



| ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A UN SPECIALIZED AGENCY

PERFORMANCE-BASED AERODROME OPERATING MINIMA PBAOM

PBN SG/8 (DOHA, QATAR, 12 - 13 DECEMBER 2023)

Performance-based Aerodrome Operating Minima

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Acting Chief, Operational Safety Section

Air Navigation Bureau

Overview

Standards

Implementation

Examples



ICAO

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CIVIL AVIATION
ORGANIZATION**

Overview

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Aerodrome Operating Minima

Aircraft capabilities

Aerodrome infrastructure

Approach
Classification

Aerodrome
Infrastructure

Performance-based
Aerodrome Operating
Minima

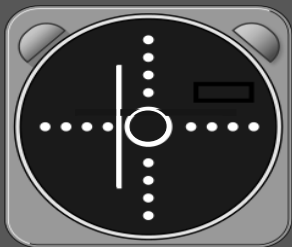
Performance-based
Navigation

Enhanced Visual
Displays

Approach Classification

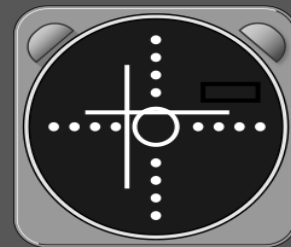
- Defines **Approach Operations**
 - Removes *Operational* use of:
 - Precision Approach;
 - Non-Precision Approach
 - Approach with Vertical Guidance
 - No reference to sensor or navigation aid
 - **Performance Based**

2D

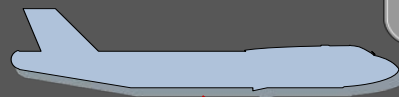
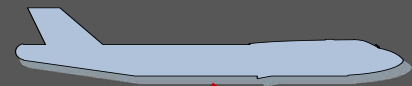


Horizontal
Guidance

3D



Horizontal
and
Vertical
Guidance



Aerodrome Infrastructure

- Allows for gradual **phased improvements**
 - Lights
 - Visual aids
 - Nav aids
 - Standby systems
 - RVR measuring equipment

Performance-based Navigation

- PBN allows *vertically* guided Approaches at all runways
 - APV (Approach Procedure with Vertical Guidance)
- All States *urged* to provide all instrument runways ends with a PBN Approach
 - *Assembly Resolution A37-11*



No expensive ground-based infrastructure

Enhanced Visual Displays

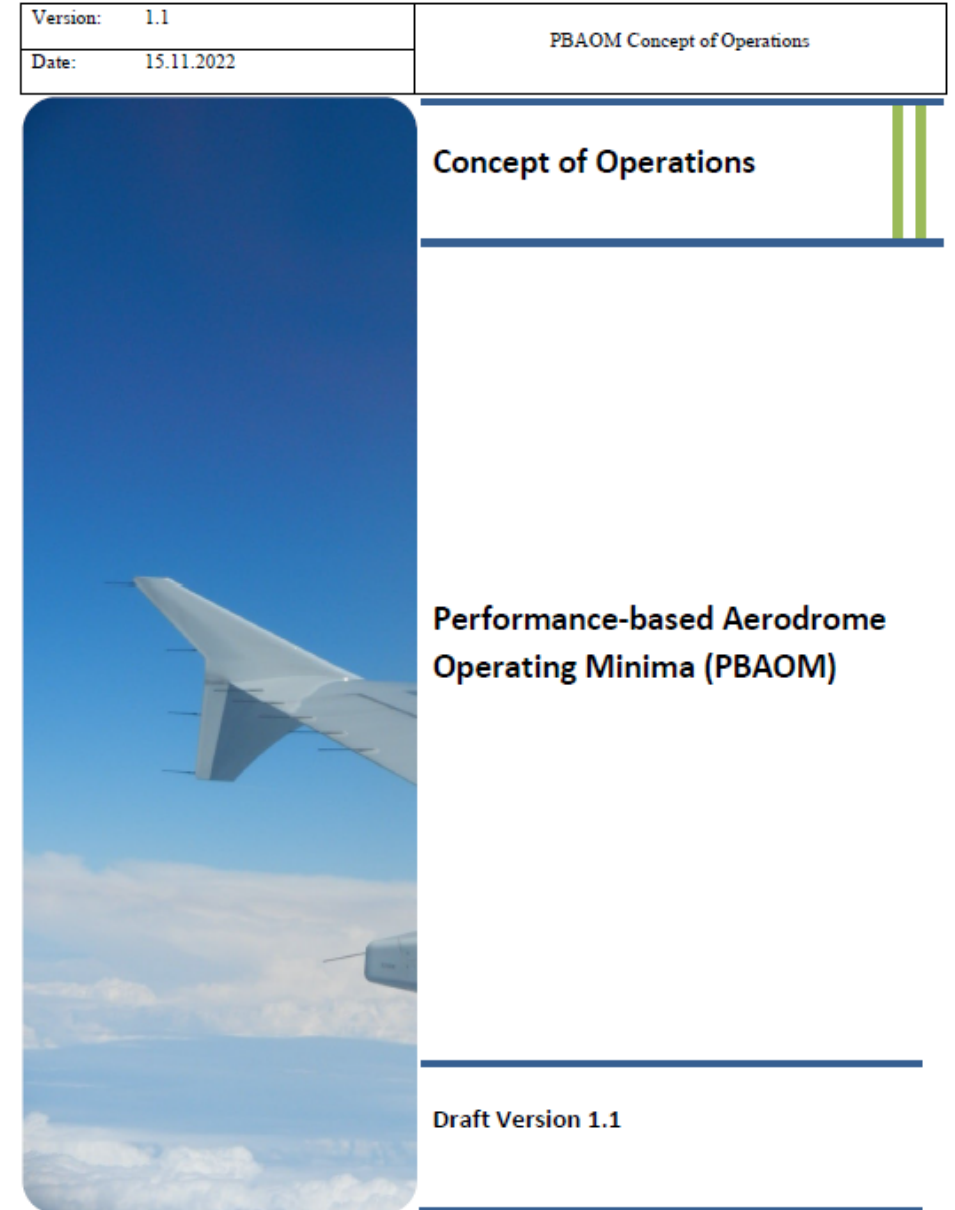
- Potential for further benefits
- Performance **enhancements** lead to **lower** minima
 - Basic principle of a performance-based system
- Can be used in all situations





Concept of Operations

- Draft conops developed by FLTOPSP AWO-SG
- Circulated to other Panels for comment
- Challenges:
 - Ground movement
 - ATM coordination – flow, sequencing
 - Information exchange



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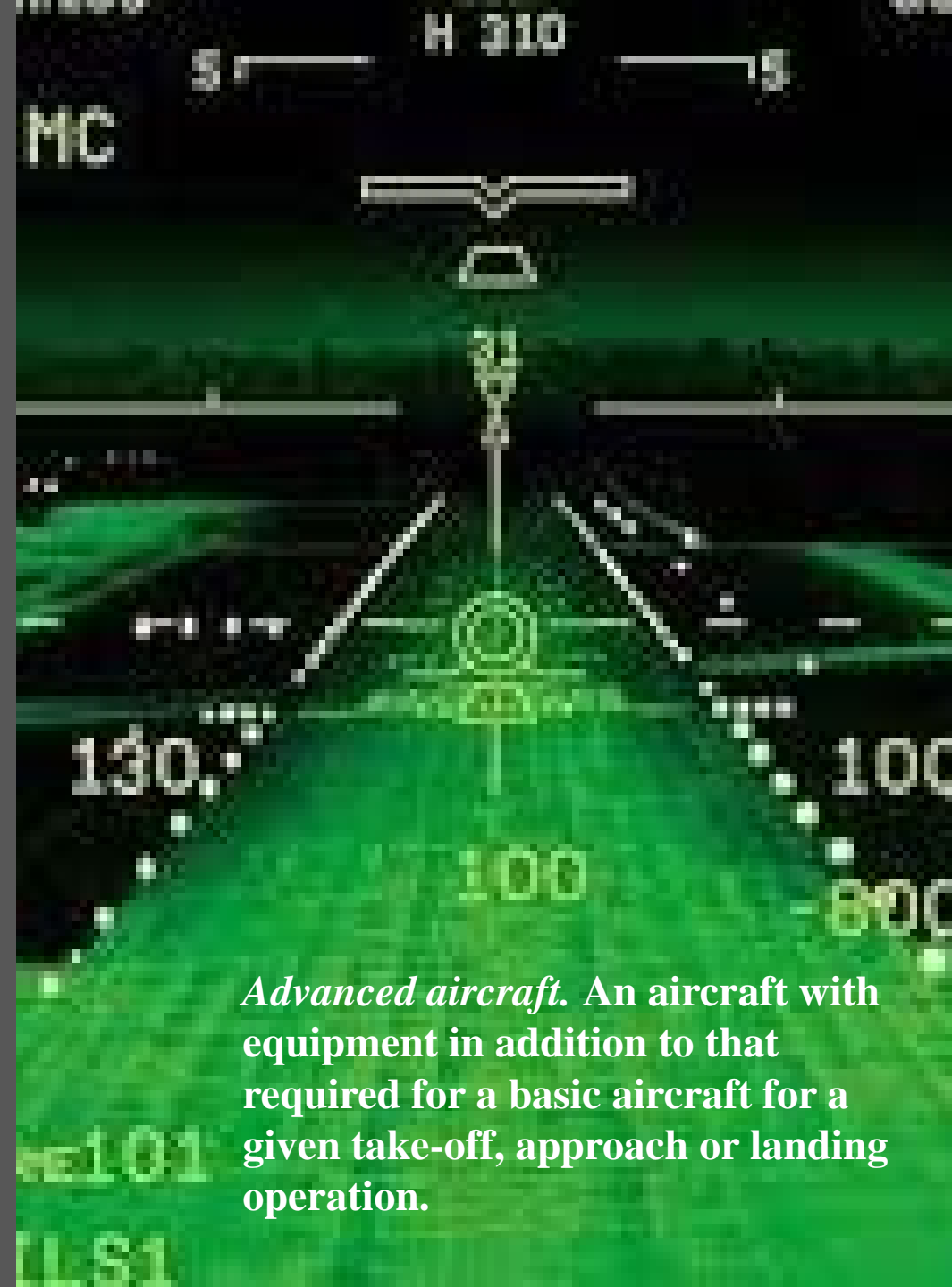
Annex 6

New definitions:

Basic aircraft

Advanced aircraft

Operational credit



Advanced aircraft. An aircraft with equipment in addition to that required for a basic aircraft for a given take-off, approach or landing operation.

Annex 6

4.2.8 – Aerodrome operating minima

Operational credit for advanced aircraft

Specific Approval required for low visibility use



Annex 6

Operational credit:

- Minima below aerodrome operating minima
- Reduced infrastructure requirements
- Reduced visibility requirement



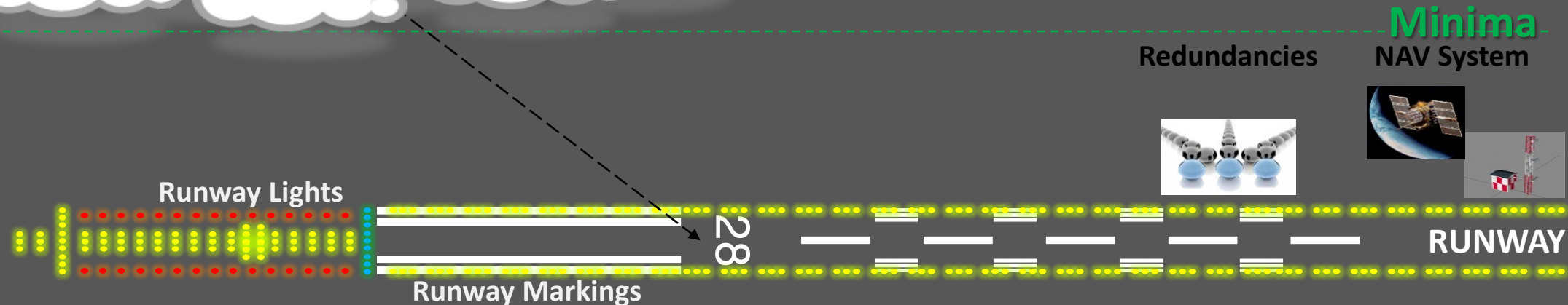
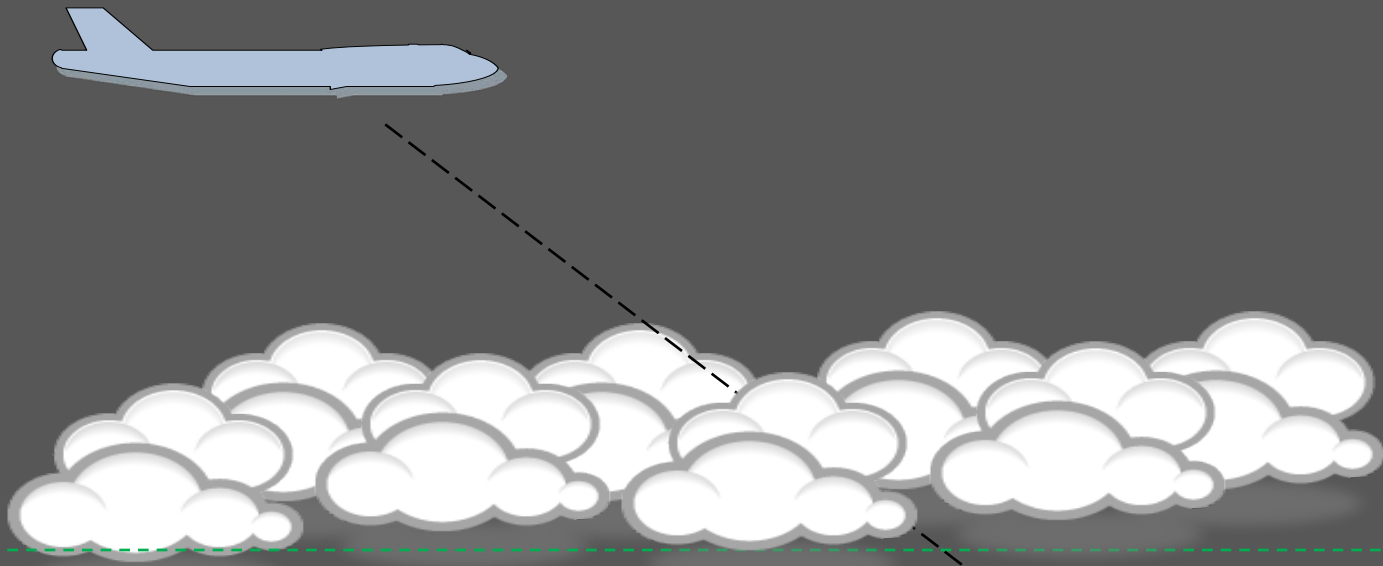
Overview

Standards

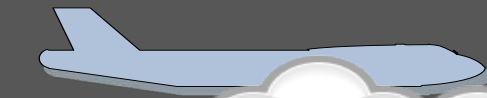
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Traditional Requirements

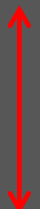


Alternative path



Basic Minima

Advanced aircraft benefit



Advanced

NAV System



RUNWAY



Overview

Standards

Implementation

Examples

Franklin County (KFSO)



Non-precision runway

HIGHGATE, VERMONT AL-6141 (FAA) 14345

WAAS CH 48900 W01A	APP CRS 005°	Rwy Idg 3000 TDZE 228 Apt Elev 228	RNAV (GPS) RWY 1 FRANKLIN COUNTY STATE (F'SO)	
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⚠ Circling to Rwy 19 NA at night. Baro-VNAV NA when using Plattsburgh altimeter setting. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C (5°F) or above 54°C (130°F).
 When VGSi (Inp, Straight-In/Circling Rwy 1 procedure NA at night.
 DME/DME RNP-0.3 NA. Visibility reduction by helicopters NA.
 When local altimeter setting not received, use Plattsburgh altimeter setting and increase all DA 55 feet and all MDA 60 feet; increase LNAV/VNAV all Cats and LNAV and Circling Cat B visibilities 1/2 mile.

MISSED APPROACH: Climb to 1100 then climbing left turn to 3000 direct JUTEK and hold.

AWOS-3 119,025	BURLINGTON APP CON* 121.1 (EAST) 278.8 (WEST) 360.8	GCO 121.725	UNICOM 122.8 (CTAF) 0
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		5.7 NM	
CATEGORY	A	B	
LPV DA	512-1	284 (300-1)	
LNAV/VNAV DA	1024-2½	796 (800-2½)	
LNAV MDA	920-1	692 (700-1)	
CIRCLING	920-1	692 (700-1)	

ELEV 228 TOZE 228

FRANKLIN COUNTY STATE (F'SO)
RNAV (GPS) RWY 1

NE-1, 15 SEP 2016 to 13 OCT 2016

Operational credit - example



Action by the meeting

The meeting is invited to :

- a) take note of the information contained in this presentation; and
- b) discuss any relevant matters as appropriate.



Thank You!