



# AOP10 — Time-Based Separation

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Time-based separation (TBS) consists in the separation of aircraft in sequence on the approach to a runway using time intervals instead of distances. It may be applied during final approach by allowing equivalent distance information to be displayed to the controller taking account of prevailing wind conditions. Radar separation minima and Wake Turbulence Separation parameters shall be integrated to provide guidance to the air traffic controller to enable time-based spacing of aircraft during final approach that considers the effect of headwind.

A TBS system that provides in real-time the separation to apply between two aircraft needs to be fed by:

- the aircraft sequence to anticipate aircraft specific speed management and to define the time separation required for a given wake category pair, and;
- the wind profile, approximately 10 minutes before landing, to define the separation on final approach.

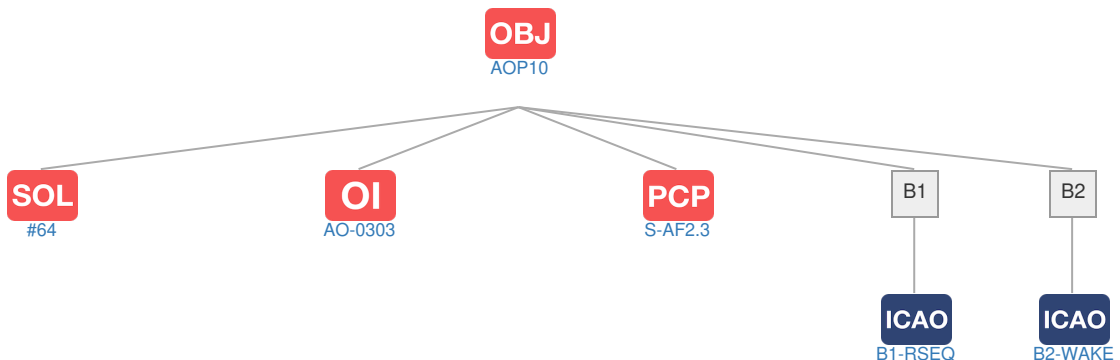
These require respectively the development of an easily usable sequencing tool and a now casting technology based upon merging wind profile measurement and heuristic techniques.

*NOTE FOR MILITARY AUTHORITIES: It is the responsibility of each military authority to review this Objective IN ITS ENTIRETY and address each of the SLoAs that the military authority considers RELEVANT for itself. This has to be done on top and above of the review of "MIL" SLoAs which identify actions EXCLUSIVE to military authorities.*

<b>Edition</b>	2022
<b>Stakeholders</b>	Regulator / Air Navigation Service Provider / Airspace Users
<b>Type</b>	SESAR
<b>Scope</b>	Airport
<b>Status</b>	Active

## Context

### Related Elements









## Applicability Area(s) and Timescales

**Applicability Area:** See list of airports in MP Level 3 Implementation Plan - Annexes







Timescales	From	By	Applicable to
Initial operational capability	01-01-2015	-	Applicability Area
Full operational capability	-	31-12-2023	Applicability Area

## Links to ATM Master Plan Level 2

### **OI** Operational Improvement Steps

Code	Title	IOC	FOC	Related Elements
AO-0303	<a href="#">Time Based Separation for Final Approach - full concept</a>	31-12-2019	31-12-2023	       









### **SOL** Links to SESAR Solutions

Code	Title	Program	Related Elements
#64	<a href="#">Time Based Separation</a>	SESAR1	     

### **PCP** Links to PCP ATM Sub-Functionalities

Code	Title	Related Elements
S-AF2.3	<a href="#">Time-Based Separation for Final Approach</a>	    

### **ICAO** ICAO Block Modules

Designator	Title	Related Elements
B1		
B1-RSEQ	Improved Airport operations through Departure, Surface and Arrival Management	   
B2		
B2-WAKE	Advanced Wake Turbulence Separation (Time Based)	   

## References

#### Applicable legislation

None

#### Applicable ICAO Annexes and other references

None

#### Deployment Programme 2022

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#### Operating Environments

Airport

Terminal Airspace

## Expected Performance Benefits

<b>Safety</b>	More consistent separation delivery on final approach.
<b>Capacity</b>	Improved aircraft landing rates leading to increased airport throughput. Reduction of holding times and stack entry to touchdown times leading to reduced delays.
<b>Operational efficiency</b>	-
<b>Cost efficiency</b>	-
<b>Environment</b>	Reduced emissions due to reduced holding times and stack entry to touchdown times.
<b>Security</b>	-

## Stakeholder Lines of Action

Code	Title	From	By	Related Enablers
REG01	Publish TBS operations procedures in national aeronautical information publications	01-01-2015	01-01-2024	
ASP01	Ensure AMAN system is compatible with TBS support tool	01-01-2015	01-01-2024	<b>EN</b>
ASP02	Modify CWP to integrate TBS Support tool with safety nets	01-01-2015	01-01-2024	
ASP03	Local MET info with actual glide-slope wind conditions to be provided into TBS Support tool	01-01-2015	01-01-2024	
ASP04	TBS Support tool to provide automatic monitoring and alerting of non-conformant behaviours, infringements, wrong aircraft	01-01-2015	01-01-2024	
ASP05	Implement procedures for TBS operations	01-01-2015	01-01-2024	
ASP06	Train controllers (Tower and Approach) on TBS operations	01-01-2015	31-12-2024	
USE01	Train flight crews on TBS operations	01-01-2015	01-01-2024	

## Supporting Material

Title	Related SLoAs
EUROCONTROL - GUID-187 - EUROCONTROL Guidelines on Time-Based Separation (TBS) for Final Approach - Edition 1.0 / 05/2021 <a href="https://www.eurocontrol.int/publication/eurocontrol-guidelines-time-based-separation-tbs-final-approach">https://www.eurocontrol.int/publication/eurocontrol-guidelines-time-based-separation-tbs-final-approach</a>	ASP01, ASP02, ASP03, ASP04, ASP05, ASP06, REG01
EUROCONTROL - SPEC-167 - EUROCONTROL Specification for Time Based Separation (TBS) support tool for Final Approach - Edition 1.0 / 02/2018 <a href="https://www.eurocontrol.int/publication/eurocontrol-specification-time-based-separation-tbs-support-tool-final-approach">https://www.eurocontrol.int/publication/eurocontrol-specification-time-based-separation-tbs-support-tool-final-approach</a>	ASP01, ASP02, ASP03, ASP04, ASP05, ASP06, REG01
SJU - SESAR Solution 64: Data Pack for Time Based Separation <a href="https://www.sesarju.eu/cesar-solutions/time-based-separation">https://www.sesarju.eu/cesar-solutions/time-based-separation</a>	ASP01, ASP02, ASP03, ASP04, ASP05, ASP06, REG01, USE01

## Consultation & Approval

<b>Working Arrangement in charge</b>	Airport Operations Team (AOT)
<b>Outline description approved in</b>	-
<b>Latest objective review at expert level</b>	-
<b>Commitment Decision Body</b>	Provisional Council (PC)
<b>Objective approved/endorsed in</b>	10/2015
<b>Latest change to objective approved/endorsed in</b>	10/2015