (a)(1)(i)(A) or (a)(1)(ii)(B) of this AD.

(A) Overhaul the rate gyroscope in accordance with Sperry Overhaul Manual 24-09-20, "RG1000 Miniature Rate Gyroscope, Part No. 2589124-902;" and reinstall the rate gyroscope in accordance with Section 3F, page 504, of the Honeywell Component Maintenance Manual. Or

(B) Replace the rate gyroscope with a new part in accordance with Section 3F, page 504, of the Honeywell Component Maintenance Manual.

(2) If the yaw damper coupler fails the tests, prior to further flight, accomplish either paragraph (a)(2)(i) or (a)(2)(ii) of this AD.

(i) Repair the coupler in accordance with the Honeywell Component Maintenance Manual, and perform tests specified in

paragraph (a)(1) of this AD to verify the integrity of the rate gyroscope. Or

(ii) Replace the coupler with a new coupler, or with a serviceable coupler on which the integrity of the rate gyroscope has been verified in accordance with paragraph (a)(1) of this AD. Accomplish the replacement in accordance with procedures specified in the Honeywell Component Maintenance Manual.

(b) Within 18 months after the effective date of this AD: Perform a one-time inspection of the engage solenoid valve of the yaw damper to determine the P/N of the valve. If any valve having P/N 10-60881-1, -3, or -9 is installed, prior to further flight, replace it with a valve having P/N 10-60881-8 or -13. Accomplish the actions in accordance with Chapter 27-20-01 of the Boeing 737 Overhaul Manual.

Note 2: Boeing In-Service Activities Report 95-03-2725-10, dated February 16, 1995 (for Model 737-100 and -200 series airplanes), or 95-04-2725-10, dated February 24, 1995 (for Model 737-300, -400, and -500 series airplanes), provide additional information concerning interchangeability of solenoid valve part numbers.

(c) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Seattle ACO, FAA, Transport Airplane Directorate. Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Seattle ACO.

Note 3: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

(d) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

Issued in Renton, Washington, on August 21, 1996.

Ronald T. Wojnar,

Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. 96-21883 Filed 8-23-96; 9:03 am]

BILLING CODE 4910-13-U

**14 CFR Part 39**

[Docket No. 96-NM-152-AD]

RIN 2120-AA64

**Airworthiness Directives; Boeing Model 737-100 and -200 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 all Boeing Model 737-100 and -200 series

airplanes. This proposal would require replacement of certain outboard and inboard wheel halves with improved wheel halves. This proposal also would require cleaning and inspecting certain outboard and inboard wheel halves for corrosion, missing paint in large areas, and cracks; and repair or replacement of the wheel halves with serviceable wheel halves, if necessary. This proposal is prompted by a review of the design of the flight control systems on Model 737 series airplanes. The actions specified by the proposed AD are intended to prevent failure of the wheel flanges, which could result in failure of the hydraulics systems, jammed flight controls, loss of electrical power, or other combinations of failures; and consequent reduced controllability of the airplane.

**DATES:** Comments must be received by October 24, 1996.

**ADDRESSES:** Submit comments in triplicate to the Federal Aviation Administration (FAA), Transport Airplane Directorate, ANM-103, Attention: Rules Docket No. 96-NM-152-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 Allied Signal Aerospace Company, Bendix Wheels and Brakes Division, South Bend, Indiana 46624; and Bendix, Aircraft Brake and Strut Division, 3520 West Mestmoor Street, South Bend, Indiana 46624. This information may be examined at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington.

**FOR FURTHER INFORMATION CONTACT:** David Herron, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington; telephone (206) 227-2672; 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.