

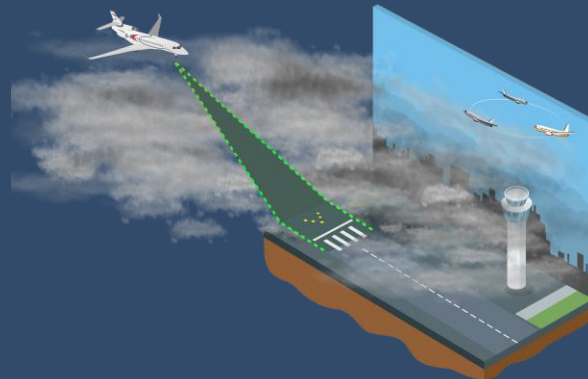


EASA AWO WEBINAR 3

EFVS operations

Olivier BAUDSON

24 OCT 2022





AGENDA

1. **What** are the privileges and benefits
2. **How** to get credit of these privileges

EFVS BENEFITS 1/3

- **EFVS operation:**
 - Based on a **camera** that provides visual advantage over natural vision in HUD
 - Based on an straight in Instrument **A**pproach **P**rocedure & 3D operations³: extension of visual segment
- **EASA Regulation grants a credit of RVR to operators capable of EFVS operations: typically 1/3**
- **RVR credit applicable to landing operating minima and can be used:**
 - for **Flight Planning** – selection of DEST & ALT
 - In **Approach** – descent below approach ban – *not less than 1 000 ft - “privilege of going to see at the DH”*
- **EASA AWO regulation offers 3 types of EFVS with Ops credit operations with different level of privileges**

Types of EFVS operations	EFVS 200	EFVS-A	EFVS-L
Part	CAT / NCC / SPO 312 235 235	SPA 100 105 110 115 120	
Min RVR with EFVS	RVR 550 m	RVR 300 m ¹	RVR 300 m ¹
Min height for natural vis.	200 ft 	100 ft 	0 ft
RVR credit	1/3	1/3 ¹	1/3 ¹
OPS Specific Approval	NO	YES	YES

L
V
O

³ | EASA AWO WENINAR 3 – EFVS operations – 24 oct 2022


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Note 1: or more is stated in AFM (1/3 reflects the systems/ technology in service in 2022). Note 2: Maximum whatever the visual advantage stated in AFM. Note 3: including NPA flow as CDFA

EFVS BENEFITS 2/3 : EXEMPLES OF EFVS OPERATIONS

EFVS 200: Antwerp RNP APCH 11

Published minima



AP BELGIUM AND LUXEMBOURG		AD 2,LEBAW/AC:02	
INSTRUMENT APPROACH CHART - ICAO		ANTWERPEN / Deurne (EBAW)	
		RNP RWY 11	
OCA (OCH)			
CAT of ACFT	A	B	C
LNAV	540 (510)	540 (510)	540 (510)
LNAV/VNAV	353 (325)	365 (337)	377 (349)
LPV	296 (268)	309 (281)	322 (294)
CIRCLING	590 (560)	720 (690)	960 (1030)

RVR 900m

Reduced Approach lighting

1/3^d ops credit of RVR

600m

With EFVS


Min RVR (ATC)

200ft

Natural vision

Category	Min RVR	Max RVR
1	100	100
2	150	150
3	200	200
4	300	300
5	400	400
6	500	500
7	600	600
8	700	700
9	800	800
10	900	900
11	1000	1000
12	1100	1100
13	1200	1200
14	1300	1300
15	1400	1400
16	1500	1500
17	1600	1600
18	1700	1700
19	1800	1800
20	1900	1900
21	2000	2000
22	2100	2100
23	2200	2200
24	2300	2300
25	2400	2400
26	2500	2500
27	2600	2600
28	2700	2700
29	2800	2800
30	2900	2900
31	3000	3000
32	3100	3100
33	3200	3200
34	3300	3300
35	3400	3400
36	3500	3500
37	3600	3600
38	3700	3700
39	3800	3800
40	3900	3900
41	4000	4000
42	4100	4100
43	4200	4200
44	4300	4300
45	4400	4400
46	4500	4500
47	4600	4600
48	4700	4700
49	4800	4800
50	4900	4900
51	5000	5000
52	5100	5100
53	5200	5200
54	5300	5300
55	5400	5400
56	5500	5500
57	5600	5600
58	5700	5700
59	5800	5800
60	5900	5900
61	6000	6000
62	6100	6100
63	6200	6200
64	6300	6300
65	6400	6400
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67	6600	6600
68	6700	6700
69	6800	6800
70	6900	6900
71	7000	7000
72	7100	7100
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91	9000	9000
92	9100	9100
93	9200	9200
94	9300	9300
95	9400	9400
96	9500	9500
97	9600	9600
98	9700	9700
99	9800	9800
100	9900	9900

EFVS-A: Le Bourget LPV 27



APPROCHE AUX INSTRUMENTS		PARIS LE BOURGET			
Instrument approach		FNA RNP RWY 27			
CAT A B C D					
CAT	LPV	LNAV-VNAV		LNAV	
		DA (H)	RVR/OCH	MDA (H)	RVR/OCH
A	370 (200)	710 184	430 (270)	264	1500
B	370 (200)	710 194	440 (280)	274	1500
C	370 (210)	750 204	450 (290)	284	1800
D	380 (225)	800 214	460 (300)	293	1800

Reduced Approach lighting

1/3^d ops credit of RVR

400m¹

Min RVR (ATC)

100ft

Natural vision

LVP in force

Category	Min RVR	Max RVR
1	100	100
2	150	150
3	200	200
4	300	300
5	400	400
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99	9800	9800
100	9900	9900

EFVS BENEFITS 3/3

1. ↗ EFFICIENCY in degraded weather conditions

- Increase accessibility: Local economy, Medevac...
- Reduce indirect cost associated to rerouting of passengers in LVO
- Extend all existing 3D IAP and supplement the PBN IR implementation
- Open the door for LVO operation at other than CATII/III aerodromes (EFVS-A and -L)
- Unlock the capacity of the dense European network of secondary aerodrome
- Relieve pressure on HUB during peak of Low vis

2. ↗ SAFETY

- Boost situational awareness = safety margins for all phases of flight

3. ↘ ENVIRONMENT impact

- Closer DEST/ ALT, fuel intake
- Less Go Around, shorter holding time and less diversions

Concerns all the aviation community: AIR operators, Aerodrome operators, ANSP, states
Current fleet of A/C equipped with EVS is estimated to 3 200 A/C, most being bizjets

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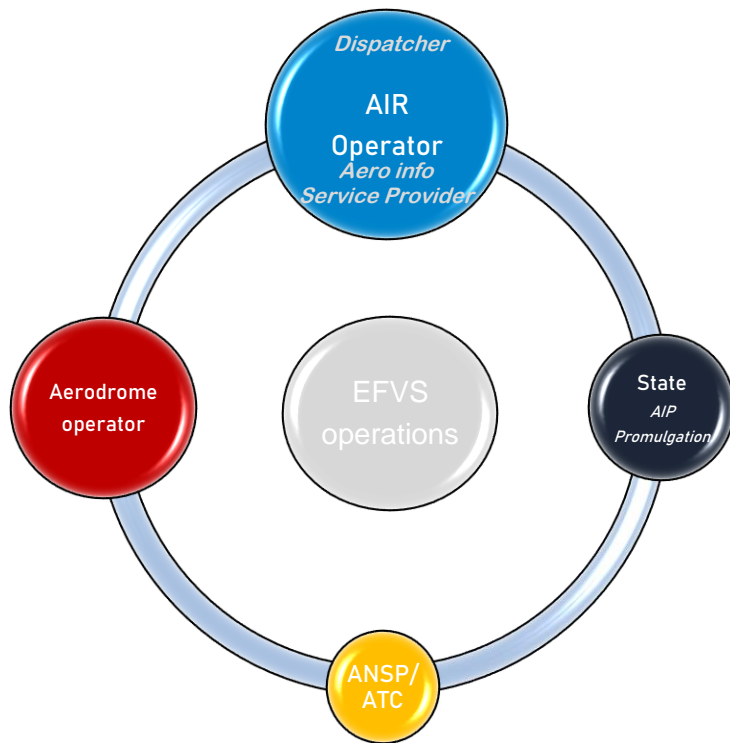
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Current fleet of A/C equipped with EVS is estimated to more than 3 200 A/C, most being business jets

HOW TO GET EFVS PRIVILEGES



- **EFVS webpage on EASA Community Network :**
 - EASA implementation manual
 - Application checklist
 - Required actions checklist
 - Air operators
 - including dispatcher, aero info service providers
 - Aerodromes operators
 - ANSP/ ATC
 - NAA / CAA's
 - State
 - User Feedback

Under construction

HOW TO GET EFVS PRIVILEGES: “ZOOM IN” ON AIR OPERATORS

	EFVS 200	EFVS-A	EFVS-L
❶ Aircraft certified for	EFVS-A or –L “Legacy” EVS ¹	EFVS-A or –L “Legacy” EVS ²	EFVS-L
❷ Crew competence As PF, as PM	Initial training & checking - OSD Recurrent & checking -OSD Recent experience –OSD Difference – OSD	Initial training & checking - OSD Recurrent & checking -OSD Recent experience –OSD Difference – OSD	Initial training & checking - OSD Recurrent & checking -OSD Recent experience –OSD Difference – OSD
❸ Operator	CAT: AOC ³ NCC & SPO: Declaration ³ Operating procedure MEL Maintenance Monitoring of the operation Operating minima	Specific approval	Specific approval
❹ Aerodrome & IAP	Suitable runway	Suitable runway	Suitable runway

Note 1: **For CAT & NCC & SPO:** Use of legacy EVS (certified before 1st of January 2022) are acceptable for EFVS 200 but their use requires approval from competent authority (CAT.OP.MPA 312, NCC.OP.235, SPO.OP.235)

Note 2: **For SPA:** Legacy systems may be certified as ‘EVS with an operational credit’. Such a system may be considered an EFVS used for approach (EFVS-A)

Note 3: For **CAT:** EFVS 200 operation shall be described in the **AOC** (ORO.AOC.100). For **NCC & SPO:** EFVS 200 operation shall be notified in the **Declaration** (ORO.DEC.100)

NON PROTEGE

SUITABILITY OF RUNWAYS: POINTS TO BE CHECKED FOR EFVS OPERATIONS

EFVS 200	EFVS A	EFVS L	Requirements to be satisfied <i>EFVS 200: AMC1 & AMC2 of CAT.OP.MPA.312(a)(2) / NCC.OP.235(a)(2)</i> <i>EFVS-A: & -L: AMC1 & AMC2 of SPA.LVO.110 and GM12.SPA.LVO.110</i>	Where to get the information See Here below <i>or contact aerodrome</i>
EFVS 200	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ 	Impact of LED lighting (ALS) on visual advantage according to AFM IAP straight in designed in accordance with PANS OPS vol, II (ICAO 8168) or TERPS IAP vertical path in accordance with AFM limitations and vertical guidance available ² (AFM) IAP final segment lateral Offset <3° for EFVS 200 or more EFVS-A & -L (AFM) Obstacles: - Presence of OFZ ¹ , or VSS of intended published minima not penetrated - No obstacles requiring visual identification - Balked landing: Presence of OFZ or climb gradient consistent with Instrument departure procedure ³	AIP AD2.14 AIP AD2.24 (charts) AIP AD2.24 AIP AD2.24 AIP AD2.12 & AD2.25 (vss) AIP AD2.10 AIP AD2.12
EFVS A	<ul style="list-style-type: none"> ✓ ✓ 	<ul style="list-style-type: none"> ✓ ✓ 	TDZ RVR sensor available appropriate LVP for landing and associated min RVR (<i>including switch over time 1sec for runway lights</i>)	AIP/ aerodrome chart AIP AD2.22 (AIP AD2.15)
EFVS L	<ul style="list-style-type: none"> ✓ ✓ 	<ul style="list-style-type: none"> ✓ ✓ 	terrain profile prior to threshold, consistent with Flare domain (AFM) runway profiles consistent with Flare domain (AFM)	AIP PATC AIP ICAO obstacle type A

If a runway has been promulgated as suitable for EFVS by the state of the aerodrome (e.g AIP), then **red items** here above do not need to be verified by the air operator

A CATII/ III runway is considered as suitable for EFVS 200, EFVS-A and EFVS-L operations

KEY TAKE AWAY/ GOOD PRACTICES/ INSIGHT

- **Aerodrome operator: to update AIP with EFVS information (LED on ALS, VSS, OFZ, LVP for app, switch over time...):**
 - ... and to upgrade their certificates with EFVS operations in accordance with 2022/208 regulation¹
 - ... and to account for EFVS in NOTAM when appropriate
 - ... and to verify the validity of the description of the lighting system (length and number of crossbar)
- **Service Provider (e.g Jeppesen, LIDO, NAV blue...): to establish aerodrome operating minima reflecting EFVS privileges of each operator (EFVS-200 or EFVS-A or EFVS-L depending on your authorizations)**
 - ... and to propose a service verifying the suitability of the aerodrome according to EFVS regulation²
- **Air Operator/ Dispatcher**
 - to declare the EFVS-RVR capacity in the Flight plan (field 18) “*EFVS RVR 350m*”
 - to take RVR credit into account when selecting aerodromes
 - to use EFVS Procedures as much as possible in day to day 3D operations
- **All users: To share your feedback about EFVS operations on EASA website (when available).**

KEY TAKE AWAY/ GOOD PRACTICES/ INSIGHT

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QUESTIONS

EBAA EFVS SURVEY
(...COMING IN 2 WEEKS...)