

Cir 325
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In-Trail Procedure (ITP) Using Automatic Dependent Surveillance — Broadcast (ADS-B)

Approved by the Secretary General
and published under his authority

International Civil Aviation Organization

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ABBREVIATIONS AND ACRONYMS

ADS-B	Automatic dependent surveillance — broadcast
AIS	Aeronautical information service
ATC	Air traffic control
ATS	Air traffic service
ATSA	Air traffic situational awareness
CPDLC	Controller-pilot data link communications
EUROCAE	European Organisation for Civil Aviation Equipment
GNSS	Global navigation satellite system
HF	High frequency
ITP	In-trail procedure
MOPS	Minimum operational performance standards
NM	Nautical mile
OpsSpecs	Operations specifications
PF	Pilot flying
PNF	Pilot not flying
RA	Resolution advisory
Resp.	Respectively
SASP	Separation and Airspace Safety Panel
SASP MSG	SASP Mathematical Sub-Group
SATCOM	Satellite phone communications
SLOP	Strategic lateral offset procedures
SOP	Standard operating procedure
SPR	Safety and performance requirements
VHF	Very high frequency

GLOSSARY

Note.— References followed by an asterisk () can be found in proposed Amendment 6 to the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444) (applicable November 2014).*

Closing ground speed. The difference between the ITP aircraft's ground speed and a reference aircraft's ground speed, used to determine the reduction in ITP distance.

Closing Mach speed. The difference between the ITP aircraft's Mach speed and a reference aircraft's Mach speed used to determine the reduction in ITP distance.

Free text message element. A message element used to convey information not conforming to any standardized message element in the CPDLC message set.

ITP aircraft. An aircraft approved by the State of Operator to conduct in-trail procedure (ITP).

ITP distance. The distance between the ITP aircraft and a reference aircraft as defined by:

- a) aircraft on the same track, the difference in distance to an aircraft calculated common point along a projection of each other's track; or
- b) aircraft on parallel tracks, the distance measured along the track of one of the aircraft using its calculated position and the point abeam the calculated position of the other aircraft.

Note.— Reference aircraft refers to one or two aircraft with ADS-B data that meet the ITP criteria described in the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444), 5.4.2.7, and are indicated to ATC by the ITP aircraft as part of the ITP clearance request.*

ITP equipment. All avionics which are involved in the execution of ITP functions needed to support or perform the ADS-B in-trail procedure (ITP).

Preformatted free text message element. A free text message element that is stored within the aircraft system or ground system for selection.

Standardized free text message element. A message element that uses a defined free text message format, using specific words in a specific order.

Note.— Standardized free text message elements may be manually entered by the user or pre-formatted.

REFERENCES

ICAO publications:

Annex 10 — Aeronautical Telecommunications, Volume II — Communication Procedures including those with PANS status
Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444)
Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168)
Safety Management Manual (SMM) (Doc 9859)
Manual on Airborne Surveillance Applications (Doc 9994) (draft)
Global Operational Data Link Document (GOLD), 2nd Edition

Other publications:

European Organisation for Civil Aviation Equipment (EUROCAE)

Safety, Performance and Interoperability Requirements Document for ATSA-ITP Application, Doc ED-159 and Supplement

Minimum Operational Performance Standards (MOPS) for Aircraft Surveillance Applications (ASA) System, Doc ED-194

RTCA

Safety, Performance and Interoperability Requirements Document for the In-Trail Procedure in Oceanic Airspace (ATSA-ITP) Application, DO-312

Minimum Operational Performance Standards (MOPS) for Aircraft Surveillance Applications (ASA) System, DO-317A and Supplement

Note.— RTCA documents DO-312 and DO-317A and Supplement are available for purchase from RTCA, Inc., 1150 18th Street NW, Suite 910, Washington, DC 20036. Tel.: (202) 833-9339. www.rtca.org.

Chapter 1

OVERVIEW

Note.— References followed by an asterisk () can be found in proposed Amendment 6 to the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444) (applicable November 2014).*

1.1 INTRODUCTION

The purpose of this document is to provide information on the in-trail procedure (ITP), its separation minimum and the work undertaken by ICAO in this regard. It is aimed at civil aviation authorities and service providers worldwide who are responsible for implementing ITP.

1.2 BACKGROUND

1.2.1 At the Tenth Meeting of the Separation and Airspace Safety Panel Working Group of the Whole (SASP WG/WHL/10, November 2006), the panel was advised that the Air Navigation Commission had requested that SASP, among other panels, be directly involved in assisting the Aeronautical Surveillance Panel (ASP) in the progression of a work programme focused on airborne surveillance applications.

1.2.2 The work programme included the development of ITPs that would enable reduced separation minimum to be used in planned flight trials. The use of airborne surveillance applications such as ITP would facilitate climb and descent of aircraft during the en-route phase to enable better use of optimal flight levels in environments where a lack of air traffic surveillance service or the application of large separation minima was a limiting factor. The system benefit of ITP is significant fuel savings, enabling greater payloads to be uplifted. In some situations, ITP also allows the pilot to more readily achieve an operationally desirable flight level, as in situations where persistent turbulence exists along the planned flight route.

Note.— The benefit analysis of the EUROCONTROL CRISTAL ITP project indicated that ITP has the potential to provide a 1 per cent reduction in the total fuel used by all aircraft in the North Atlantic fleet. This equates to an annual saving of €108 million and a reduction of 344 000 tonnes of carbon dioxide emissions.

1.2.3 RTCA and European Organisation for Civil Aviation Equipment (EUROCAE) developed a concept of operations for ITP that included a coordinated determination of requirements and interoperability for early implementation of ADS-B applications. ITP safety performance and requirements are specified in RTCA DO-312 and in EUROCAE ED-159, *Safety Performance and Interoperability Requirements Document for the In-Trail Procedure in Oceanic Airspace (ATSA-ITP) Application* and its Supplement. Furthermore, additional guidance can be found in EUROCAE ED-194 and RTCA DO-317A, *Minimum Operational Performance Standards (MOPS) for Aircraft Surveillance Applications (ASA) System* and its Supplement.