



JEPPESEN®

BRIEFING BULLETIN

JEP 15-A

NEW POLICY CONCERNING THE GLOBAL APPLICATION OF AERODROME OPERATING MINIMUMS (AOM) (EXPANDED VERSION)

PURPOSE

The purpose of this Expanded Bulletin is to provide additional details concerning an important announcement involving a significant change in policy concerning the way in which Jeppesen determines and applies Aerodrome Operating Minimums (AOM) to its worldwide library of Airway Manual Instrument Approach Procedure (IAP) charts.

An important aspect of the new AOM policy involves a major change to the depiction of the Profile View section of Non-Precision Approach (NPA) procedure charts. This related change is being made to improve the depiction of vertically-guided NPAs where Vertical Descent Angles (VDA) or Vertical Navigation (VNAV) capabilities exist and support the use of a stabilized approach in the final approach segment of an IAP. The new profile depiction is intended to give primary emphasis on the use of Constant Descent Final Approach (CDFA) flight techniques.

Because implementation of the new global AOM policy incorporates VDA, VNAV and CDFA concepts which, in turn, are applicable to many IAP profile view depictions, these two interrelated subjects were carefully considered. For this reason they are being announced at the same time and are intended to be implemented simultaneously.

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 Minima (AOM) depicted on Jeppesen's worldwide library of 'standard' IFR Airway Manual charts. For the most part AOM involve the determination of a set of minimum visibility values with respect to a defined minimum descent altitude and available landing aids.

For decades Jeppesen's policy has been to apply State-defined AOM when and where provided. If State-provided AOM was incomplete, or if AOM was not provided at all, Jeppesen would then apply 'standard' AOM visibility values based on accepted methods. This additional service was performed in an effort to provide pilots with a basic and uniform set of AOM wherever they operated in the world.

Jeppesen provides airlines and operators the option to customize or tailor selected Airway Manual charts with AOM of their determination. These tailored AOM are often lower than what the State or Jeppesen 'standard' AOM would otherwise provide. The Lower-Than-Standard AOM are based on a combination of possible factors such as individual operating procedures, regulatory approval, aircraft equipment, and flight crew training.

The original Jeppesen standard for AOM was 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 actively involved in international initiatives to develop new, harmonized global AOM concepts. These industry efforts led to the development of European JAR-OPS, then EU-OPS and, most recently, the publication of ICAO's Document 9365 All Weather Operations Manual (AWOM). ICAO's formal publication of a global set of AOM was the genesis of Jeppesen's decision to eliminate its original ECOMS and replace it, where applicable, with an entirely new standard AOM policy based on the ICAO AWOM.

Jeppesen's existing policy for the depiction of the flight track in the Profile View has been to graphically represent the IAP as it had been designed by the State authority. If a procedure was designed with a continuous descent from the FAF, the flight track would be depicted as such. If it was not, and the procedure involved a series of level segments, the flight track would be depicted using a "stepped" depiction. With the emergence and widespread acceptance of CDFA flight techniques, many conventional NPAs can now be flown using various methods to achieve a stabilized or continuous descent.

The corresponding change to Jeppesen's Profile View depictions, with emphasis on CDFA and stabilized methods, is a continuation of Jeppesen's ongoing support of the use of vertical guidance as an aid to non-precision IAPs. The safety benefits of CDFA are widely recognized.

Jeppesen's support of vertical guidance on NPAs originated in the late 1970s when the first advisory VNAV angles were included in the ARINC 424 NavData procedure coding. In the mid-1990s Jeppesen introduced the depiction of NavData VNAV angles in the Profile View of its charts in the interest of compatibility between NavData coding and the corresponding charts.

The vertical angle shown in the Profile View represents the Vertical Descent Angle (VDA) provided by a State Authority or, if one is not provided, the VNAV angle calculated by Jeppesen and coded in the NavData navigation database. VNAV angles are calculated to ensure clearance with any Step-Down Fix altitudes between the FAF and MAP.

IMPORTANT NOTE: The VNAV path is NOT to be flown BELOW the published Minimum Descent Altitude (MDA) unless visual minimums exist.

IMPORTANT NOTE: The VNAV path does NOT assure obstacle clearance below the MDA in the visual segment of a Non-Precision Approach procedure.

OBJECTIVES

The ICAO AWOM, harmonized on a global basis after years of dedicated international efforts, reflect the latest philosophies in instrument procedure design with an emphasis on vertically-guided navigation capabilities and flight techniques.

Jeppesen's new standard AOM policy will be based primarily upon ICAO Doc 9365 AWOM (this is nearly identical to the guidance provided in EU-OPS and EASA Air Ops). This important decision was made in recognition of ongoing international efforts intended to harmonize AOM around the world. The policy change is intended to help facilitate the implementation of those AOM concepts and the compatibilities with stabilized descents and CDFA flight techniques, where possible. Under EU-OPS, European operators are required to fly non-precision approaches using the CDFA flight technique unless otherwise approved by the State authority. It has been Jeppesen's long-standing policy to recognize and respect the authority of individual State Aviation Authorities. This is a fundamental principle of Jeppesen's AOM policy, past, present, and future.

The new Jeppesen standard AOM concept for the depiction of operating minimums will apply State-published visibilities and, if necessary, compare them to the ICAO-based values. When available, State AOM will always be depicted. State AOM may be supplemented with higher ICAO AOM values and noted accordingly. Where a State does not provide any AOM, the Jeppesen standard AOM will be used to derive visibility values. In some cases, available State AOM may be lower than ICAO AOM, or vice versa. In these cases the differences will be noted.

The implementation of Jeppesen's new standard AOM and the corresponding changes to Jeppesen's Profile View depiction emphasizing the CDFA flight technique are intended to bring currency and consistency to Jeppesen's entire global Airway Manual chart library. The impact of implementing the new AOM will be significant not only to Jeppesen but to many international customers as well.

SCOPE

The effects of replacing ECOMS-based visibility values with the new ICAO-based visibilities will vary by State or by region. In some cases, such as in the United States and in other States where complete, official AOM are provided and therefore no changes are expected. The most significant changes will be seen on IAP charts for States that provide only partial AOM, or for States that provide no AOM whatsoever.

The systematic conversion from ECOMS to the new harmonized AOM will affect airlines and operators differently depending on the nature of their operations; domestic or international, country of origin, etc. Airlines and operators, especially those who operate internationally, are encouraged to become familiar with ICAO Doc 9365 AWOM with respect to possible implications.

Airline or operator requirements involving the depiction and use of Lower-Than-Standard AOM will continue to be accommodated on an individualized custom or tailored basis, in accordance with Jeppesen's established processes.

Changes to Profile View depictions, with emphasis on the CDFA flight technique in the final approach segment, will correspond to the application of new AOM on affected Airway Manual approach charts, as revised.

OVERVIEW OF NEW JEPPESEN AOM FOR IAPs

For reference, factors which form the basis of Jeppesen's new global 'standard' AOM policy are outlined below.

Principle AOM regulatory or conforming influences around the world

- United States – FAA TERPS
- Canada – TP-308
- European Union / EASA States (and adopting States) – ICAO AWOM (Doc 9365)
- Most International States – ICAO AWOM (Doc 9365)
- Some International States – Not Specified or Unknown

Scenarios involving the availability of State-provided AOM

- AOM – Complete
- AOM – Complete (May include OCA/H)
- AOM – Partial or Incomplete (May include OCA/H)
- AOM – Not Available or Not Provided (OCA/H Only)

A Ceiling will be included for Straight-In Landing or Circle-To-Land minimums if prescribed by the State authority as a parameter of the AOM they provide.

IMPORTANT NOTE: Jeppesen will apply the AOM of the State in which the aerodrome is located, not the State of registry of any particular airline or aircraft operator.

IMPORTANT NOTE: Aerodrome Operating Minimums based on the new Jeppesen standard will never be lower than those provided by a State Authority.

The label "Standard" on current IAPs indicates the AOM are according to EU-OPS. This label will also apply to the new Jeppesen AOM as predicated on the ICAO AWOM.

APPLICATION OF VISIBILITY VALUES (FORWARD VISIBILITY)

Guidelines for the depiction of applicable Visibility Values for IAP landing minimums are outlined below.

- United States / FAA TERPS (and adopting States)
 - AOM is Complete: State source values will be depicted.
- European Union / EASA States (and adopting States)
 - Where AOM is Complete: The ICAO AWOM will be compared with State source. The State value and any higher ICAO AWOM value will be depicted.
 - Where AOM is Partial or Incomplete: The ICAO AWOM will be compared with State source. The State value and any higher ICAO AWOM value will be depicted. The ICAO AWOM for conditional situations not provided by the State will be applied.
 - Where AOM is *Not Provided*: The ICAO AWOM will be depicted.
- Other States
 - Where AOM is Complete: The ICAO AWOM will be compared with State source. The State value and any higher ICAO AWOM value will be depicted.
 - Where AOM is Partial or Incomplete: The ICAO AWOM will be compared with State source. The State value and any higher ICAO AWOM value will be depicted. The ICAO AWOM for conditional situations not provided by the State will be applied.
 - Where AOM is *Not Provided*: The ICAO AWOM value will be depicted.

APPLICATION OF DESCENT LIMIT VALUES (MINIMUM ALTITUDES)

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

- United States / FAA TERPS (and adopting States)
 - AOM is Complete: State source values will be depicted.
- European Union / EASA States (and adopting States)
 - Where AOM is Complete (may include OCA/H): The ICAO AWOM will be compared with State source. The State value and any higher ICAO AWOM value will be depicted.
 - Where AOM is Partial or Incomplete (may include OCA/H): The ICAO AWOM will be compared with State source. The State value and any higher ICAO AWOM value will be depicted.
 - Where AOM is *Not Provided* (OCA/H only): The ICAO AWOM will be compared with State source. The State value and any higher ICAO AWOM value will be depicted.
- Other States
 - Where AOM is Complete (may include OCA/H): The ICAO AWOM will be compared with State source. The State value and any higher ICAO AWOM value will be depicted.
 - Where AOM is Partial or Incomplete (may include OCA/H): The ICAO AWOM will be compared with State source. The State value and any higher ICAO AWOM value will be depicted.
 - Where AOM is *Not Provided* (OCA/H only): The ICAO AWOM will be compared with State source. The State value and any higher ICAO AWOM value will be depicted.

APPLICATION OF DESCENT LIMIT LABELS – DA(H) vs MDA(H)

Guidelines for the depiction of applicable Descent Limit labels for IAP landing minimums - DA(H) or MDA(H) - are outlined below.

- United States / FAA TERPS (and adopting States)
 - AOM is Complete
 - Precision IAP with GS: DA(H) will be depicted per State source.
 - Precision IAP with State-defined VNAV Angle: DA(H) will be depicted per State source.

- Non-Precision IAP with State-defined VNAV Angle: MDA(H) will be depicted per State source.
- Non-Precision IAP with Jeppesen-defined VNAV Angle (ARINC 424): MDA(H) will be depicted per State source.
- Non-Precision IAP without VNAV Angle (No State- or Jeppesen-defined ARINC 424 VNAV Angle): MDA(H) will be depicted per State source.
- European Union / EASA States (and adopting States)
 - Where AOM is Complete
 - Precision IAP with GS: DA(H) will be depicted per State source.
 - Precision IAP with State-defined VNAV Angle: DA(H) will be depicted per State source.
 - Non-Precision IAP with State-defined VNAV Angle: DA(H) or MDA(H) will be depicted when published as such in State source. If not, then DA/MDA(H) will be depicted (+ Add Height Loss Adjustment Note (as applicable. Refer to HEIGHT LOSS ADJUSTMENT NOTES section).
 - Non-Precision IAP with Jeppesen-defined VNAV Angle (ARINC 424): DA(H) or MDA(H) will be depicted when published as such in State source. If not, then depict as DA/MDA(H) will be depicted (+ Add Height Loss Adjustment Note as applicable. Refer to HEIGHT LOSS ADJUSTMENT NOTES section).
 - Non-Precision IAP without VNAV Angle (No State- or Jeppesen-defined ARINC 424 VNAV Angle): MDA(H) will be depicted per State source.
 - Where AOM is Partial or Incomplete
 - Precision IAP with GS: DA(H) will be depicted per State source.
 - Precision IAP with State-defined VNAV Angle: DA(H) will be depicted per State source.
 - Non-Precision IAP with State-defined VNAV Angle: DA/MDA(H) will be depicted (+ Add Height Loss Adjustment Note as applicable. Refer to HEIGHT LOSS ADJUSTMENT NOTES section).
 - Non-Precision IAP with Jeppesen-defined VNAV Angle (ARINC 424): DA/MDA(H) will be depicted (+ Add Height Loss Adjustment Note as applicable. Refer to HEIGHT LOSS ADJUSTMENT NOTES section).
 - Non-Precision IAP without VNAV Angle (No State- or Jeppesen-defined ARINC 424 VNAV Angle): MDA(H) will be depicted per State source.
 - Where AOM is *Not* Provided
 - Precision IAP with GS: DA(H) will be depicted.
 - Precision IAP with State-defined VNAV Angle: DA(H) will be depicted.
 - Non-Precision IAP with State-defined VNAV Angle: DA/MDA(H) will be depicted (+ Add Height Loss Adjustment Note as applicable. Refer to HEIGHT LOSS ADJUSTMENT NOTES section).
 - Non-Precision IAP with Jeppesen-defined VNAV Angle (ARINC 424): DA/MDA(H) will be depicted (+ Add Height Loss Adjustment Note as applicable. Refer to HEIGHT LOSS ADJUSTMENT NOTES section).
 - Non-Precision IAP without VNAV Angle (No State- or Jeppesen-defined ARINC 424 VNAV Angle): MDA(H) will be depicted.
- Other States
 - Where AOM is Complete
 - Precision IAP with GS: DA(H) will be depicted per State source.
 - Precision IAP with State-defined VNAV Angle: DA(H) will be depicted per State source.
 - Non-Precision IAP with State-defined VNAV Angle: MDA(H) will be depicted per State source.
 - Non-Precision IAP with Jeppesen-defined VNAV Angle (ARINC 424): MDA(H) will be depicted per State source.
 - Non-Precision IAP without VNAV Angle (No State- or Jeppesen-defined ARINC 424 VNAV Angle): MDA(H) will be depicted per State source.

- Where AOM is Partial or Incomplete
 - Precision IAP with GS: DA(H) will be depicted per State source.
 - Precision IAP with State-defined VNAV Angle: DA(H) will be depicted per State source.
 - Non-Precision IAP with State-defined VNAV Angle: MDA(H) will be depicted per State source.
 - Non-Precision IAP with Jeppesen-defined VNAV Angle (ARINC 424): MDA(H) will be depicted per State source.
 - Non-Precision IAP without VNAV Angle (No State- or Jeppesen-defined ARINC 424 VNAV Angle): MDA(H) will be depicted per State source.
- Where AOM is *Not* Provided
 - Precision IAP with GS: DA(H) will be depicted.
 - Precision IAP with State-defined VNAV Angle: DA(H) will be depicted.
 - Non-Precision IAP with State-defined VNAV Angle: DA/MDA(H) will be depicted (+ Add Height Loss Adjustment Note as applicable. Refer to HEIGHT LOSS ADJUSTMENT NOTES section).
 - Non-Precision IAP with Jeppesen-defined VNAV Angle (ARINC 424): DA/MDA(H) will be depicted (+ Add Height Loss Adjustment Note as applicable. Refer to HEIGHT LOSS ADJUSTMENT NOTES section).
 - Non-Precision IAP without VNAV Angle (No State- or Jeppesen-defined ARINC 424 VNAV Angle): MDA(H) will be depicted.

HEIGHT LOSS ADJUSTMENT NOTES – APPLICABLE TO CDFA & DA(H) MANEUVER

Wherever a State authority has clearly prescribed, provided, or otherwise specified that a Non-Precision IAP may be flown using the CDFA flight technique, and the corresponding Descent Limit value may be flown as if it were a DA(H), Jeppesen will assume the State-provided DA(H) value includes a Height Loss Adjustment.

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

IMPORTANT NOTE: 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.

As described in the previous section covering instances where a State authority might authorize the use of the CDFA flight technique and a DA(H) maneuver, but it cannot be determined if the State has incorporated a Height Loss Adjustment, the following Ball Notes will be applied to the Descent Limit values on applicable Non-Precision IAP approach charts.

- A note will be added to the Straight-In landing minimums: “Use of DA(H) in lieu of MDA(H) requires height loss adjustment.”

Some States may prescribe specific DA(H) Height Loss Adjustment procedures for use when Non-Precision IAPs are flown using CDFA and DA(H) techniques. These situations will be noted accordingly.

- A note will be added to the Straight-In landing minimums referencing any State-provided Height Loss Adjustment value when using CDFA technique and DA(H) maneuver.

Example

Standard		STRAIGHT-IN LANDING			CIRCLE-TO-LAND	
		1 DA/MDA(H) 530'(438')			Not Authorized North of Runway	
CDFA		Non-CDFA (When Req By Op Spec)				
		ALS out		ALS out	Max Kfs	MDA(H)
A	2 R1200m	R1500m	R1500m	R2200m	90	550'(438') V1600m
B	R1300m				120	4 570'(458') V1600m
C	R1400m	3 R1800m	R1700m	R2400m	140	720'(608') V2400m
D	R1600m				V2000m	165

1 VNAV DA(H) in lieu of MDA(H) requires height loss adjustment.
ICAO: 2 R1300m 3 R2000m 4 620'(508')

PROFILE VIEW DEPICTION

Jeppesen's new Profile View depiction of the flight path or track, intended to support the use of stabilized descent and CDFA, will be based upon the following criteria:

- State-defined VDA or VNAV angle.
- State-defined Distance and Altitude Descent Table.
- Jeppesen-defined VNAV angle based on ARINC 424.

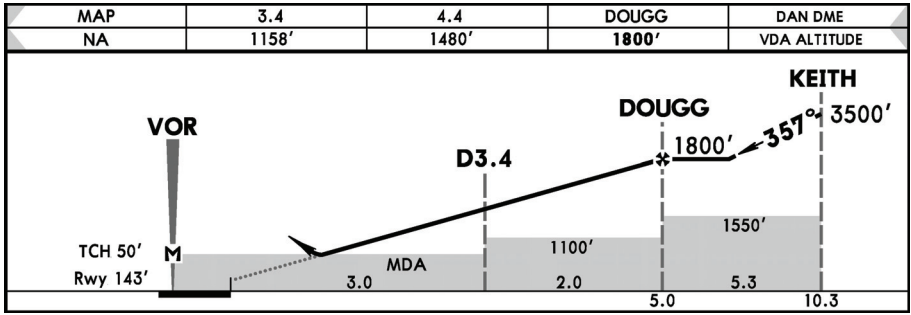
Guidelines to be used for the depiction of flight tracks in the Profile View are outlined below.

- Precision IAP with ILS GS: Continuous descent path via Glide Slope will be depicted (no change from current depiction).
- Precision IAP with State-defined VNAV Angle: Continuous descent path via VDA or VNAV angle will be depicted.
- Non-Precision IAP with State-defined VNAV Angle: Continuous descent path via VDA or VNAV angle will be depicted.
- Non-Precision IAP with Jeppesen-defined VNAV Angle (ARINC 424) Continuous descent path via VDA or VNAV angle will be depicted.
- Non-Precision IAP without VDA or VNAV Angle (No State or No Jeppesen-defined VDA or VNAV Angle): Conventional Level Segment depiction method will be depicted.

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

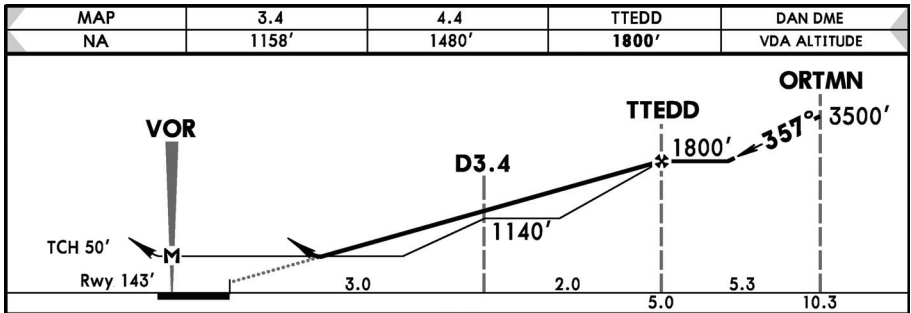
For NPAs where the use of VDA or VNAV guidance is required, or the NPA is designed as a continuous descent, the flight path will be depicted as a continuous path from the FAF to the MAP using a thick line. For vertically guided NPAs this will become the primary depiction method. (+ For U.S. NPAs only, a DA(H) profile note will be added where applicable as described below.)

Example



For NPAs where VDA or VNAV exist but its use may be optional (the NPA may be flown With or Without VDA or VNAV), a combined depiction will be made. The flight path With VDA or VNAV will be depicted as a continuous path from the FAF to MAP using a thick line. Additionally, to accommodate the alternative or conventional method of descent Without VDA or VNAV, a secondary flight path will also be depicted using the conventional Level Segment depiction method using a thin line. (+ For U.S. NPAs only, a DA(H) profile note will be added where applicable as described below.)

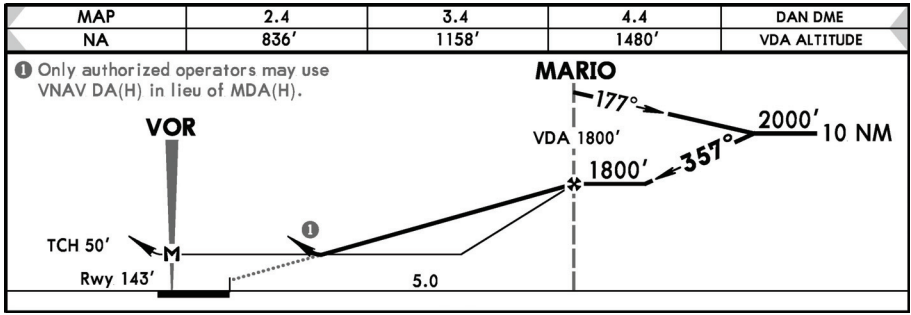
Example



For NPAs where VDA or VNAV is NOT available, the flight path will be depicted using the conventional Level Segment depiction method using a thick line.

- U.S. FAA OpSpec C073, applicable to U.S. FAR Part 121 & 135 operations, prescribes specific conditions concerning the use of a DA(H) maneuver when flying an NPA. These conditions will continue to be noted in the Profile View of U.S. NPAs where applicable. These notes will be applied to U.S. NPAs only. The note will read: "Only authorized operators may use VNAV DA(H) in lieu of MDA(H)."

Example



Changes to individual IAP Profile View depictions will be applied on an as-revised basis, in conjunction with changes to the landing minimums related to the new AOM, where applicable.

SUPPLEMENTAL AOM TEXT PAGE LISTINGS

At certain airports, supplemental AOM text page listings have been published in order to accommodate the needs of operators who required operating minimums that differed from the AOM as depicted on the standard Airway Manual IAP charts.

These supplemental minimums pages will be removed once the new AOM have been applied to all the IAP charts at an affected location.

IMPLEMENTATION PLAN

The purpose of this Bulletin is to announce the new Jeppesen standard AOM policy and provide a general description of the forthcoming changes. The resulting changes to Approach Chart Minimums and Profile View depictions will have significant and far-reaching implications across the entire Airway Manual terminal chart library. The implementation program and timetable are currently in the process of being developed.

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

RETAIN THIS BULLETIN UNTIL ADVISED TO DESTROY