

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 January 19, 1996.

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14 CFR Part 39

[Docket No. 96-NM-14-AD]

Airworthiness Directives; Jetstream Model 4101 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 Jetstream Model 4101 airplanes. This proposal would require revising the Airplane Flight Manual (AFM) to specify procedures that would prohibit flight in freezing rain or freezing drizzle conditions (as determined by certain visual cues), limit or prohibit the use of various flight control devices, and provide the flight crew with recognition cues for, and procedures for exiting from, severe icing conditions. This proposal is prompted by results of a review of the requirements for certification of the airplane in icing conditions, new information on the icing environment, and icing data provided currently to the flight crews. The actions specified by the proposed AD are intended to minimize the potential hazards associated with operating the airplane in freezing rain or freezing drizzle conditions by providing more clearly defined procedures and limitations associated with such conditions.

DATES: Comments must be received by March 7, 1996.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), Transport Airplane Directorate, ANM-103, Attention: Rules Docket No. 96-NM-14-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056. Comments may be inspected at this location between 9 a.m. and 3 p.m., Monday through Friday, except Federal holidays.

This information may be examined at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington.

FOR FURTHER INFORMATION CONTACT: William Schroeder, Aerospace Engineer, Standardization Branch, ANM-113, FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (206) 227-2148; fax (206) 227-1149.

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-14-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-14-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056.

Discussion

In October 1994, a transport category airplane was involved in an accident in which severe icing conditions (believed to be composed of freezing drizzle size droplets) were reported in the area. Although the National Transportation Safety Board (NTSB) has not yet made a finding of probable cause of the accident, loss of control of the airplane may have occurred because ice accretion on the upper surface of the wing aft of the area protected by the ice protection system caused airflow separation, which resulted in the

ailerons being forced to a right-wing-down control position. There also is concern that the autopilot, which was engaged, may have masked the unusual control forces generated by the ice accumulation. These conditions, if not corrected, could result in a roll upset from which the flight crew may be unable to recover.

The atmospheric conditions (freezing drizzle) that may have contributed to the accident are outside the icing envelope specified in Appendix C of part 25 of the Federal Aviation Regulations (14 CFR part 25) for certification of the airplane. Freezing rain is an atmospheric condition that also is outside the icing envelope. Such icing conditions are not defined in Appendix C, and the FAA has not required that airplanes be shown to be capable of operating safely in those icing conditions.

The FAA finds that flight crews are not currently provided with adequate information necessary to determine when the airplane is operating in icing conditions for which the airplane is not certificated or what action to take when such conditions are encountered. Therefore, the FAA has determined that flight crews must be provided with such information and must be made aware of certain visual cues that may indicate the airplane is operating in atmospheric conditions that are outside the icing envelope.

Since such information is not available to flight crews, and no airplane is certificated for operation in freezing drizzle conditions, the FAA finds that the potentially unsafe condition (described previously as control difficulties following operation of the airplane in icing conditions outside of the icing envelope) is not limited to airplanes having the same type design as that of the accident airplane.

The FAA recognizes that the flight crew of any airplane that is certificated for flight in icing conditions may not have adequate information concerning flight in icing conditions outside the icing envelope. However, the FAA finds that the specified unsafe condition must be addressed as a higher priority on airplanes that are turbopropeller-powered and have unpowered control systems. Many of these airplanes carry passengers in regularly scheduled revenue service in the United States. Since turbopropeller-powered airplanes are more likely to operate at low altitudes and to make more frequent landings, they are more likely to encounter icing conditions that are outside the icing envelope. Additionally, the flight crew of an

airplane having an unpowered roll control system must rely solely on physical strength to counteract roll control anomalies, whereas a roll control anomaly that occurs on an airplane having a powered roll control system need not be offset directly by the flight crew.

Subsequent to the accident, the FAA, in conjunction with certain foreign airworthiness authorities and airplane manufacturers, conducted reviews of certain transport and small category airplanes to determine if any airplanes might experience control difficulty should a ridge of ice form aft of the deicing boots and forward of the ailerons. The review focused on turbopropeller-powered airplanes having unpowered roll control systems, since those airplanes are similar in design to the accident airplane and because they are frequently exposed to icing conditions.

During the reviews of these airplanes, an artificial ice shape was used in the demonstration of roll control characteristics. This ice shape was chosen as representative of a shape that might form if an airplane were operated in freezing drizzle. Results of these reviews revealed that certain airplanes demonstrated acceptable roll control forces. However, the dynamics of ice accretion in freezing drizzle are not well understood, and the FAA recognizes that such airplanes could develop ice shapes other than those tested during the review. Upon further review, the FAA may consider additional rulemaking.

Following examination of all relevant information, the FAA has determined that certain limitations and procedures should be included in the FAA-approved Airplane Flight Manual (AFM) for the affected airplanes, as follows:

- Jetstream Model 4101 airplanes must be prohibited from flight in freezing rain or freezing drizzle conditions (as determined by certain visual cues); and
- Flight crews must be provided with information that would minimize the potential hazards associated with operating the airplane in freezing rain or freezing drizzle conditions.

The FAA has determined that such limitations and procedures currently are not defined adequately in the AFM for these airplanes.

This airplane model is manufactured in the United Kingdom and is type certificated for operation in the United States under the provisions of section 21.29 of the Federal Aviation Regulations (14 CFR 21.29) and the

applicable bilateral airworthiness agreement.

Explanation of the Provisions of the Proposed AD

Since an unsafe condition has been identified that is likely to exist or develop on other airplanes of the same type design, the proposed AD would require revising the Limitations Section of the AFM to specify procedures that would:

- Prohibit flight in freezing rain or freezing drizzle conditions (as determined by certain visual cues);
- Prohibit use of the autopilot when ice is formed aft of the protected surfaces of the wing, or when an unusual lateral trim condition exists; and
- Require that all icing detection lights be operative prior to flight into icing conditions at night.

The prohibition on flight in freezing rain or freezing drizzle is not intended to prohibit purely inadvertent encounters with the specified atmospheric conditions. However, pilots should make all reasonable efforts to avoid such encounters and must immediately exit the conditions if they are encountered.

This proposed AD also would require revising the Normal Procedures Section of the AFM to specify procedures that would:

- Limit the use of the flaps and prohibit the use of the autopilot when ice is observed forming aft of the protected surfaces of the wing, or if unusual lateral trim requirements or autopilot trim warnings are encountered; and
- Provide the flight crew with recognition cues for, and procedures for exiting from, severe icing conditions.

Cost Impact

The FAA estimates that 35 airplanes of U.S. registry would be affected by this proposed AD, that it would take approximately 1 work hour per airplane to accomplish the proposed actions, and that the average labor rate is \$60 per work hour. Based on these figures, the cost impact of the proposed AD on U.S. operators is estimated to be \$2,100, or \$60 per airplane.

The cost impact figure discussed above is 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.

In addition, the FAA recognizes that this proposed AD may impose operational costs. However, those costs are incalculable because the frequency

of occurrence of the specified conditions and the associated additional flight time are indeterminable.

Nevertheless, because of the severity of the unsafe condition addressed, the FAA has determined that continued operational safety necessitates the imposition of these costs.

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 USC 106(g), 40113, 44701.

§ 39.13 [Amended]

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

Jetstream Aircraft Limited: Docket 96–NM–14–AD.

Applicability: All Model 4101 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 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 use the authority provided in paragraph (b) of this AD to request approval from the FAA. This approval may address either no action, if the current configuration eliminates the unsafe condition; or different actions necessary to address the unsafe condition described in this AD. Such a request should include an assessment of the effect of the changed configuration on the unsafe condition addressed by this AD. In no case does the presence of any modification, alteration, or repair remove any airplane from the applicability of this AD.

Compliance: Required as indicated, unless accomplished previously.

To minimize the potential hazards associated with operating the airplane in freezing rain or freezing drizzle icing conditions by providing more clearly defined procedures and limitations associated with such conditions, accomplish the following:

(a) Within 30 days after the effective date of this AD, accomplish the requirements of paragraphs (a)(1) and (a)(2) of this AD.

Note 2: Operators must initiate action to notify and ensure that flight crewmembers are apprised of this change.

(1) Revise the FAA-approved Airplane Flight Manual (AFM) by incorporating the following into the Limitations Section of the AFM. This may be accomplished by inserting a copy of this AD in the AFM.

• Flight in meteorological conditions described as freezing rain or freezing drizzle, as determined by the following visual cues, is prohibited:

-Unusually extensive ice accreted on the airframe in areas not normally observed to collect ice.

-Accumulation of ice on the upper surface (for low-wing airplanes) or lower surface (for high-wing airplanes) of the wing aft of the protected area.

-Accumulation of ice on the propeller spinner farther back than normally observed.

If the airplane encounters conditions that are determined to contain freezing rain or freezing drizzle, the pilot must immediately exit the freezing rain or freezing drizzle conditions by changing altitude or course.

Note: The prohibition on flight in freezing rain or freezing drizzle is not intended to prohibit purely inadvertent encounters with the specified meteorological conditions. However, pilots should make all reasonable efforts to avoid such encounters and must immediately exit the conditions if they are encountered.

• Use of the autopilot is prohibited when any ice is observed forming aft of the protected surfaces of the wing, or when unusual lateral trim requirements or autopilot trim warnings are encountered.

Note: The autopilot may mask tactile cues that indicate adverse changes in handling characteristics. Therefore, the pilot should consider not using the autopilot when any ice is visible on the airplane.

• All icing detection lights must be operative prior to flight into icing conditions at night. [NOTE: This supersedes any relief provided by the Master Minimum Equipment List (M MEL).]"

(2) Revise the FAA-approved AFM by incorporating the following into the Normal Procedures Section of the AFM. This may be accomplished by inserting a copy of this AD in the AFM.

“WARNING

“If ice is observed forming aft of the protected surfaces of the wing, or if unusual lateral trim requirements or autopilot trim warnings are encountered:

• If the flaps are extended, do not retract them until the airframe is clear of ice.

• The flight crew should reduce the angle-of-attack by increasing speed as much as the airplane configuration and weather allow, without exceeding design maneuvering speed.

• If the autopilot is engaged, hold the control wheel firmly and disengage the autopilot. Do not re-engage the autopilot until the airframe is clear of ice.

• Exit the icing area immediately by changing altitude or course.

• Report these weather conditions to Air Traffic Control.

CAUTION

Severe icing comprises environmental conditions outside of those for which the airplane is certificated. Flight in freezing rain, freezing drizzle, or mixed icing conditions (supercooled liquid water and ice crystals) may result in extreme ice build-up on protected surfaces exceeding the capability of the ice protection system, or may result in ice forming aft of the protected surfaces. This ice may not be shed using the ice protection systems, and may seriously degrade the performance and controllability of the airplane.

THE FOLLOWING SHALL BE USED TO IDENTIFY FREEZING RAIN/FREEZING DRIZZLE ICING CONDITIONS:

• Unusually extensive ice accreted on the airframe in areas not normally observed to collect ice.

• Accumulation of ice on the upper surface (for low-wing airplanes) or lower surface (for high-wing airplanes) of the wing aft of the protected area.

• Accumulation of ice on the propeller spinner farther back than normally observed.

THE FOLLOWING MAY BE USED TO IDENTIFY POSSIBLE FREEZING RAIN/FREEZING DRIZZLE CONDITIONS:

• Visible rain at temperatures below +5 degrees Celsius [outside air temperature (OAT)].

• Droplets that splash or splatter on impact at temperatures below +5 degrees Celsius OAT.

PROCEDURES FOR EXITING THE FREEZING RAIN/FREEZING DRIZZLE ENVIRONMENT:

These procedures are applicable to all flight phases from takeoff to landing. Monitor the outside air temperature. While severe icing may form at temperatures as cold as -18 degrees Celsius, increased vigilance is

warranted at temperatures around freezing with visible moisture present. If the visual cues specified in the AFM for identifying possible freezing rain or freezing drizzle conditions are observed, accomplish the following:

• Exit the freezing rain or freezing drizzle severe icing conditions immediately to avoid extended exposure to flight conditions outside of those for which the airplane has been certificated for operation. Asking for priority to leave the area is fully justified under these conditions.

• Avoid abrupt and excessive maneuvering that may exacerbate control difficulties.

• Do not engage the autopilot. The autopilot may mask unusual control system forces.

• If the autopilot is engaged, hold the control wheel firmly and disengage the autopilot.

• If an unusual roll response or uncommanded control movement is observed, reduce the angle-of-attack by increasing airspeed or rolling wings level (if in a turn), and apply additional power, if needed.

• Avoid extending flaps during extended operation in icing conditions. Operation with flaps extended can result in a reduced wing angle-of-attack, with ice forming on the upper surface further aft on the wing than normal, possibly aft of the protected area.

• Report these weather conditions to Air Traffic Control.”

(b) 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, Standardization Branch, ANM-113, FAA, Transport Airplane Directorate. Operators shall submit their requests through an appropriate FAA Principal Operations Inspector, who may add comments and then send it to the Manager, Standardization Branch, ANM-113.

Note 3: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Standardization Branch, ANM-113.

(c) 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 January 19, 1996.

Darrell M. Pederson,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

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14 CFR Part 39

[Docket No. 96-NM-13-AD]

Airworthiness Directives; Jetstream Model BAe ATP Airplanes

AGENCY: Federal Aviation Administration, DOT.