

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 121, 125, and 135

[Docket No. 27987; Amendment No. 121-265, 125-29, 135-68]

RIN 2120-AF19

Revision to Minimum Altitudes for the Use of an Autopilot

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The Federal Aviation Administration amends the regulations governing the use of approved flight control guidance systems with automatic capability (autopilot), and would permit the use of an autopilot at altitudes less than 500 feet above ground level (AGL) during the takeoff and initial climb phases of flight. This amendment permits this use of approved autopilot systems for takeoff and initial climb phases of flight if the Administrator authorizes their use as stated in an air carrier's operations specifications. By permitting air carriers to take advantage of technological improvements in the operational capabilities of autopilot systems, safety will be enhanced by decreasing pilot workload during the critical takeoff phase of flight.

EFFECTIVE DATE: This amendment is effective June 20, 1997.

FOR FURTHER INFORMATION CONTACT: Richard A. Temple, AFS-410, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, telephone (202) 267-5824.

SUPPLEMENTARY INFORMATION:**Background**

The FAA is amending §§ 121.579, 125.329, and 135.93 of Title 14 of the Code of Federal Regulations to permit certificate holders that operate under parts 121, 125, or 135 to obtain authorization to use an approved autopilot system for takeoff if authorized by the FAA in the certificate holders's operations specifications. Section 121.579(a) currently states that no person may use an autopilot en route, including climb and descent, at an altitude above the terrain that is less than twice the maximum altitude loss specified in the Airplane Flight Manual (AFM) for a malfunction of the autopilot under cruise conditions, or less than 500 feet, whichever is higher. Sections 125.329(a) and 135.93(a) state that no person may use an autopilot at an

altitude above the terrain which is less than 500 feet or less than twice the maximum altitude loss specified in the approved Airplane Flight Manual or equivalent for a malfunction of the autopilot, whichever is higher. Paragraphs (b) and (c) in § 121.579, paragraphs (b), (c) and (d) of § 125.329, and paragraphs (b), (c), and (d) in § 135.93 provide exceptions to this restriction for the approach and landing phases of flight.

The current restrictions in the regulations regarding the use of an autopilot below 500 feet AGL have not been amended since 1965, when provisions for the landing phase of flight were incorporated into § 121.579. This change was incorporated into part 135 when § 135.93 was recodified in 1978, and into part 125 when § 125.329 was established in 1980. Although significant improvements in autopilot technology have been made, the regulations have not been amended to specifically permit the use of an autopilot system during the takeoff and initial climb phases of flight. In addition, the aviation industry anticipates further improvements in autopilot technology, particularly in relation to using the autopilot during the takeoff phase of flight.

The Aviation Rulemaking Advisory Committee (ARAC) and some industry members expressed their opinion that amending the regulation to permit increased usage of autopilot engagement during takeoff would have certain benefits, such as allowing pilots to focus proportionately more attention on duties other than the manual manipulation of the flight controls and constant surveillance of the cockpit instruments during the critical takeoff phase of flight. Based on a recommendation from the Autopilot Engagement Working Group of the ARAC, the FAA published a Notice of Proposed Rulemaking (NPRM) in the **Federal Register** on December 9, 1994 (59 FR 63868). Comments on the proposal closed January 9, 1995. Seven comments were received.

Based on autopilot technology, the expectation that technology will continue to advance, and the safety benefits that will result from using improved technology, the FAA amends the current regulations to permit authorization for the use of an autopilot during the takeoff and initial climb phases of flight; to enable parts 121, 125, and 135 operators, when authorized, to use existing technology; and to further promote technological advances while increasing the level of public safety.

The FAA and the aviation industry anticipate that further technological advances will lead to the evolution of additional autoflight guidance systems that can safely be used from initiation of takeoff roll to completion of landing.

Comments

The FAA received seven comments on the proposal. The Regional Airline Association (RAA) comments that it supports the proposal; that support is based primarily on its development and recommendation by the ARAC.

The National Air Transportation Association (NATA) comments that it supports the proposal because it allows operators to take advantage of advanced technology, thus decreasing pilot workload during a critical phase of flight. NATA also comments that it will achieve a significant increase in aviation operating safety without a corresponding increase in capital or operating expenses.

Maine Instrument Flight (MIF) supports the proposal, saying that this is a good example of how the FAA can respond to advances in technology and give regulatory relief to operators.

The Air Line Pilots Association (ALPA) also supports the proposed rule and advisory circular based on the permitted advantages of technological improvements in the operational capabilities of approved flight control guidance systems.

Boeing Commercial Airplane Group comments that it agrees with the FAA that an automatic pilot system can provide the flightcrew with work load relief during the busy takeoff and landing phases of flight. Boeing notes, however, that the NPRM addresses only a limited part of the total minimum engagement altitude issue, which is currently being addressed by the FAA/JAA/Industry All Weather Operations Harmonization Program. Boeing also sees no value in the proposed advisory circular discussed in the NPRM, commenting that existing methods of approval and use of the autopilot are adequate.

AVRO International Aerospace comments that it supports the proposal, but is concerned that it does not cover all phases of flight for which modern autopilots are being used, e.g., circling approaches. AVRO also comments that the certification procedures of 14 CFR 25.1329 must be updated since they do not specifically cover the operational changes of this proposal. AVRO notes that there is some overlap in the areas covered by the Autopilot Engagement Requirements Working Group and the All Weather Operations Working Group, and urges the FAA to coordinate within

the ARAC system to determine areas of responsibility. AVRO views the proposed advisory circular as "increasing certification costs," and therefore recommends that it not be issued. AVRO also requests that commenters be given at least 30 working days to comment; they find 30 calendar days, over a holiday period, unacceptable.

The Civil Aviation Authority makes a similar comment on the abbreviated comment period. CAA commends the removal of arbitrary takeoff limitations, but also notes that this operational proposal fails to provide detailed airworthiness requirements, which it finds need to be developed in harmonization with the JAA requirements in JAR 25.1329.

In response to Boeing, AVRO, and CAA, the FAA notes that the ARAC, in establishing the initial terms of reference for its task, focused on the takeoff phase of flight only which is addressed in this rule change. Certification issues for future autopilot systems are presently being addressed by the ICAO All Weather Operations Harmonization working group and will complement this rule change.

The ICAO All Weather Operations Harmonization working group will propose the modification of 14 CFR 25.1329, automatic pilot systems, to determine any additional certification requirements for future uses of autopilot systems. This action is in keeping with the goal of FAR/JAR harmonization to the maximum extent possible.

The FAA agrees with Boeing and AVRO that the initial approval of the equipment installation would be addressed in the normal certification process. The advisory circular is addressed to operators under parts 119, 121, 125, and 135, providing issues to consider when requesting changes to their operations specifications. The FAA sees no additional program requirement or cost in the areas of certification and maintenance to the certificate holder by providing this list for their use. However, the FAA acknowledges that there may be minimal costs voluntarily incurred by the certificate holder associated with modifying existing training programs and manuals to utilize the new/lower engagement altitude.

An abbreviated comment period was determined by the FAA as adequate because of previous FAA/Industry participation and agreement through the ARAC process.

In the course or reviewing and addressing comments to the proposed minimum takeoff engagement height requirement the FAA noted that

additional adjustments to the proposed provisions were necessary to properly relate these amended provisions to operational procedures and other provisions of the FAR, such as 14 CFR 121.189. Adjustments to the language of the provisions were also necessary to acknowledge that proper operational use of automatic flight guidance and control systems may sometimes require specific mode use constraints or minimum engagement altitudes above that demonstrated in the AFM. For example, because autoflight system use must be consistent with both lateral and vertical obstacle clearance requirements, and must take into account irregular terrain in the departure path, non-normal procedures for such things as engine failure, and the application of different methods for autoflight engagement height airworthiness demonstrations, it was recognized that the FAA and the operator may sometimes need to operationally specify mode use constraints or minimum engagement heights above that demonstrated and specified in the AFM. Issues such as these are typically addressed by the FAA's Flight Standardization Board (FSB) for each aircraft type, and any additional provisions for safe operational autoflight system use, if required, are identified by the FAA. Although the language in sections 121.579(d)(2), 125.329(e)(2), and 135.93(e)(2) [redesignated in this rule as sections 121.579(d)(3), 125.329(e)(3), and 135.93(e)(3)] was designed to address issues like the irregular terrain in the departure path, it would not have addressed some of the other issues mentioned above which warrant a higher minimum engagement height for the autopilot than specified in the AFM. Accordingly, the language of each of the provisions was modified to acknowledge this, and note that the Administrator may in certain instances find it necessary for safety to operationally specify engagement heights above or different than the minimum specified in the AFM. In view of the modifications discussed above, it was necessary to add some new language to the three sections to make it clear that engagement of the autopilot below the greater of two altitudes specified in §§ 121.579(a), 125.329(a), or 135.93(a) is only permitted if the AFM specifies a minimum engagement height. Thus, under these amendments, engagement of the autopilot is prohibited below the minimum engagement altitude specified in the AFM and may in some circumstances be prohibited below an altitude that is

higher than the altitude specified in the AFM.

The Amendment

Section 121.579

Section 121.579 is amended by adding a new paragraph (d), which will allow the Administrator to issue operations specifications that establish the minimum altitude permitted to engage/use an autopilot during the takeoff and initial climb phases of flight. In addition, § 121.579(a) will be amended by striking the words "paragraphs (b) and (c)" and inserting the words "paragraphs (b), (c), and (d)."

Section 125.329

Section 125.329 is amended by adding paragraph (e) to allow the Administrator to issue operations specifications that establish the minimum altitude permitted to engage/use an autopilot during the takeoff and initial climb phases of flight. In addition, § 125.329(a) is amended by striking the words "paragraphs (b), (c), and (d)" and inserting the words "paragraphs (b), (c), (d), and (e)."

Section 135.93

Section 135.93 is amended by redesignating paragraph (e) as paragraph (f) and adding a new paragraph (e) to allow the Administrator to issue operations specifications that establish the minimum altitude permitted to engage/use an autopilot during the takeoff and initial climb phases of flight. In addition, § 135.93(a) is amended by striking the words "paragraphs (b), (c), and (d)" and inserting the words "paragraphs (b), (c), (d), and (e)."

Paperwork Reduction Act

The information collection requirements in the amendment to §§ 121.579, 125.329, and 135.93 have previously been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.) and have been assigned OMB Control Number 2120-0008.

Economic Assessment

The FAA has determined that this rulemaking is not a significant rulemaking action as defined by Executive Order 12866, and therefore no assessment is required. In accordance with Department of Transportation Policies and Procedures (44 FR 11034; February 26, 1979) when the impact of a regulation will be minimal if adopted, a full regulatory evaluation does not need to be prepared. The following discussion provides an economic

assessment of the proposal's anticipated costs and benefits.

Costs

The amendment will allow air carriers and commercial operators to seek authorization for the use of autopilot systems during the takeoff phase of flight. Because the decision whether to seek authorization for the use of autopilot is optional and voluntary, the amendment will not impose any additional costs on certificate holders that operate under parts 121, 125, or 135.

Benefits

This amendment will have positive effects on the safety of air operations. As with any change to operations specifications, the FAA reserves the right to determine whether suggested revisions to an air carrier's operations specifications meet the various criteria and guidelines that will ensure that the current level of safety is met or exceeded.

The use of the autopilot system below 500 feet AGL will enable the pilot to monitor the performance of the aircraft while performing other safety-related functions, such as scanning the outside area for other aircraft. Since less time is spent manipulating the controls, the use of the autopilot also enables the flightcrew to more readily identify any deviations from expected aircraft performance thus increasing the pilot's opportunity to quickly respond to any aircraft malfunctions. Increasing the pilot's opportunity to scan the area outside the aircraft for other airborne traffic, to detect aircraft malfunctions, and to respond more quickly to problems will increase the level of safety.

International Trade Impact Analysis

The FAA has determined that the amendments to parts 121, 125, and 135 will not have a significant impact on international trade. The amendments are expected to have no negative impact on trade opportunities for U.S. firms doing business overseas or foreign firms doing business in the United States.

International Civil Aviation Organization and Joint Aviation Regulations

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with ICAO Standards and Recommended Practices (SARP) to the maximum extent practicable. In reviewing the SARP for air carrier operations and JAR-OPS 1, the FAA

finds that there is not a comparable rule under either ICAO standards or the JAR.

Regulatory Flexibility Determination

Congress enacted the Regulatory Flexibility Act (RFA) of 1980 (Pub. L. 96-354) to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. The RFA requires agencies to review rules that may have a significant impact on a substantial number of small entities. This amendment will impose no additional costs on air carriers; therefore, it will not have a significant economic impact on small business entities.

Federalism Implications

The regulations contained herein will 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 amendment will not have sufficient implications to warrant the preparation of a Federalism Assessment.

Conclusion

For the reasons discussed in the preamble, and based on the findings in the Regulatory Flexibility Determination and the International Trade Impact Analysis, the FAA has determined that this regulation is not a significant rulemaking action under Executive Order 12866. This amendment is also considered nonsignificant under Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). In addition, the FAA certifies that this amendment will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the RFA.

List of Subjects

14 CFR Part 121

Air carriers, Aircraft, Airmen, Aviation safety, Reporting and recordkeeping requirements, Safety, Transportation.

14 CFR Part 125

Aircraft, Airmen, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 135

Air taxis, Aircraft, Airmen, Aviation safety, Reporting and recordkeeping requirements.

The Amendment

In consideration of the foregoing, the Federal Aviation Administration amends parts 121, 125, and 135 of the Federal Aviation Regulations (14 CFR parts 121, 125, and 135) as follows:

PART 121—OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

1. The authority citation for part 121 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 40119, 44101, 44701–44702, 44705, 44709–44711, 44713, 44716–44717, 44722, 44901, 44903–44904, 44912, 46105.

2. Section 121.579 is amended by removing “paragraphs (b) and (c)” and adding in their place “paragraphs (b), (c), and (d)” in paragraph (a) and adding new paragraph (d) to read as follows:

§ 121.579 Minimum altitudes for use of autopilot.

* * * * *

(d) *Takeoffs.* Notwithstanding paragraph (a) of this section, the Administrator issues operations specifications to allow the use of an approved autopilot system with automatic capability below the altitude specified in paragraph (a) of this section during the takeoff and initial climb phase of flight provided:

(1) The Airplane Flight Manual specifies a minimum altitude engagement certification restriction;

(2) The system is not engaged prior to the minimum engagement certification restriction specified in the Airplane Flight Manual or an altitude specified by the Administrator, whichever is higher; and

(3) The Administrator finds that the use of the system will not otherwise affect the safety standards required by this section.

PART 125—CERTIFICATION AND OPERATIONS: AIRPLANES HAVING A SEATING CAPACITY OF 20 OR MORE PASSENGERS OR A MAXIMUM PAYLOAD CAPACITY OF 6,000 POUNDS OR MORE

3. The authority citation for part 125 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701–44702, 44705, 44710–44711, 44713, 44716–44717, 44722.

4. Section 125.329 is amended by removing “paragraphs (b), (c), and (d)” and adding in their place “paragraphs (b), (c), (d), and (e)” in paragraph (a) and adding new paragraph (e) to read as follows:

§ 125.329 Minimum altitudes for use of autopilot.

* * * * *

(e) Notwithstanding paragraph (a) of this section, the Administrator issues operations specifications to allow the use of an approved autopilot system with automatic capability during the takeoff and initial climb phase of flight provided:

- (1) The Airplane Flight Manual specifies a minimum altitude engagement certification restriction;
- (2) The system is not engaged prior to the minimum engagement certification restriction specified in the Airplane Flight Manual or an altitude specified by the Administrator, whichever is higher; and
- (3) The Administrator finds that the use of the system will not otherwise affect the safety standards required by this section.

PART 135—OPERATING REQUIREMENTS: COMMUTER AND ON-DEMAND OPERATIONS

5. The authority citation for part 135 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701–44702, 44705, 44709, 44711–44713, 44715–44717, 44722.

6. Section 135.93 is amended by removing “paragraphs (b), (c), and (d)” and adding in their place “paragraphs (b), (c), (d), and (e)” in paragraph (a), redesignating paragraph (e) as paragraph (f), and adding new paragraph (e) to read as follows:

§ 135.93 Autopilot: Minimum altitudes for use.

* * * * *

(e) Notwithstanding paragraph (a) of this section, the Administrator issues operations specifications to allow the use of an approved autopilot system

with automatic capability during the takeoff and initial climb phase of flight provided:

- (1) The Airplane Flight Manual specifies a minimum altitude engagement certification restriction;
- (2) The system is not engaged prior to the minimum engagement certification restriction specified in the Airplane Flight Manual, or an altitude specified by the Administrator, whichever is higher; and
- (3) The Administrator finds that the use of the system will not otherwise affect the safety standards required by this section.

* * * * *

Issued in Washington, DC, on May 9, 1997.

Barry L. Valentine,
Acting Administrator.
[FR Doc. 97–12747 Filed 5–20–97; 8:45 am]
BILLING CODE 4910–13–M