GLOBAL APPLICATION OF NEW AERODROME OPERATING MINIMUMS (AOM) CONCEPT

PURPOSE

The purpose of this Bulletin is to announce the new Standard AOM concept and provide a general description of the forthcoming changes concerning the way in which Jeppesen determines and applies Aerodrome Operating Minimums (AOM) for landing and take-off to its worldwide library of the Instrument Approach Procedures (IAP) and Airport charts in the Jeppesen Airway Manual.

BACKGROUND

Jeppesen has a long history as a global provider of aeronautical charts, navigation data and related services. Among these essential services has been the uniform publication of Aerodrome Operating Minimums on Airway Manual charts.

Jeppesen's policy to recognize and respect the authority of individual State Aviation Authorities is a fundamental principle past, present, and future.

The original Jeppesen Standard for AOM is known as the "Explanation of Common Airport Operating Minimum Specifications", or ECOMS. This standard was significantly influenced by U.S. FAA TERPS visibility tables which were widely accepted when ECOMS was originally created in the late 1970s.

Over the years Jeppesen has been involved in initiatives to develop new, harmonized global AOM concepts. These industry efforts led to the development of Joint Aviation Authorities JAR-OPS, then EASA AIR OPS and in 2017 to the publication of the 4th edition of ICAO's Doc 9365 Manual of All-Weather Operations (AWOM). This was the genesis of the decision to replace the aged ECOMS with a new Jeppesen AOM concept which is aligned with the new ICAO AWOM.

OBJECTIVES

The implementation of the new Standard AOM is intended to adopt accepted ICAO standards and to better serve developments in aviation (such as Continuous Descent Final Approach flight technique, Approaches with Vertical Guidance, Enhanced Vision Systems, Performance Based Navigation, etc.). It also leads to the presentation of the lowest possible visibility minimums which are authorized by the State of the aerodrome.

The **Jeppesen Standard AOM Policy** for the depiction of operating minimums is:

a. **State-provided AOM will always be depicted as published by the State**.

   State-provided visibilities may be lower than the visibilities determined according to ICAO's AWOM. The determination of lower values by the State is not precluded by ICAO if such values result in an acceptable level of safety. **Therefore, the State-provided visibilities will not being raised to match the visibilities from the tables in ICAO AWOM**.

   If the State does not provide AOM for "ALS out" condition, ALS out visibility values will be determined according to the rules and tables in ICAO's AWOM, but not below any State-provided visibilities for operational approach lights.

   "Provided by State" means either, minimum visibilities are published on procedure source, within the Aeronautical Information Publication (AIP), or a specific AOM concept has to be applied within this State.

b. **Where a State does not provide any AOM, Jeppesen will determine visibility values according to the rules and tables in ICAO's AWOM.**

c. **Operators with tailored AOM concepts** will continue to be accommodated in accordance with the established processes.

SCOPE

The systematic conversion from ECOMS to the new Standard AOM will affect operators differently depending on the nature of their operations; domestic or international, country of origin, etc.

Operators, especially those who operate internationally, are encouraged to become familiar with ICAO Doc 9365 AWOM with respect to possible implications. FAA and EASA approved operators might be less affected because of the harmonization with ICAO.

The effects of replacing ECOMS-based visibility values with the new ICAO-based visibilities will vary by State or by region.

In States where complete AOM are provided (such as United States), minimum visibility will typically remain the same. If the charted visibility was raised because of a higher ECOMS table value, it is now being replaced by the lower State-provided visibility value.

In States that provide no or incomplete AOM, significant changes will apply on instrument approach procedures charts. The new visibilities might be higher or lower than the charted ones.

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OVERVIEW OF NEW JEPPESEN STANDARD AOM

MINIMUMS BOX LABEL

In the future, the new Std label will apply to Jeppesen charts to indicate that the charted minimums are determined according to the rules of the new Jeppesen AOM concept.

The current Standard label on existing charts, which indicates the AOM are according to EU-OPS/EASA AIR OPS, will be replaced by Std/State.

Minimums with the Std/State label are determined according to a State Regulation which provides rules **similar** to the ICAO AWOM. Deviations from ICAO AWOM will be described in ATC State pages in the Airway Manual.

If the minimums are determined according to another AOM concept which is **not** similar to ICAO AWOM, the State Regulation will be indicated by a different label:

TERPS	minimums based on TERPS
State	State simply provides minimums, regulation/rules might be unknown
JAR-OPS	minimums based on JAR-OPS
Military	minimums supplied with Military procedures

SCENARIOS INVOLVING THE AVAILABILITY OF STATE-PROVIDED AOM FOR LANDING

Descent Limit

The procedure source may include the following information to determine the descent limit for the specific approach procedure:

a. DA, DH, DA(H) or MDA, MDH, MDA(H) or similar information;
b. OCA, OCH or OCA(H);
c. DA(H) or MDA(H) together with the procedure design OCA(H).

Guidelines for the determination of applicable Descent Limit values for landing minimums are outlined below.

Approach Type/ Condition	Source Provides	Descent Limit in Minimums Box labelled as	Notes
Precision (ILS, MLS, PAR, GLS, LPV200, etc.)	DA, DH, DA(H)	DA(H)	Adjustments may be made for rounded source values.
APV (LPV, LNAV/VNAV)			
Precision (ILS, MLS, PAR, GLS, LPV200, etc.)	OCA, OCH, OCA(H)	DA(H)	The DA(H) is determined according to the rules described in ICAO AWOM. Adjustments may be made for rounded source values.
APV (LPV, LNAV/VNAV)			
Non-precision (LNAV, LP, LOC, VOR, NDB, VDF, SRA, etc.)	MDA, MDH, MDA(H)	MDA(H)	**Depiction of MDA(H) as descent limit is independent from using the CDFA or non-CDFA flight technique.** Adjustments may be made for rounded source values.

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Approach Type/ Condition	Source Provides	Descent Limit in Minimums Box labelled as	Notes
Non-precision (LNAV, LP, LOC, VOR, NDB, VDF, SRA, etc.)	DA, DH, DA(H)	DA(H)	**It is assumed that a height loss adjustment is applied by the State.** Adjustments may be made for rounded source values.
Non-precision CDFA flight technique/continuous descent profile (LNAV, LP, LOC, VOR, NDB, VDF, SRA, etc.)	OCA, OCH, OCA(H)	DA/MDA(H)	The DA/MDA(H) is determined according to the rules described in ICAO AWOM and **does not include a height loss adjustment.** Adjustments may be made for rounded source values.
Non-precision non-CDFA flight technique/stepped descent profile (LNAV, LP, LOC, VOR, NDB, VDF, SRA, etc.)	OCA, OCH, OCA(H)	MDA(H)	The MDA(H) is determined according to the rules described in ICAO AWOM. Adjustments may be made for rounded source values.

HEIGHT LOSS ADJUSTMENT NOTES – APPLICABLE TO DA(H) MANEUVER ON NPA

Wherever a State authority has clearly prescribed, provided, or otherwise specified that a non-precision instrument approach procedure has to be flown using the CDFA flight technique, **and** the corresponding descent limit value is published by source as a DA(H), Jeppesen will assume the State-provided DA(H) value includes a height loss adjustment. Only in this case the descent limit would be charted as a DA(H) on a non-precision approach procedure.

IMPORTANT NOTES:

Jeppesen will not add any Height Loss Adjustment to any charted DA/MDA(H) or MDA(H) Descent Limit values unless specified by the State.

When using the CDFA flight technique and using a DA(H) in lieu of MDA(H), operators must determine and apply an appropriate Height Loss Adjustment applicable to the aircraft, landing configuration and/or operating requirements.

If it cannot be determined if the State has incorporated a Height Loss Adjustment, the ball note below will be shown on applicable Non-Precision IAP approach charts. It is the operator's responsibility to provide necessary guidance to pilots.

"VNAV DA(H) in lieu of MDA(H) depends on operator policy."

States may prescribe specific DA(H) height loss adjustment procedures for use when non-precision IAPs are flown using CDFA and DA(H) techniques. Such situations will be noted accordingly. A note will be added to the straight-in landing minimums referencing any State-provided height loss adjustment value or requirement.

IMPORTANT NOTE:

CDFA is a flight technique. It is not a procedure design criterion. Depending on varying regulatory operational requirements, for some operators the use of CDFA for NPAs may be mandatory; for others it may be optional.

Visibility

States may not always provide visibilities for landing. The table below shows the rules which are applied to determine the landing visibility:

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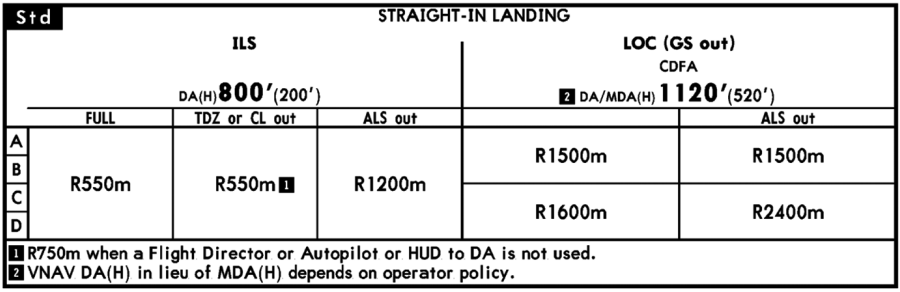
Scenario	Rules
States provide visibilities for with and without lights	– State-provided visibilities will be charted.
States provide visibilities for with approach lights only (approach lights are available and operational)	– State-provided visibilities will be charted. – Visibilities for "ALS out" will be determined according to ICAO AWOM, but not below the State-provided values for operational lights.
States provide visibilities without lights only (approach lights are not available or not operational at all)	– State-provided visibilities will be charted.
States provide no visibilities at all	– Visibilities will be determined according to ICAO AWOM.

Visibilities will always be labelled as R (= RVR), V (= VIS), C (= CMV) or as R/V (= RVR and/or VIS).

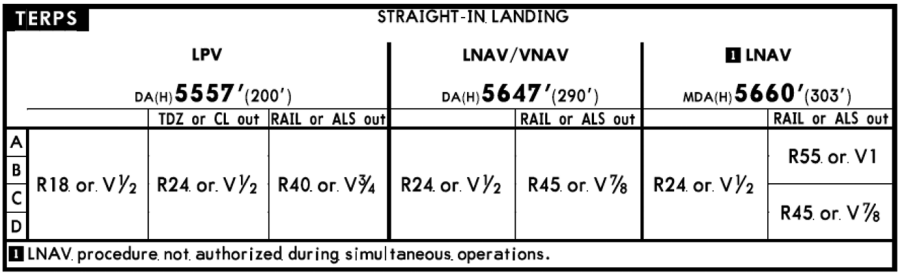
Samples



Std — STRAIGHT-IN LANDING

	ILS DA(H) 800′ (200′)			LOC (GS out) CDFA 2 DA/MDA(H) 1120′ (520′)	
	FULL	TDZ or CL out	ALS out		ALS out
A	R550m	R550m 1	R1200m	R1500m	R1500m
B					
C				R1600m	R2400m
D					

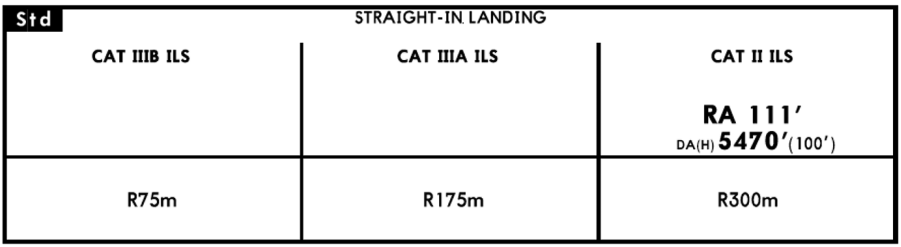
1 R750m when a Flight Director or Autopilot or HUD to DA is not used.
2 VNAV DA(H) in lieu of MDA(H) depends on operator policy.



TERPS — STRAIGHT-IN LANDING

	LPV DA(H) 5557′ (200′)			LNAV/VNAV DA(H) 5647′ (290′)		1 LNAV MDA(H) 5660′ (303′)	
		TDZ or CL out	RAIL or ALS out		RAIL or ALS out		RAIL or ALS out
A	R18 or V½	R24 or V½	R40 or V¾	R24 or V½	R45 or V⅞	R24 or V½	R55 or V1
B							
C							R45 or V⅞
D							

1 LNAV procedure not authorized during simultaneous operations.



Std — STRAIGHT-IN LANDING

CAT IIIB ILS	CAT IIIA ILS	CAT II ILS
		RA 111′ DA(H) 5470′ (100′)
R75m	R175m	R300m

SCENARIOS INVOLVING THE AVAILABILITY OF STATE-PROVIDED AOM FOR TAKE-OFF

States may provide visibility minimums for take-off or not. The table below shows the rules which are applied to determine the take-off visibilities:

GLOBAL APPLICATION OF NEW AERODROME OPERATING MINIMUMS (AOM) CONCEPT

Scenario	Rules
States provide visibilities for with and without operational runway lights *(depending on lighting conditions, like HIRL + CL, CL, RCLM, etc.)*	– State-provided visibilities will be charted.
States provide visibilities for operational runway lights *(lowest possible visibilities for best lights, no visibilities for other conditions)*	
States provide visibilities without lights	
States do not provide any visibilities for take-off	– Visibilities will be determined according to ICAO AWOM.

Visibilities will always be labelled as R (= RVR), V (= VIS), C (= CMV) or as R/V (= RVR and/or VIS).

Samples

Std	TAKE-OFF 1						
HIRL & CL (spacing 15m or less) & relevant RVR	RL & CL & relevant RVR	RL & CL	RL & RCLM	RL or CL	RL or RCLM	Adequate Vis Ref	
			DAY	NIGHT	DAY	DAY	NIGHT
TDZ R125m Mid R125m Rollout R125m	TDZ R150m Mid R150m Rollout R150m	R200m	R300m		R400m	R/V500m	NA
1 RWY 18, 25L, 25R: TDZ/Mid/Rollout R75m with approved lateral guidance system.							

Std	TAKE-OFF 1						
HIRL & CL (spacing 15m or less) & relevant RVR	RL & CL & relevant RVR	RL & CL	RL & RCLM	RL or CL	RL or RCLM	Adequate Vis Ref	
			DAY	NIGHT	DAY	DAY	NIGHT
TDZ R4 Mid R4 Rollout R4	TDZ R5 Mid R5 Rollout R5	R6	R10		R12	R16 V1/4	NA
1 RWY 18, 25L, 25R: TDZ/Mid/Rollout R3 with approved lateral guidance system.							

CEILING

A Ceiling will only be charted for straight-in landing, circle-to-land or take-off minimums if prescribed by the State authority as a parameter of the AOM they provide.

SUPPLEMENTAL AOM TEXT PAGE LISTINGS

At certain airports, supplemental AOM text page listings (like 10-9S pages) have been published in order to accommodate the needs of operators who require operating minimums that differ from the AOM as depicted on the Standard Airway Manual charts.

With the implementation of the new Standard AOM concept most of these supplemental minimums pages might become obsolete and will be removed accordingly.

However, the supplemental AOM text pages might still be required for airports where the State published minimums are lower than the AOM concept which is used by a specific operator.

An operator, who still needs supplemental AOM text pages, has to define the affected airports and has to provide the AOM rules, same as for the current procedure.

IMPLEMENTATION PLAN

ICAO Annex 6 requires that the operator establishes airport operating minimums for each airport to be used. This method needs to be approved by the State of the operator.

The publication of this Briefing Bulletin and the description of the new Standard AOM concept allows you to become familiar with the changes and to analyze the impact on the operations before the new concept is applied to the Airway Manual.

Jeppesen plans to start the publication of the new Standard AOM in **January 2020**.

GLOBAL APPLICATION OF NEW AERODROME OPERATING MINIMUMS (AOM) CONCEPT

All charts of an airport will be converted to the new concept at the same time. The conversion will be done together with regular revision activities.

For customized charts we continue to determine the minimums according to the minimums specifications which are agreed by the customer, only the depiction of the minimums box will be changed to the new format.

Airports will be converted according to the priorities below:

a. Airports with pure ECOMS minimums where no State-provided minimums are available.
   Existing 10-9S charts will be deleted during conversion.

b. Airports where ECOMS and State-provided minimums are charted.
   Minimums will be converted to "State" and existing 10-9S pages will be updated to show the higher of State and EASA AIR OPS.

c. Airports where "Standard", "Standard/DGCA", "TERPS" or "JAR-OPS" minimums are charted.
   These airports see almost no changes to the minimums, except the change to the new format.

DOCUMENTATION

A detailed description of take-off and landing minimums based on the rules from ICAO AWOM and their application on Jeppesen charts will be added into the Airway Manual (AWM) and to our web site www.jeppesen.com/aom.

The following documents are available with revision 23 AUG 19:

– Briefing Bulletin JEP 19-A;
– Jeppesen ATC-Chapter "Aerodrome Operating Minimums - Jeppesen" describing the rules and tables for the new concept;
– Table comparing ICAO Doc 9365 AOM rules against EASA AIR OPS, Indian CAR, TERPS and EU-OPS/CAR-OPS as part of the Jeppesen ATC chapter as mentioned above.

The following documents will be made available before January 2020:

– AOM scenarios and expected changes when converting to the new AOM concept (web site);
– State overview table to indicate which minimums concept will be applied for which State (web site);
– Airport & Approach Chart Legend for take-off and landing minimums (Airway Manual and web site).

Inquiries related to this Bulletin may be submitted through established customer support channels.