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OUR REFERENCE

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U.S. Department of Transportation Dockets
Docket No. FAA-2002-14002
400 Seventh Street, SW.
Room Plaza 401
Washington, DC 20590
U.S.A.

**AIRBUS COMMENTS ON NPRM ON RNAV AND MISCELLANEOUS AMENDMENTS
(Docket No. FAA-2002-14002; Notice No. 02-20)**

Dear Sir,

Airbus is pleased to offer the attached comments concerning the FAA proposal to amend the Federal Aviation Regulations to facilitate the transitions from ground-based navigation to new reference sources, enable advances in technology, and increase efficiency of the National Airspace System (NAS) of the United States.

We thank the FAA for having offered this opportunity to express our views, and we apologize for late submission, which we hope will not prevent their consideration.

Yours sincerely,

A handwritten signature in black ink, appearing to read "P. de Gouttes", with a horizontal line underneath.

Philippe de Gouttes
Manager Aviation Regulations
Airworthiness Standards
Product Integrity Division



**AIRBUS COMMENTS ON NPRM ON RNAV AND MISCELLANEOUS AMENDMENTS
(Docket No. FAA-2002-14002; Notice No. 02-20)**

General Comments

In general, the intent of these amendments is excellent. Amendments to the Federal Aviation Regulations are sorely needed to accommodate the safety and efficiency benefits that modern technology can provide when combined with new operating and air traffic management concepts. While the vast majority of these amendments are fully appropriate and suitable to achieve the objectives of this rulemaking proposal, several of the proposals require amendment to achieve those objectives without adversely impacting the industry or potentially reducing the safety and efficiency benefits that can be achieved with modern technology.

Airbus fully supports changes in navigation and communication requirements which facilitate more efficient use of the modern technology that is incorporated in its aircraft. Airbus also fully supports the safety enhancements recommended by the Commercial Aviation Safety Team (CAST), including those related to enhanced navigation and instrument flight procedures. Airbus also supports the recommendations of the Free Flight Executive Steering Committee and the FAA efforts to modernize the NAS by transforming it to a performance based system.

Airbus sees the recommendations of CAST and the Free Flight Executive Steering Committee as essential guidelines to achieving the optimum safety and efficiency benefits that modern technology and new operating and air traffic management concepts can provide. The provisions of any rulemaking effort needs to be fully compatible with the government and industry consensus that have been developed within these two efforts.

Areas of Concern

The following provisions of the proposed rule and its preamble, which explains intent, require modification to be fully appropriate and suitable to achieve the stated objectives, or to optimize the safety and efficiency benefits that modern technology and new operating and air traffic management concepts can provide, or to minimize adverse and unreasonable impact on NAS users, or to correct errors in stated concepts.

The areas of concern primarily include numerous new or amended definitions in FAR Part 1 and provisions in 91.129, 91.175, 91,189, 97.1, 97.20, 121.99, 121.349 and related provisions in 125, 129, and 135. There are also sections of the preamble which are misleading, or inaccurate, or expound flawed or unnecessarily onerous concepts.

Definitions

The NPRM proposes to make a number of changes to FAR Part 1 by adding or amending definitions related to instrument flight operations. Some of these changes also have a very undesirable "ripple effect" in many of the operating rules.

A significant number of the changes do not appear to be related to the implementation of RNAV. There also does not appear to be any safety or operating efficiency reason for these changes. In fact, some of these changes adversely affect concepts and operations that have been used safely and efficiently for many years and remain fully suitable for operations in a performance based RNAV NAS.

Due to the high degree of connectivity and many very subtle relationships with other regulations as well as numerous evaluation and approval criteria and commonly accepted safe operating practices, it is not possible to understand the significance of a change to a single definition without examining all of the rules and criteria affecting instrument flight operations as a whole.

Approach Classification Definitions

As an example, the proposed definition of “precision approach procedure” appears to be right and reasonable for both current operations and operations in the future performance based NAS. However, when other proposed definitions are considered, such as “Approach Procedure With Vertical Guidance”, contradictions, conflicts, and confusion occurs. The proposed language for the three relevant definitions is shown below.

- Precision approach procedures (PA) is an instrument approach procedure based on a lateral path and a vertical glide path.
- Approach Procedure with vertical guidance (APV) is an instrument approach procedure based on lateral path and vertical glide path. These procedures may not conform to requirements for precision approaches.
- Nonprecision approach procedure is an instrument approach procedure based on lateral path and no vertical path.

These definitions would lead one to conclude that an APV approach is a “non precision” approach procedure even though it otherwise appears to meet the definition of a “precision approach”. But the relationship between the rules is more complex than just a conflict with the definitions. The operational consequences of this distinction are very significant due the connectivity and subtle relationships between the definitions and the operating rules and training requirements. The issue is further confused by the introduction of the term “precision final approach fix” which “is associated with a precision or APV approach procedure”.

Even though the piloting tasks for a “precision approach” and an “APV” approach are fundamentally the same (tracking lateral and vertical guidance) and the flight instrument displays are equivalent, the apparent classification of an APV approach as a “non precision approach” (since that is the only other choice in the definitions) would require each air carrier pilot to perform the very same tasks twice in each training sessions and continue to do so for the rest of the pilots flying career. This is very inefficient use of a valuable training resource and the time could be much better spent on much more relevant issues, such as CFIT or Loss of Control prevention. This also creates a large economic burden of the air carrier without achieving any significant safety or operational benefit.

Modern technology has reached the point where the old classification schemes are not truly relevant anymore. Current production large transport airplanes currently provide a lateral and vertical navigation capability that uses a combination of GPS, IRS, and barometric information. Currently this LNAV / VNAV capability is approved for instrument approach operations as low as 250 feet above the touchdown zone. However, many believe that this capability will be eventually demonstrated to be safe for operations below 200 feet. Therefore, it makes no sense to call this a “non precision” approach, especially when the piloting tasks are equivalent to an ILS approach. In fact, CAST has recommended that nonprecision approaches should be eliminated to significantly reduce the potential for CFIT and Approach and Landing accidents.

Airbus strongly believes that any instrument approach that provides both lateral and vertical guidance should be classified as a precision approach or just as a Category I approach, which raises another issue with the definitions.

The proposed definition is in direct conflict with the definition of a Category I operation that has been used safely and successfully in the air carrier operations specification since the mid 1980's. The Operations Specifications and the accompanying Air Carrier's Handbook defines a Category I operation as any instrument approach operation that is not a Category II or Category III operation. In other words, Category I operations include both "precision" and "non precision" approaches. The proposed change would limit Category I operations to "precision approaches" and would exclude "nonprecision" and "APV" approaches. There is no safety or operating efficiency reason for the change. In fact, there is no safety or operating efficiency reason why definitions for the various categories of approaches need to be defined in the regulations. In fact, Category I has never been defined in the FARs and there is more than 40 years of safe operation with it being defined in ACs and Orders. Plus, Category II and Category III operations were safely conducted for decades without a definition in the FARs.

Airbus believes that navigation technology is evolving so fast that the old NAS terms "precision approach" and "nonprecision approach" are rapidly losing utility or meaning. Therefore, for the future performance based NAS, Airbus believes that there should only be three ways to classify instrument approach operations, Category I, Category II, and Category III. These classifications should be based solely on operating minima (DA/DH and RVR/VIS).

Others have also made the argument that even these three categories are dated, since they arose to support an ILS based infrastructure and have limited meaning in a performance based NAS, which is independent of any particular sensor. These persons have argued that modern technology supports operating minima that is a continuum, where the same basic equipment fit can support a wide range of operating minima, based on the runway and approach lighting provided, the training of the flight crew, the maintenance program for a particular operator, and the software options purchased by the operator.

In summary, Airbus opposes the proposal to include the proposed definition of Category I operation in FAR Part 1. Airbus also opposes any definition or other regulatory requirement that would not permit an instrument approach that provided both lateral and vertical path guidance to be used in the same manner as ILS approaches have been traditionally used, including pilot training requirements. It is acknowledged that the operating minima and obstacle clearance requirements may not be equivalent to an ILS operation and that these factors would be based on the characteristic of the system.

Airbus strongly opposes any definition or other regulatory requirement that would not permit systems that provide both lateral and vertical path guidance to be used for Category II and Category III operations, if the system met the total system performance requirements that have been traditionally required of ILS based systems used in these operations.

The classification system for instrument approaches, in specific, and instrument operations, in general, should not be locked in the past but must be focused on operations in the future performance based NAS and the transition to that state.

Airbus recommends the elimination of all reference to "precision" and nonprecision" approaches. Instead of using these terms, all instrument approaches should be referred to as Category I, Category II, or Category III. Airbus also recommends the elimination of all references to APV or LPV approaches, which should be considered in the continuum of Category I approaches. Airbus also recommends that the definitions of Category II and Category III approaches be removed from

Part 1 to eliminate any adverse operational consequences or unnecessary operational restrictions that could be encountered in the future during the introduction on modern technology (such as enhanced vision, LAAS, etc) or the introduction of new operating concepts and capabilities.

Definition of Decision Height (DH)

Airbus opposes the proposed definition of Decision Height (DH). This definition has at least two significant flaws. First, it prohibits the use of radio altimeters to define the missed approach point in any future Category I approach, even if modern technology could provide a more precise and therefore safer decision point than having to rely on barometric information and its many limitations, especially in mountainous and precipitous terrain areas.

Secondly, it eliminates some Category II operations that have been safety and effectively conducted for more than 40 years. It has always been permissible to conduct certain Category II operations that used a decision point that was defined either by a barometric altimeter or an inner marker. This proposed definition would eliminate those operations. There is no accident or incident history that justifies this proposal and the economic consequences could be very large, especially in the future.

Airbus opposes any definition or other regulatory requirement that would prevent, in the future, using a DH in Category I operations or a DA or Inner Marker (or equivalent fix) in Category II operations to define the decision point. The proposed change could have an adverse impact of aircraft design, flight operations, and training.

The definitions for the decision points in instrument approaches should not be locked in the past but must be focused on operations in the future performance based NAS and the transition to that state.

Definition of HAT

Airbus disagrees with the proposed amendment to the definition of HAT and the statement in the preamble that this change is insignificant. There are many good reasons for the existing definition of Height Above the Touchdown Zone. Height above the touchdown zone is a major concept in the design of automatic landing systems and one of the basic principles of Category III operations. This change can have many adverse consequences on aircraft design and potentially on the safety of low visibility operations. There is no accident or incident history that justifies the need for this change. And, the only justification given is to make it consistent with ICAO. The most desirable solution is to align the ICAO definition with the way aircraft are designed, certificated, and operated.

Section 91.175 and Section 97.1

Airbus disagrees with the proposed change to Section 91.175 (f) and the intent stated in the preamble that "Takeoff minimums are determined from the analysis of a particular runway environment. Thus the departure procedure must be followed for a particular runway to ensure adequate obstacle clearance."

Airbus also disagrees with the proposed change to Section 97.1 and the intent stated in the preamble that "Proposed 97.1 would clarify that published civil takeoff weather minimums are



based on a specified route, and that pilots must comply with that route unless an alternative route has been assigned by ATC.”

For air carrier operations, the proposed changes are fundamentally flawed and create significant safety problems and impose unreasonable economic burdens on the air carriers. These changes are not compatible with the way air carriers have been safely and efficiently operating for more than 40 years. The changes are not justified by any air carrier accident or incident history.

Airbus acknowledges that pilots and dispatchers need to know that the takeoff minimums developed in accordance with Part 97 assume that the aircraft will adhere to the published flight track. However, it is unnecessary, unsafe, and economically onerous to require air carrier pilots to adhere to these tracks under certain circumstances. It has been a commonly accepted safe operating practice for many decades for air carriers to use a flight track in determining compliance with FAR 121.189 that is significantly different from the track published in the FAR Part 97 procedure.

Compliance with FAR 121.189 is demonstrated on an aircraft-by-aircraft and flight-by-flight basis, based on the specific circumstances associated with that flight. If it is necessary to use an alternate flight track during a portion of the departure to demonstrate compliance with FAR 121.189, the alternate route and the commit point are defined prior to takeoff. In such a case, it would be unsafe for the pilot to continue to fly the published departure flight path if an engine failure occurred prior to passing the commit point.

In these situations, it is unreasonable to require the pilot to immediately request and receive a new ATC clearance to comply with the FAR 121.189 routing. It is also unreasonable to expect the pilot to immediately exercise “emergency authority” in these cases since the route is preplanned and ATC has knowledge of the alternative routing. When an engine failure occurs, the pilots immediate actions must always be to maintain aircraft control, establish the aircraft on the proper flight path, perform the immediate action items on the checklist, and then communicate with ATC, as required.

Section 97.20

Airbus opposes the amendment to Section 97.20 which would incorporate FAA Order 8260.3, “U.S. Standard for Terminal Instrument Procedures (TERPS)”, and FAA Order 8260.19, “Flight Procedures and Airspace” into the Code of Federal Regulations. There is no accident or significant incident history that suggests that this change is required for safety reasons.

These orders are highly detailed and contain many administrative procedures and processes that are not safety related. Instrument flight procedures have been safely developed and safely used throughout the history of FAR Part 97 (about 40 years) without FAA Order 8260.3 or 8260.19 being incorporated into the Code of Federal Regulations. Airbus believes that this amendment would place significant burdens on the industry by unnecessarily delaying the implementation of new technologies and operational capabilities and by making changes to these Orders even more difficult and time consuming than they already are.

Airbus acknowledges and fully supports the need for thorough and thoughtful review of changes to these Orders by industry. Airbus also believes that it is essential to preserve the ability to rapidly correct administrative or technical errors or to quickly incorporate new technologies and operating concepts to enhance safety and improve operating efficiency. Airbus believes that there are many other more effective and efficient ways to achieve this objective without undergoing the onerous process associated with rulemaking, as required by the proposed amendment.

Section 121.99

Airbus opposes the amendment to Section 121.99 that would define “rapid communications” to mean that the calling party must be able to establish contact with the called party in less than 4 minutes. This proposed regulatory requirement is not realistic, places undue economic burden on operators, and fails to address technical and propagation limitations in communications technology that has been used safely and effectively for many decades.

Section 121.349

Airbus opposes the amendment to Section 121.349 which defines “independent navigation systems” in such a way that restricts, for all practical purposes, GPS equipped aircraft to operations that are within the operational service volume of either VOR, DME, or NDB ground stations. This unnecessary and extremely onerous requirement will eliminate many of the benefits of RNAV and the establishment of a performance based NAS.

The preamble makes it very clear that the FAA intent is to restrict operations to the service volume of existing nav aids. The preamble states that “the intent of this rule is to ensure that there is no single point of failure or event affecting aircraft navigation systems that causes loss of all ability to navigate along the intended route or to navigate to a suitable diversion airport”.

The preamble further states that “For example, two minimum GPS (or other satellite navigation) receivers may not be considered “independent”, since both are so vulnerable to interference.” This statement implies that such interference is very common. However, there is no information that defines the severity and the probability of this potential or any steps the FAA or other government agencies might take in the future to reduce or eliminate the generation of interfering signals.

The proposed change would mean that GPS operators would have to show that the aircraft has the capability to comply with Section 121.103 following one of the alleged GPS interference events, which hypothetically could occur at any point along the planned route of flight to the destination or any other airport required for the operation by Part 121.

In the case of a GPS equipped aircraft, this means that the operators must be able to show at each point along these routes that the aircraft retains the capability to “navigate the airplane along the route with the required degree of accuracy”. This means that the aircraft can never be outside the operational service volume of the existing nav aid network.

This is an unreasonable and unnecessary constraint that will significantly impede implementation of a performance based NAS and the achievement of the safety and efficiency benefits of RNAV systems which use GPS information. It will also impose a huge economic burden on many operators.

Additionally, there is no known criteria for industry or the FAA to use to determine which GPS systems can be considered “independent” and which are not. Furthermore, there is more than 10 years experience of using GPS systems as the primary means of navigation in oceanic areas. There are no known accident or serious incident in the operations that justify such an onerous requirement in any operation.



Summary

In summary, the intent of these amendments is excellent. Amendments to the Federal Aviation Regulations are sorely needed to accommodate the safety and efficiency benefits that modern technology can provide when combined with new operating and air traffic management concepts.

While the vast majority of these amendments are fully appropriate and suitable to achieve the objectives of this rulemaking proposal, several of the proposals require amendment to achieve those objectives without adversely impacting the industry or potentially reducing the safety and efficiency benefits that can be achieved with modern technology. Those amendments include many of the definitions proposed for Part 1. These amendments also include Sections 91.129, 91.175, 91.189, 97.1, 97.20, 121.99, and 121.349. Plus, many other changes are required in the other operating rules due to a "ripple effect" from the inappropriate definitions in FAR Part 1.

Airbus fully supports changes in navigation and communication requirements which facilitate safer and more efficient use of the modern technology that is incorporated in its aircraft. Airbus also fully supports the safety enhancements recommended by the Commercial Aviation Safety Team (CAST), the recommendations of the Free Flight Executive Steering Committee, and FAA efforts to modernize the NAS by transforming it to a performance based system.

Airbus is willing to assist the FAA in any way it can to implement a performance based national airspace system that optimizes the safety and efficiency benefits that can be achieved from the introduction of modern technology and new operating and air traffic management concepts. RNAV and RNP are both essential elements of this future NAS, which is why the regulatory requirements must assist and encourage this transformation while maintaining the level of safety everyone currently enjoys.