International Civil Aviation Organization

A42-WP/465[1]
TE/184
29/7/25

WORKING PAPER

ASSEMBLY — 42ND SESSION

TECHNICAL COMMISSION

Agenda Item 24: Aviation Safety and Air Navigation Priority Initiatives

USE OF TRANSITIONS TO COMPLEMENT STANDARD INSTRUMENT ARRIVALS (STARs): PROPOSAL FOR INCLUSION IN PANS-OPS (DOC 8168), VOLUME. II

(Presented by the Dominican Republic)

EXECUTIVE SUMMARY

Several Caribbean States have implemented instrument arrival procedures with segments called *transitions* to link air traffic services (ATS) routes directly to instrument approach procedures. These segments have proven to be especially useful in airspaces with low traffic volumes and low complexity of separation between arrival and departure flows.

Unlike standard instrument arrivals (STARs), these transitions are not formally recognized in Doc 8168, *Procedures for Air Navigation Services — Aircraft Operations*, Volume II — *Construction of Visual and Instrument Flight Procedures*, which limits their standardization, despite their being included in the national regulations of some States. This working paper proposes that ICAO consider including specific guidelines on the use of transitions as a complementary tool to STARs, to facilitate their harmonized and consistent implementation in environments of low operational complexity.

These transitions contribute to a more efficient design of performance-based procedures (PBN) and seamless operations in airports where the full implementation of STARs is not cost-effective. The international recognition of this instrument would strengthen regional interoperability and consistency with Doc 8168, the Aviation system block upgrade (ASBU) modules, and the Global Air Navigation Plan (GANP) objectives.

Action: The Assembly is invited to:
a) note the information in this paper;
b) support the proposal for ICAO to consider including, in future updates to Doc 8168, Volume II, guidance on the use of transitions as a complement to standard instrument arrivals (STARs); and
c) encourage States to adopt these transitions in their procedures, especially at airports with low traffic density, as an efficient and safe alternative.

[1] Spanish version provided by the Dominican Republic.

Strategic Goals:	This working paper relates to Strategic Goals *Every Flight is Safe and Secure; Aviation Delivers Seamless, Accessible, and Reliable Mobility for All;* and *The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All.*
Financial implications:	The activities mentioned in this working paper will be subject to the availability of resources from the 2026-2028 Regular Budget, as well as extrabudgetary and/or voluntary contributions.
References:	Doc 8168, *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS) Doc 4444, *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM) Doc 9613, *Performance-based Navigation (PBN) Manual*. Doc 9906, *Quality Assurance Manual for Flight Procedure Design* FAA Order 8260.3 – United States Standard for Terminal Instrument Procedures (TERPS)

1. INTRODUCTION

1.1 The design of standard instrument arrival procedures (STARs) has been essential to manage air traffic flows at airports with high operational density. However, in environments with limited traffic, many States use transition segments to link ATS routes directly to initial approach fixes (IAF) as a practical and efficient alternative.

1.2 These transitions are not defined in ICAO manuals, but they have proven to be functional, safe and adaptable in less complex environments. In some countries, such as the United States, transitions are officially included in national regulations as part of the design of terminal procedures, which serves as a valid technical reference for its implementation.

1.3 In the performance-based navigation (PBN) framework, transitions allow for optimized trajectories without unnecessarily overloading infrastructure and design, facilitating a seamless integration with instrumental approaches and reducing tactical load on air traffic controllers. This concept is consistent with the continuous climb operation (CCO)/continuous descent operation (CDO) modules of the GANP, which promote more efficient operations through continuous trajectories and a flexible airspace management.

2. DISCUSSION

2.1 The use of transitions as a complement to STARs offers multiple benefits, especially at regional or low-volume airports. These include:

a) more efficient and simple alternatives at airports where a full STAR is not warranted;

b) easier design and implementation of safe and predictable trajectories in low air traffic density environments; and

c) optimized use of resources in air navigation services and lower tactical load without compromising safety.

2.2 This practice has been successfully adopted by Member States such as the Dominican Republic, Barbados, Saint Lucia and Dominica, demonstrating its feasibility to efficiently link en-route airspace to approach procedures without compromising separation or air traffic management.

2.3 In addition, transitions facilitate integration with modern flight management systems (FMS) and area navigation (RNAV)/required navigation performance (RNP) trajectories, ensuring consistency with PBN and compliance with the interoperability requirements of the CNS/ATM system.

2.4 In terms of interoperability, standardization would facilitate a seamless integration with FMS and digitalization under system-wide information management (SWIM) and Flight and Flow — Information for a Collaborative Environment (FF-ICE), ensuring dynamic information sharing between air navigation services providers (ANSPs) and operators.

2.5 This initiative also has a positive impact on environmental sustainability. The implementation of transitions reduces radar vectors and unnecessary delays, minimizing fuel consumption and CO_2 emissions, in line with Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) commitments and GANP objectives.

2.6 However, the lack of recognition of transitions in ICAO documents creates barriers to their formal validation, hinders the standardization of criteria and limits their adoption in other similar settings. The United States Standard for Terminal Instrument Procedures (FAA TERPS) includes operational references to equivalent segments, which can serve as a technical basis that can be adapted to ICAO context.

2.7 It is recommended that transitions be incorporated into PANS-OPS (Doc 8168) as structures that can complement STARs, establishing criteria related to their design, gradients, minimum altitudes and protection areas, as well as standards for ARINC 424 coding and publication in AIXM databases.

3. CONCLUSION

3.1 Transitions constitute a valid technical tool to complement STARs in environments of low operational complexity. Their use contributes to an efficient design of procedures, optimizes the use of technical and human resources, while maintaining the required levels of safety.

3.2 It is recommended that ICAO consider including specific guidelines on the use of transitions in PANS-OPS (Doc 8168), Volume II, so that States can implement them in a standardized manner, thus promoting the global harmonization of procedures.

3.3 When considering this, the analysis should take into account the effect on FMS interoperability, global navigation satellite system (GNSS) integrity assurance and compatibility with CCO/CDO operations, in order to maximize the technical and environmental benefits of transitions on the global aviation system.

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