Välkommen till AOC seminarium gällande nya regelverk inom AWO/LVO samt Fuel Scheme

TRANSPORT STYRELSEN

Tid	Program	Frågor som berörs
0830-0845	Inledning	
0845-0930	**AWO & LVO** Förordning (EU) 2021/2237	• Bakgrund- RMT.379 – NPA 2018-06 • IR • EASA ED Decision 2022/NNN/R - AMC/GM All-Weather Operations • Skillnader - vad är nytt IR/AMC/GM (urval)
0930-0935	Paus 5 min	
0935-1005	Implementeringsfrågor AWO & LVO	• Påverkan på gående verksamhet? Grandfathering av tillstånd • Vad krävs av AOC för implementering - Tidsplan • Vad gör TS?
1005-1030	Frågestund AWO & LVO	Jonas Gavelin och Bo Eckerbert svarar på frågor
1030-1100	**Fuel/Energy Schemes** Förordning (EU) 2021/1296	• Bakgrund-RMT.0573-NPA 2016-06 • IR • EASA ED Decision ED Decision 2022/005/R - AMC/GM Fuel/energy planning and management — fuel schemes • Skillnader- Vad är nytt IR/AMC/GM (urval)?
1100-1105	Paus 5 min	
1105-1140	Implementeringsfrågor Fuel/Energy Schemes	• Påverkan på gående verksamhet? • Vad krävs av AOC för implementering - Tidsplan • Vad gör TS?
1140-1200	Frågestund Fuel/Energy	Per Davidsson och Bo Eckerbert svarar på frågor

TRANSPORT STYRELSEN

AWO/LVO reglering i Europa
Förordning (EU) 2021/2237

Genomgång + Implementeringsfrågor

Jonas Gavelin Flyginspektör

Bo Eckerbert Flygoperativ Expert

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AWO/LVO under förändring i Europa - Bakgrund

- Behov av förändringar för att:
- Följa med i ändringar från ICAO (Annex 6, Doc 9365, Doc 8168 m.m.)
- Bättre och uppdaterad harmonisering med FAA
- Göra regler mer målbaserade och anpassa till ny teknik
- Ändringar på olika nivåer och olika sätt exempelvis genom:
  - Nya regler och definitioner
  - Strukturella förändringar - IR till AMC/GM
  - Lättnader
  - Regler tas bort
  - Språkliga omformuleringar genom förtydliganden för bättre kontext och förståelse
  - Förenklingar
- Anpassning till ”The total system concept”. Nuvarande regler i flera fall ” domain centric”
- Operation med ”Operational Credit” (Operationellt tillgodoräknande) införs
- Reglerna revideras genom EASA RMT.0379 – NPA 2018-06 A, B, C, D – CRD/Opinion 02/2021

RMT 0379 – AWO/LVO – Väsentliga punkter

- Air Operations –Ändringsförordning 2021/2237 till förordning (EU) 965/2012 – AMC/GM genom EASA ED Q2 2022. Ska tillämpas 30 oktober 2022
- Synkronisering med andra EU-regler
  - Airworthiness - CS AWO issue 2 - EASA ED 2022/007/R – Beslutad 31/1-2022
  - Flygplatsreglerna – Ändringsförordning (EU) 2022/208 till förordning (EU) 139/2014 – AMC/GM genom EASA ED Q2 2022. Ska tillämpas 1/8-2022.
  - ATM-reglerna förändras inte
- God harmonisering med FAA
  - SA CAT I (DH 150ft/400m) vs LTS CAT I (DH 200ft/400m). Regler för LTS CAT I tas bort varför tillståndet kommer att tas bort. SA CAT I är annorlunda jmf med LTS CAT I eftersom SA CAT I ger credit i både visuella segmentet och instrument segmentet
  - EFVS (istället för EVS) för att beskriva hela systemet.
- Existerande möjligheter behålls i stort sett
  - CDFA utan obligatoriskt påslag. GM gällande påslag har utvecklats för vissa fall.
  - SA CAT II ersätter OTS CAT II (samma minima), samma grundförutsättningar auto-land eller HUDLS
  - CMV behålls och användande förtydligas samt förhållande 1-1 kan användas vid planering. Kan användas ner till konverterat värde om 550 meter (får inte användas för LVO) och är inte kopplat till publicerat RVR.

RMT 0379 – AWO/LVO – Väsentliga punkter (2)

- Förenklingar, t.ex.:
  - Minimatabellen kortas
  - Riskanalys CDFA. Fortfarande särskilt godkännande vid non-CDFA dock utan fasta värden 200/400.
- Nyheter
  - LVTO – gränsvärdet höjs till <550 m för synkning med flygplatser och flygtrafiktjänst; godkännande dock först vid RVR <400 m
  - EFVS-A (approach); EFVS-L (land); EFVS200 (200ft/550m)(ej LVO, inget tillstånd)
  - CAT III utan underindelning (som FAA och ICAO). Beskrivning A, B, C finns i GM. RVR 200m till 175m.
  - Nära anpassning till ICAO (Annex 6, Doc 9365 - AWO Manualen)
    - Performance Based Approach Classification (Type A & B, 2D/3D)
    - Godkännande av metoden för aerodrome operating minima (CAT.OP.MPA.110)
    - Detaljer i Operations Specifications för LVO bl.a. införs ”Operational Credits” EFVS-A, EFVS-L, SA CAT I, SA CAT II

RMT 0379 – LVO/AWO – Väsentliga punkter (3)

- Forts nyheter
  - SA CAT I (150 ft/400 m) HUD, autoland eller SVGS
    - Särskild luftvärdighetscertifiering enl CS AWO
    - Särskilt godkännande av rullbanan
  - SA CAT II (100 ft/350m) HUDLS eller auto-land
    - Särskilt godkännande av rullbanan

Överblick ändrade regler (AWO/LVO) i Förordning (EU) 965/2012

- **Annex I – DEF**
  - Nya termer definierade. Flera termer har tagits bort och ändrats. Kompletteras med EASA GM.
- **Annex II – ARO**
  - Ny mall för OPS-SPEC – ”Operational Credit” (flygoperativt tillgodoräknande) tillagt med kompletterande text i fotnoter

Annex III – ORO

  - Deklarationsblankett ändrad - ”Operational Credit” (flygoperativt tillgodoräknande), EFVS 200
  - (Nytt AMC3 ORO.GEN.160 (b) – Reportable events of LVO-operations)
- **Annex IV – CAT**
  - CAT.OP.MPA.101 – Altimeter check and settings procedure – Ny EASA regel men är egentligen redan implementerad bl.a. baserat på nationella regler
  - CAT.OP.MPA.107 - Adequate aerodrome – mindre ändring ”weather” ersatt med ”meteoroloigocal conditions”
  - CAT.OP.MPA.110 - Aerodrome Operating Minima – Äldre regel tas bort, delar av gamla regeln kvar samt att nya delmoment har tagits in även att det krävs ett godkännande av metoden för framtagande av AOM.
  - CAT.OP.MPA.115 - Approach Flight Technique – aeroplanes – Ändrad, bl.a. har obligatoriska RVR-påslag vid non CDFA tagits bort. Non-CDFA ska fortfarande godkännas men regeln blir mer målbaserad. Flera omarbetade AMC/GM kompletterar.

SWEDISH TRANSPORT AGENCY

Överblick ändrade regler (AWO/LVO) i Förordning (EU) 965/2012

- CAT.OP.MPA.245/246 - Meteorological conditions — all aircraft/aeroplanes – mindre ändringar ”weather” ersatt med ”meteoroloigocal conditions”
- CAT.OP.MPA.265 – Take off conditions – Förtydligande att befälhavaren ska vara förvissad att alla nödvändiga komponenter är på plats innan take-off (markutrustning, utrustning på flygplanet, prestandaförhållanden och status på flygbesättningen). Text i AMC om startalternativ är omarbetat.
- CAT.OP.MPA.300 – Approach and landing conditions – Text ändrad och ”speglar” CAT.OP.MPA.265 fast för inflygning och landning.
- CAT.OP.MPA.305 – Commencement and continuation of an approach operation – Ändrad – Förtydligande att CMV kan användas för fortsatt inflygning så länge CMV motsvarar tillämpliga minima även om VIS är lägre.
- CAT.OP.MPA.310 – Operating procedures – threshold crossing height -aeroplanes – Ändrad ”Precision approaches ” ersatt med ”3D instrument approach operations”
- CAT.OP.MPA.312 EFVS 200 operations - Ny möjlighet att använda EFVS operational credit utan särskilt godkännande utanför LVO-väderförhållande. Paragrafen anger vilka övergripande operativa förutsättningar som måste finnas för tillämpning.

Definitions – Annex I

Många nya definitioner för linjering med ICAO Annex 6 och ICAO ”approach classification”

- Aerodrome operating minima
- Circling approach operation
- Decision altitude (DA) or decision height (DH)
- Final approach segment
- Go-around
- Instrument approach operations
- Instrument approach procedures
- Low-visibility operations (LVO)
- Minimum descent altitude (MDA) or minimum descent height (MDH)
- Obstacle clearance altitude (OCA) or obstacle clearance height (OCH)
- Operational credit
- Type A instrument approach operation
- Type B instrument approach operation
- Enhanced flight vision system (EFVS), EFVS operation/EFVS 200

ICAO Approach Classification

Utdrag ICAO SL 12/40

New Approach Classification							
Domain	**Document**	**Aspect**					
Approach Operations	Annex 6	Classification	Type A (>= 250')		Type B CAT I (>= 200')	Type B CAT II (>= 100')	Type B CAT III (<100')
		Method	2D	3D			
		Minima	MDA/H	DA/H*			
Approach Runways	Annex 14						
System Performance Procedures	Annex 10 PANS-OPS Vol. II	NPA	NDB, Lctr, LOC, VOR, Azimuth, GNSS				
		APV		GNSS/Baro/SBAS			
		PA		ILS, MLS, SBAS, GBAS			

Vägledning gällande CDFA, se Doc 8168 Vol. I och i ICAO Doc 9365 (AWOM)

SWEDISH TRANSPORT AGENCY

Definitions – Annex I

- (74) ‘**low-visibility operations (LVOs)’** means approach or take-off operations on a runway with a runway visual range less than 550 m or with a decision height less than 200 ft;

- (75) ‘**low-visibility take-off (LVTO)’** means a take-off with an RVR less than 550 m;

- (91a) **“operational credit”** means a credit for operations with an advanced aircraft enabling lower aerodrome operating minima than would normally be established by the operator for a basic aircraft, based upon the performance of advanced aircraft systems utilising the available external infrastructure. Lower operating minima may include a lower decision height/altitude or minimum descent height/altitude, reduced visibility requirements or reduced ground facilities or a combination of these

SWEDISH TRANSPORT AGENCY

Definitions – Annex I

(120d) "Type A instrument approach operation" means an operation with a minimum MDH or DH at or above 250 ft;

(120e) "Type B instrument approach operation" means an operation with a minimum DH below 250 ft. Type B instrument approach operations are categorised as:

(a) Category I (CAT I): a DA/H not lower than 200 ft and with either a visibility not less than 800 m or an RVR not less than 550 m;

(b) Category II (CAT II): a DH lower than 200 ft but not lower than 100 ft, and an RVR not less than 300 m;

(c) Category III (CAT III): a DH lower than 100 ft or no DH, and an RVR less than 300 m or no RVR limitation;

- **No sub-categories for CAT III**.

Överblick ändrade regler (AWO/LVO) i Förordning (EU) 965/2012

- **Annex V Subpart E** – Titel ändrad till - Low-visibility operations (LVOs) and operations with operational credits
- SPA.LVO.100 Low-visibility operations and operations with operational credits – Ny omarbetad paragraph där listan med specifika LVO-operationer har tagits bort. Målbaserad regel som anger specific approval för; take-off under RVR 400 m, LVO-approach operations, operations med operational credit förutom EFVS 200.
- SPA.LVO.105 Specific approval criteria – Ordentligt omarbetad regel med angivande av målbaserade kriterier som ska uppfyllas för att kunna få ett SPA.LVO godkännande.
- SPA.LVO.110 ANS and Aerodrome-related requirements, including instrument flight procedures – Ny titel och innehåll nuvarande SPA.LVO.115, 125 – (10 AMC +12 GM)
- SPA.LVO.115 Aerodrome related requirements – Borttagen- täcks av AMC/GM SPA.LVO.110
- SPA.LVO.120 – Flight crew competence – Titel ändrad och regeln är omarbetad med förtydliganden mot utbildning, check, procedurer, utrustning och human factors aspekter i LVO m.m.
- SPA.LVO.125 – Operating procedures – Borttagen och inkorporerad i andra SPA.LVO-regler
- SPA.LVO.130 – Minimum equipment - Borttagen och inkorporerad i andra SPA.LVO-regler

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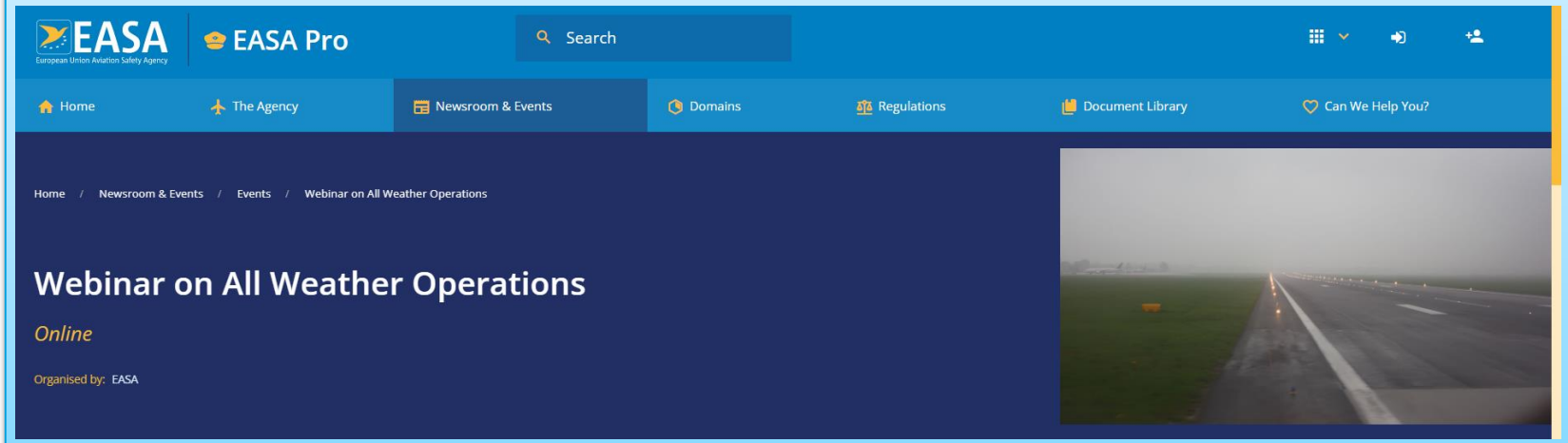
EASA Webinar

- Webinar on All Weather Operations - Online | EASA (europa.eu)
- Nästa EASA webinar i början på september 2022 angående implementeringsfrågor.



SWEDISH TRANSPORT AGENCY

AOC-seminarium

AWO/LVO, fuel scheme och planeringsregler

TRANSPORT STYRELSEN

Runway Suitability – Today (AMC6 SPA.LVO.105)

a) Each aircraft type/runway combination should be verified by the successful completion of at least one approach and landing in CAT II or better conditions, prior to commencing CAT III operations.

b) For runways with irregular pre-threshold terrain or other foreseeable or known deficiencies, each aircraft type/runway combination should be verified by operations in CAT I or better conditions, prior to commencing LTS CAT I, CAT II, OTS CAT II or CAT III operations.

Runway Suitability – New IR (applicable from 30 Oct 2022)

SPA.LVO.110 Aerodrome-related requirements, including instrument flight procedures

The operator shall ensure that only aerodromes, including instrument flight procedures, suitable for the intended operations are used for LVOs and operations with operational credits.

Supplemented by

- 10 AMC
- 12 GM

SWEDISH TRANSPORT AGENCY

Runway Suitability (LVO) – How to assess

- 3 (4) steps to assess runway suitability
  1. Previous operational data
  2. Desktop assessment
  3. Operational assessment
  4. Flight test programme

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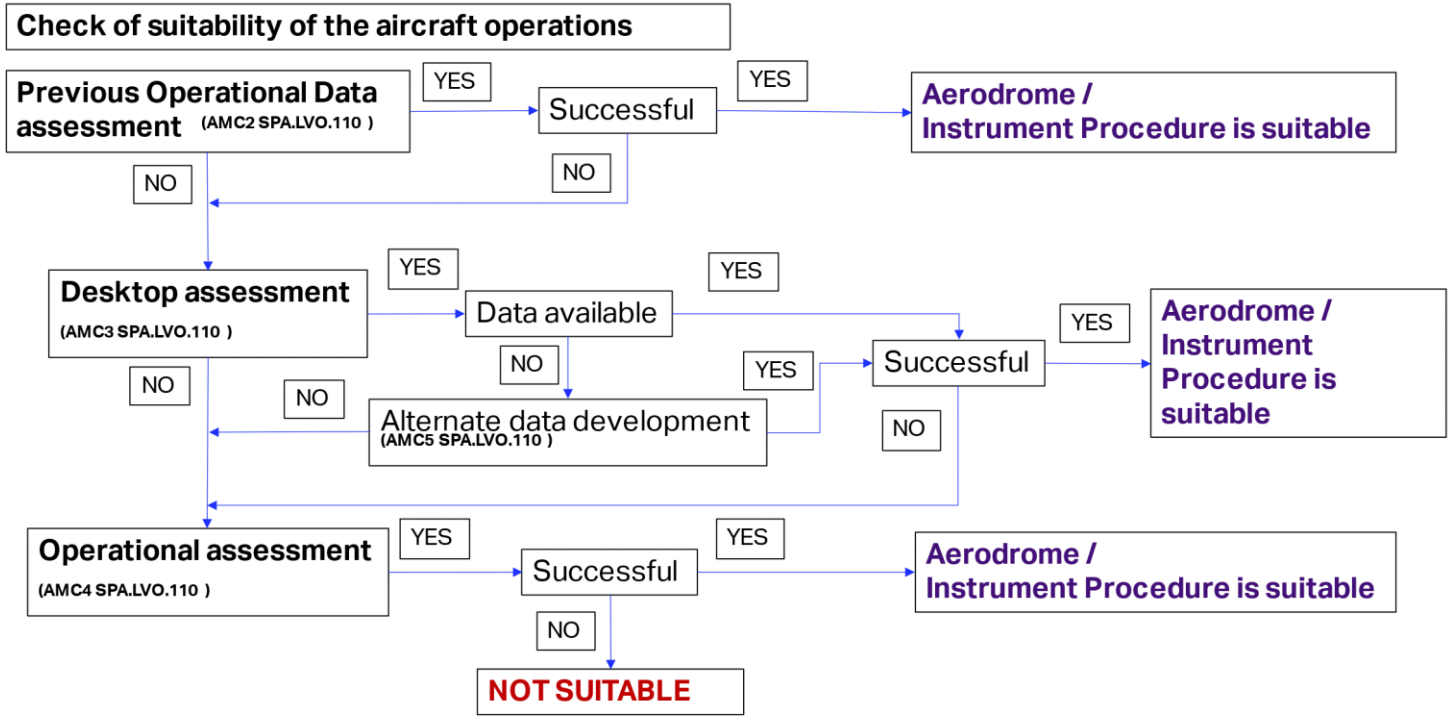
Starting Point AMC1 SPA. LVO. 110 (b) (1) to (3):



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Previous Operational Data – Acceptable Sources

- Acceptable data from:
  - The Operator itself
  - Other operators of relevant aircraft
  - The State of the aerodrome (e.g. U.S. – FAA keeps a list; other states ??)
  - The type certificate holder of the aircraft
  - The competent authority responsible for the LVO approval

Previous Operational Data - Aircraft considerations

- **Same aircraft make and model[1], e.g.:**
  - data from Airbus-A321-231 -> all A321 model aircraft
  - data from Boeing-737-8 -> other series of B737
  - unless the provider of data restricts the use
- **To other model(s), if TC holder states similarity of behavior, e.g.:**
  - A321 –> A320, A319, A318, A330, A340
  - B777 –> B787 || B757 –> B767

Note 1: "make" and "model" iaw CAST/ICAO Common Taxonomy Team:
http://www.intlaviationstandards.org/

SWEDISH TRANSPORT AGENCY

Runway Suitability (LVO) – Compatible data (AMC2 SPA.LVO.110)

Intended operation	Operations from where data originates
CAT II - auto-coupled to below DH with manual landing	CAT II - auto-coupled to below DH with manual landing SA CAT II - automatic landing CAT II - automatic landing CAT III - automatic landing
CAT II - automatic landing	CAT II - automatic landing SA CAT II - automatic landing CAT III - automatic landing
CAT III - automatic landing	CAT III - automatic landing

Note: Previous operational data should be based on the same navaid type (e.g. ILS, MLS or GLS)

SWEDISH TRANSPORT AGENCY

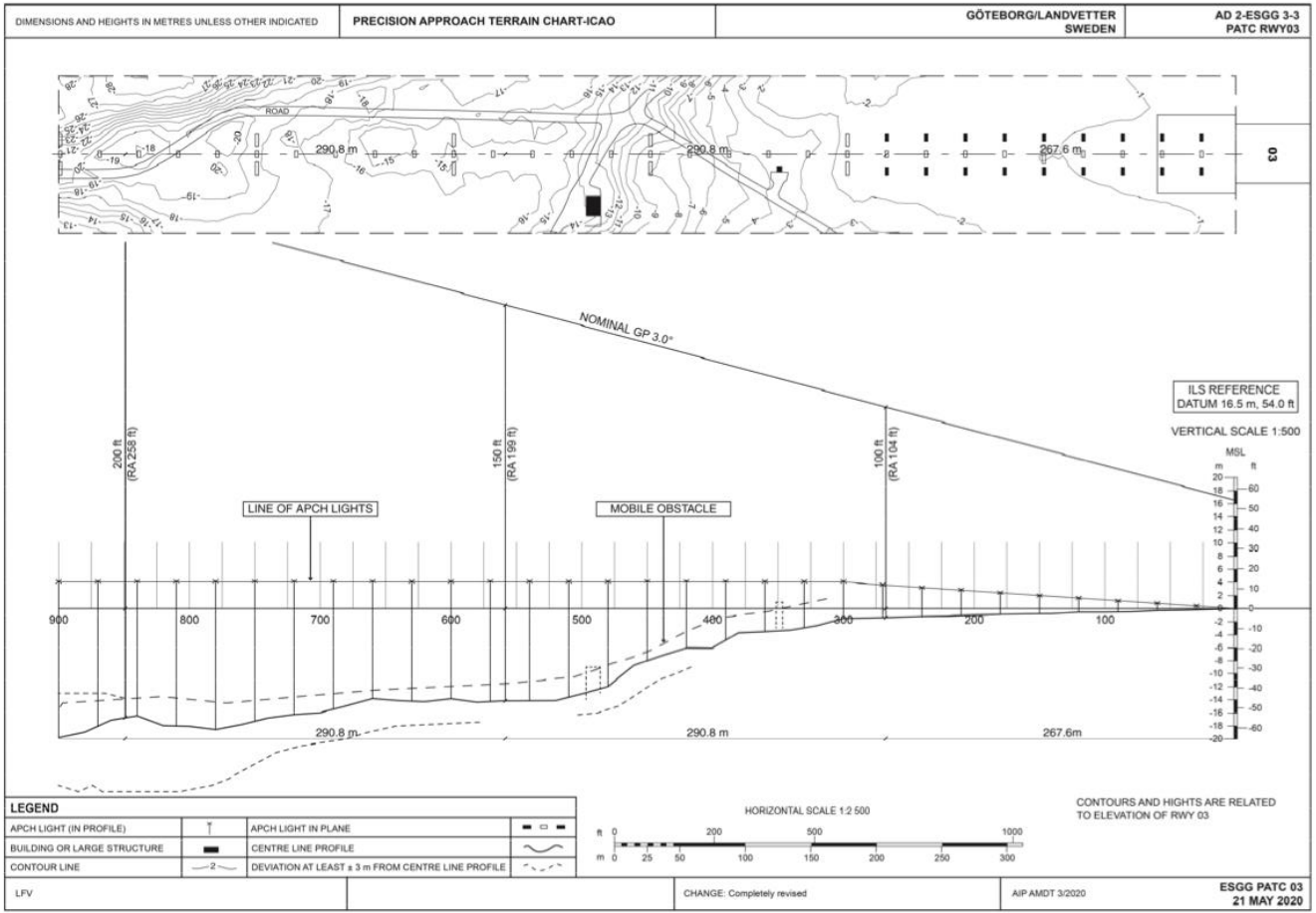
Runway Suitability–Desktop or Operational Assessment

- 2 Aspects
  - The function of the (airborne) landing system (Autoland, HUDLS, EFVS-L)
  - The ability to determine DH (and AH)
- Areas of interest for the landingsystem
  - Last 300 m before THR and first 600 m after THR
  - The first 600 m are labelled LSAA (Landing System Assessment Area)
    - AMC/GM contains detailed criteria – average slope and slope changes
      - 4 levels – Simple, moderate, complex and very complex
      - Information found on Aerodrome Obstacle Chart
    - Runway design requirements will not guarantee function of landing systems

Runway Suitability – DH/AH considerations

- Areas of interest for DH (Decision Height) and AH* (Alert Height)
  - Location below glide path at DH/AH plus distance equivalent to 3 sec travel
    - 3 seconds is for DH/AH anticipation
    - Equates to 30-50 ft vertically and 150-200 m longitudionally
    - Rdo Alt reading shall be stable, continous and repeatable
    - Information about pre-threshold terrain is found on PATC

*) AH only for fail-operational landing systems - typically 100 ft



ESGG
PATC 03

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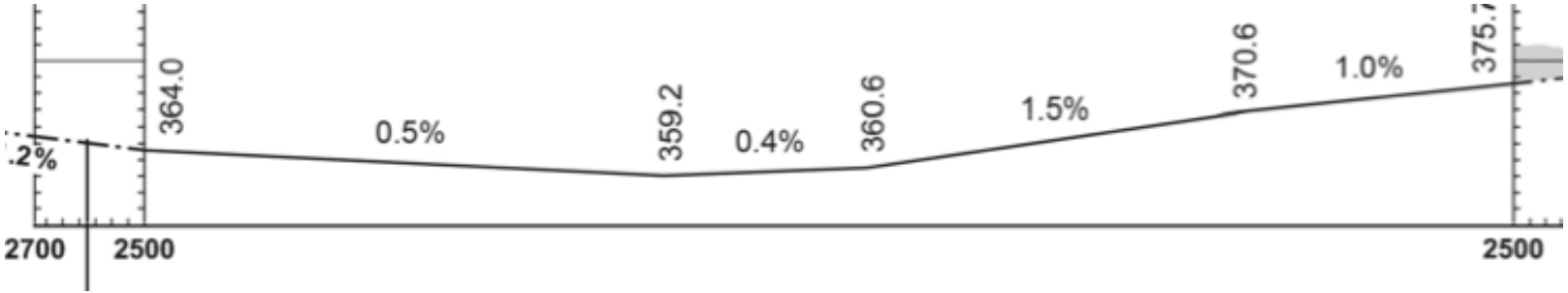
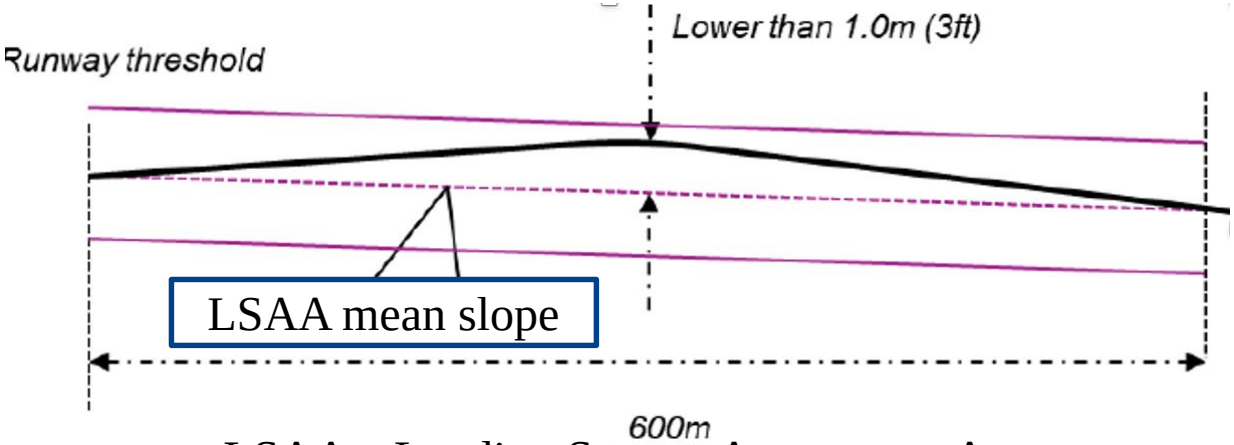
AOC ESNZ





Landing System
- Autoland
- HUDLS

LSAA – Landing System Assessment Area

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AOC-seminarium

AWO/LVO, fuel scheme och planeringsregler

TRANSPORT STYRELSEN

Implementeringsfrågor AWO/LVO reglering i Europa Förordning (EU) 2021/2237

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Implementering

- Reglerna i förordning (EU) 2021/2237 och EASA ED 2022/00X/R **ska tillämpas från och med 30/10-2022**
- TS/SLof tar fram CCL bl.a. för Del CAT (och för ORO)
- Operatörer fyller i CCL:er och lämnar in senast 30 september tillsammans med Form 2 och manualrevisioner.
- Operatör reviderar sina compliance checklistor eller motsvarande.
- Operatören gör en MoC med riskbedömning för sin operation i förhållande till nya de nya reglerna.
- En ny granskningschecklista kommer att tas fram för de nya SPA.LVO reglerna.
- Godkännande av metod för framtagande av Aerodrome Operating Minima (CAT.OP.MPA.110)
- Godkännande av reviderade utbildningsprogram-syllabus.
- Inriktning att befintliga SPA.LVO tillstånd går över med grandfather utom LTS CAT I. Dessa tillstånd följs upp via tillsynsåtgärder. Särskild TS genomgång görs dock på CAT III A och tillstånd med operational credit EVS/EFVS-A och OTS CATII/SA CAT II.
- Ingen specifik cut-off datum för nya SPA.LVO-tillstånd. Operatör ansöker när den önskar. Nuvarande regler bl.a. AMC1 SPA.LVO.105 ”operational demonstration” m.m. och AMC4 SPA.LVO.105 ”Transitional periods” (upphör 30/10). Nya regler mer målbaserade. Bra guidance i GM material. Genomförd operational demonstration och transitional periods som har löpt tillgodoräknas mot de kommande reglerna.

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Inriktning grandfathering - SPA.LVO tillstånd - nulägesstatus

- LVTO 150 RVR m - 7 AOC cirka 9 flygplanstyper
- LVTO 125 RVR m – 10 AOC cirka 21 flygplanstyper/varianter
- LVTO 75 RVR m – 1 AOC och 1 flygplanstyp
- CAT II RVR 300 m/DH 100 ft – 10 AOC cirka 20 flygplanstyper/varianter
- Befintliga CAT III (CAT III A, B) går över baserat på samma flygplan/teknologi/inga förändringar; Idag 5 AOC CAT IIIA cirka 10 flygplanstyper/varianter, 2 AOC RVR 75m no DH cirka 5 flygplanstyper/varianter
- OTS CAT II i OPS-SPEC går över till SA CAT II baserat på samma flygplan/teknologi/inga förändringar. Idag 3 AOC cirka 7 flygplanstyper/varianter
- EVS i OPS-SPEC idag går över till EFVS-A baserat på samma flygplan/teknologi/inga förändringar. Idag 1 AOC 1 flygplanstyp
- (Rullbana – Flygplan baserat på befintliga erfarenheter/data. Nya banor se särskild Rwy suitability diskussion.)

EJ GRANDFATHER

- LTS CAT I till SA CAT I – 1 AOC 1 flygplanstyp
- EFVS-L – Inget AOC ny typ av SPA.LVO-tillstånd

Omarbetade regler för nya CAT II/III tillstånd SPA.LVO.105

Utdrag EASA utkast GM2
SPA.LVO.105 (f) punkt (c)DATA…..

The number of approaches used for data gathering will depend on the performance indicators and analysis methods used by the operator. The operator will need to demonstrate that the operation for which approval is sought will achieve an acceptable level of safety. The following figures may be considered a minimum for an operator without previous experience of low-visibility approach operations:

(1) for approval of operations with a DH of not less than 50 ft: 30 approaches;

(2) for approval of operations with a DH of less than 50 ft: 100 approaches.

Utdrag EASA utkast GM2 SPA.LVO.105
(f) punkterna (e)-(f)

(e) Sharing of data: operators may use data from other operators or aircraft manufacturers to support the safety assessment required to demonstrate an acceptable level of safety. The operator applying for a specific approval would need to demonstrate that the data used was relevant to the proposed operation.

(f) It is expected that operators will have more than 6 months or at least 1 000 hours of total operational experience on the aircraft model before they can have sufficient data to set up meaningful performance indicators and establish whether planned LVOs would achieve an acceptable level of safety.

AMC4 SPA.LVO.105 LVO approval

ED Decision 2012/019/R

TRANSITIONAL PERIODS FOR CAT II AND CAT III OPERATIONS

(a) Operators with no previous CAT II or CAT III experience

(1) The operator without previous CAT II or III operational experience, applying for a CAT II or CAT IIIA operational approval, should demonstrate to the competent authority that it has gained a minimum experience of 6 months of CAT I operations on the aircraft type.

(2) The operator applying for a CAT IIIB operational approval should demonstrate to the competent authority that it has already completed 6 months of CAT II or IIIA operations on the aircraft type.

(b) Operators with previous CAT II or III experience

(1) The operator with previous CAT II or CAT III experience, applying for a CAT II or CAT III operational approval with reduced transition periods as set out in (a), should demonstrate to the competent authority that it has maintained the experience previously gained on the aircraft type.

(2) The operator approved for CAT II or III operations using auto-coupled approach procedures, with or without auto-land, and subsequently introducing manually flown CAT II or III operations using a HUDLS should provide the operational demonstrations set out in AMC1 SPA.LVO.105 and AMC2 SPA.LVO.105 as if it would be a new applicant for a CAT II or CAT III approval.

SWEDISH TRANSPORT AGENCY

Nytt AMC5 ARO.OPS.200

AMC5 ARO.OPS.200 Specific approval procedure

PROCEDURES FOR THE APPROVAL OF LOW-VISIBILITY OPERATIONS

Before issuing an approval for low-visibility operations (LVOs), the competent authority should verify that the applicant has:

(a) taken account of the relevant airworthiness requirements and limitations;

(b) established relevant aerodrome operating minima;

(c) established and documented relevant operating procedures;

(d) established and conducted adequate training and checking programmes;

(e) adopted the minimum equipment list (MEL) for the LVOs to be undertaken;

(f) processes to ensure that only runways and instrument procedures suitable for the intended operations are used; and

(g) established and conducted the relevant risk assessment and monitoring programmes.

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Exempel CCL Del CAT

SWEDISH TRANSPORT AGENCY

(EU) 965/2012, Del-CAT
(WEF 2022-10-30)

Operatör	
Tillståndsnummer eller organisationsnummer	Ifylld EASA Form 2 ☐
Relevant elements defined in the mandatory part of the Operational Suitability Data (OSD) established in accordance with Regulation (EU) No 748/2012 are taken into account	Bilaga nummer

Transportstyrelsen

~~Ärendenummer~~	~~Handläggare~~	~~Berörda sektioner/samråd~~

Information

Denna checklista är avsedd att vara ett stöd för att uppnå regeluppfyllelse mot Del-CAT i Kommissionens Förordning (EU) nr 965/2012.
Vid diskrepanser mellan detta dokument och aktuella förordningar är det de publicerade förordningarna på EASAs hemsida som gäller.

Relevanta regelparagrafer i detta dokument följs av en ruta där operatören anger var i manualverket paragrafen omhändertagits och detta ska skrivas på detaljnivå för att underlätta och påskynda granskning och handläggning, exempelvis "OM-A 8.1.3.4".

Checklistan är gulmarkerad enligt följande:

Ny punkt	Samma regelpunkt men förändrad rubrik
Regelpunkt Rubrik	Regelpunkt Rubrik

CAT.OP.MPA.101 Altimeter check and settings

	~~Ref i manualverket~~	~~TS notering~~
CAT.OP.MPA.101		
GM1 CAT.OP.MPA.101(b) Altimeter check and settings – Altimeter setting procedures		

CAT.OP.MPA.105 Use of aerodromes and operating sites

	~~Ref i manualverket~~	~~TS notering~~
CAT.OP.MPA.105		
AMC1 CAT.OP.MPA.105 Defining operating sites - helicopters		

CAT.OP.MPA.106 Use of isolated aerodromes – aeroplanes

	~~Ref i manualverket~~	~~TS notering~~
Deleted		

CAT.OP.MPA.107 Adequate aerodrome

	~~Ref i manualverket~~	~~TS notering~~
CAT.OP.MPA.107 [2237]		
AMC1 CAT.OP.MPA.107 Rescue and firefighting services (RFFS)		
GM1 CAT.OP.MPA.107 Verification of weather conditions		

CAT.OP.MPA.110 Aerodrome operating minima

	~~Ref i manualverket~~	~~TS notering~~
CAT.OP.MPA.110 [2237]		
AMC1 CAT.OP.MPA.110 Take-off operations - aeroplanes		
AMC2 CAT.OP.MPA.110 Take-off operations - helicopters		
AMC3 CAT.OP.MPA.110 **DETERMINATION OF DH/MDH FOR INSTRUMENT APPROACH OPERATIONS — AEROPLANES**		
AMC4 CAT.OP.MPA.110 **DETERMINATION OF DH/MDH FOR INSTRUMENT APPROACH OPERATIONS — HELICOPTERS**		
AMC5 CAT.OP.MPA.110 **DETERMINATION OF RVR OR VIS FOR INSTRUMENT APPROACH OPERATIONS — AEROPLANES**		

SWEDISH TRANSPORT AGENCY

SWEDISH TRANSPORT AGENCY

OPERATIONS SPECIFICATIONS

(Subject to the approved conditions in the operations manual)

Issuing Authority: Swedish Transport Agency, Civil Aviation and Maritime Department.
Telephone: +46 771 503 503 Fax: +46 11 18 52 56 E-mail: luftfart@transportstyrelsen.se

AOC No: **SE.AOC.000X** Operator Name: **Flygbolag**

Operations specifications: SE.OPS.000X-STORT FLYGPLAN

Specific approvals:	Yes	No	Specification	Remarks
Dangerous goods	☒	☐		
Low Visibility Operations				
Take-off	☒	☐	RVR: 150 m->75 m RVR: < 75 m, AFM limitations	
Approach and Landing	☒	☐	CAT III RVR: 175 m, DH: 50 ft	
			CAT III RVR: 75 m, *DH: 0-49 ft eller No DH, **AFM limitations**	*) AMC 2 SPA.LVO.100(b) Table 5
			CAT II RVR: 300 m, DH: 100 ft	
Operational credits	☒	☐	SA CAT I RVR: 400 m, DH: 150 ft **OBS! Motsvarar INTE LTS CAT I**	*) HUD, Autoland eller SVGS
			SA CAT II RVR: 350 m, DH: 100 ft OTS CAT II (*ev. Grandfathering)	*) HUDLS or Autoland
			EFVS-A RVR: 350 m, DH: 200 ft	Natural vision 100 ft
			EFVS-L RVR: 350 m, DH: 200 ft	EFVS touch-down
RVSM ☐ N/A	☒	☐		
ETOPS ☐ N/A	☐	☒		
Complex navigation specifications for PBN operations	☐	☒		
Minimum navigation performance specification	☐	☒		
Cabin crew training	☐	☒		
Issue of CC attestation	☐	☒		

(11) Insertion of approved minimum take-off RVR in metres. One line per approval may be used if different approvals are granted.

(12) Insertion of applicable precision approach category: CAT II or CAT III. Insertion of minimum RVR in metres and DH in feet. One line is used per listed approach category.

(13) Insertion of applicable operational credit: SA CAT I, SA CAT II, EFVS, etc. Insertion of minimum RVR in metres and DH in feet. One line is used per listed operational credit.

SWEDISH TRANSPORT AGENCY

ATTACHMENT to SE.AOC.000X

(Subject to the approved conditions in the operations manual)

Issuing Authority: Swedish Transport Agency, Civil Aviation and Maritime Department.
Telephone: +46 771 503 503 Fax: +46 11 18 52 56 E-mail: luftfart@transportstyrelsen.se

AOC No: **SE.AOC.000X** Operator Name: Flygbolag

Attachment: SE.ATT.000X

Changes requiring prior Approval :	Yes	No	Rule reference according to (EU) 965/2012	Reference and Date of Approval If applicable
Aerodrome Operating Minima Method used to establish aerodrome operating minima	☒	☐	CAT.OP.MPA.110(d)	And any change to that method shall be approved by the competent authority.

SWEDISH TRANSPORT AGENCY

Frågestund AWO/LVO

SWEDISH TRANSPORT AGENCY

AOC-seminarium

AWO/LVO, fuel scheme och planeringsregler

TRANSPORT STYRELSEN

Fuel schemes
Regulation (EU) 2021/1296
och EASA Opinion 02/2020
Fuel/energy planning and management.

Per Davidsson
Flyginspektör

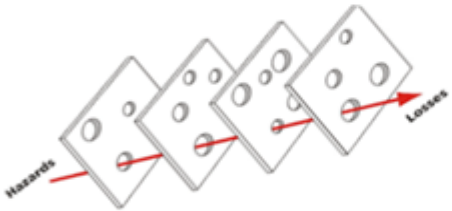
TRANSPORT STYRELSEN

Översikt

- Gäller från 30 oktober
- Historik kring framtagandet av de nya reglerna.
- Harmonisering med ICAO Annex 6
- Vad är ett Fuel scheme? - Prior approval
- Tre olika fuel schemes
- Några skillnader mot nuvarande regelverk
- Några av de nya definitionerna
- Tankning med passagerare ombord - Prior approval

Why this change in the Fuel Reg?

- → Incorporate updates to ICAO Annex 6 and elements from ICAO Doc 9976 'Flight planning and fuel management manual (FPFM)'
- → Promote new technological enhancement -> Rules are prepared for hybrid, electrical and fuel cells
- → **Environment –> more flexibility - more efficiency.**
  - → **New propulsion technology –> FUEL to Fuel/energy**

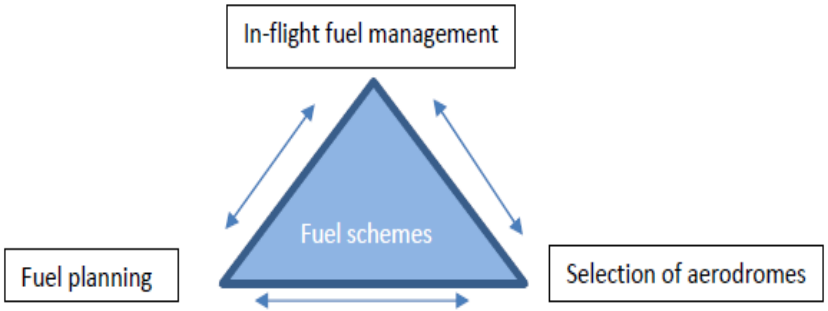


- → Improve operational control (e.g. aircraft connectivity with OCC)

TRANSPORT STYRELSEN

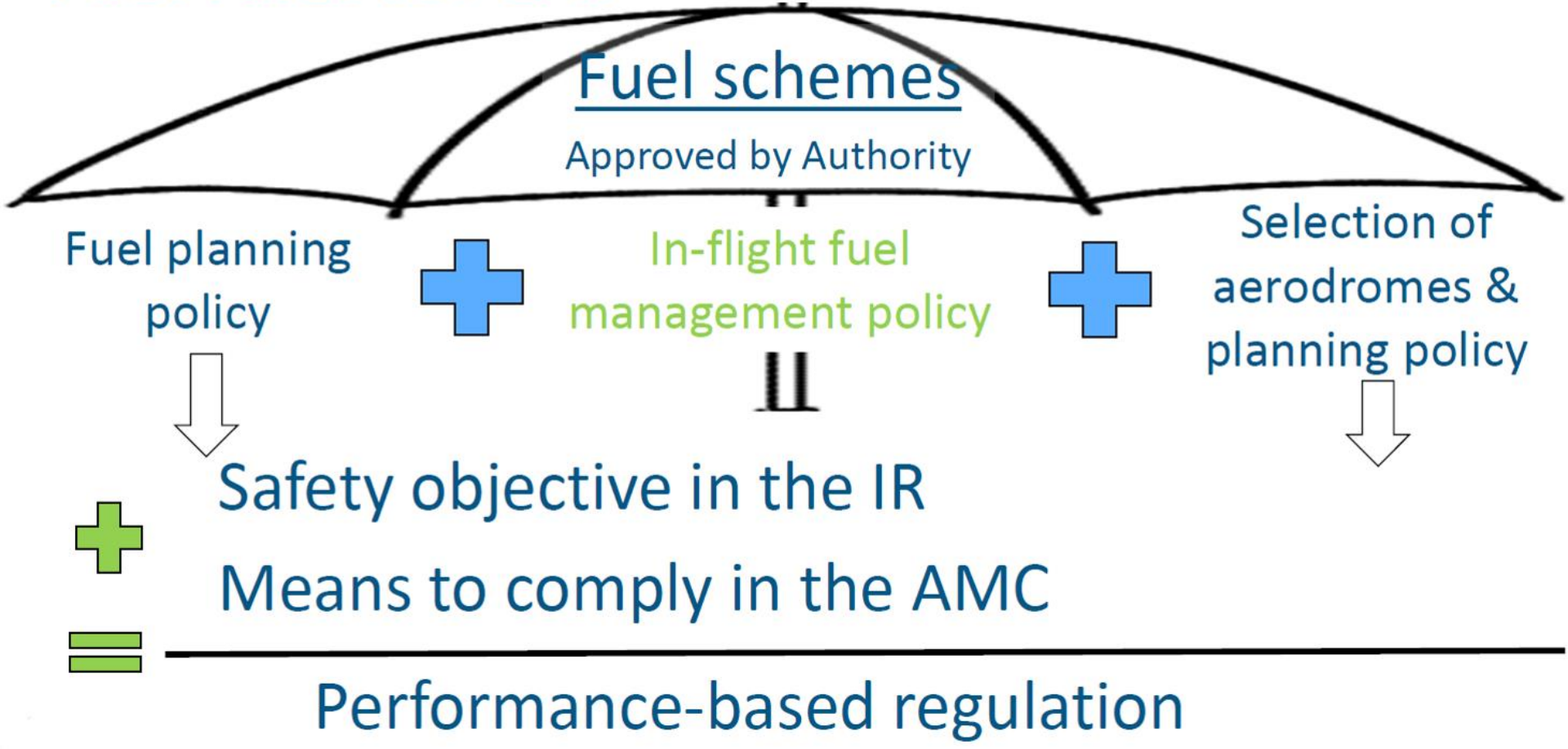
Fuel schemes

- Fuel Planning-CAT.OP.MPA 181
- Selection of Aerodromes-CAT.OP.MPA 182
- In-Flight Fuel Management-CAT.OP.MPA 185



TRANSPORT STYRELSEN

Fuel rules for CAT



CAT.OP.MPA.180

- (a) The operator shall establish, implement, and maintain a fuel/energy scheme that:
- (1) is appropriate for the type(s) of operation performed;
- (2) corresponds to the capability of the operator to support its implementation; and
- (3) is either:
- (i) a basic fuel/energy scheme….
- (ii) a basic fuel/energy scheme with variations….
- (iii) an individual fuel/energy scheme….

TRANSPORT STYRELSEN

Fuel rules for CAT – example

Implementing rule: CAT.OP.MPA.180 series

No AltMoC required

Basic fuel scheme
CAT.OP.MPA.180

Prescriptive: 5% contingency fuel
* No special requirements for the authority
* No special requirements for the operator

* Current situation for most operators

Basic fuel scheme with variations
CAT.OP.MPA.180

Variations to basic fuel scheme: 3% contingency fuel
* No special requirements for the authority
* Some requirements for the operator (e.g. fuel consumption monitoring program required)
*EASA can create new variations in the future

Individual fuel scheme
CAT.OP.MPA.180

* Requirements:
1. At least 2 years of data
2. Authority capabilities
3. Mature operator
4. Aircraft capabilities
5. Ops control centre capabilities.
6. Area of operations

Skillnader nu och från den 30 oktober

- CAT.OP.MPA.150 → CAT.OP.MPA.181+ AMC
- CAT.OP.MPA.106 → CAT.OP.MPA.182
- PDP - predetermined point procedure

TRANSPORT STYRELSEN

Skillnader nu och från den 30 oktober

Basic Fuel scheme.

- Contingency fuel 5%.
- Planning minima, ett steg åt höger ersätts med fasta tillägg enligt tabell i AMC6 CAT.OP.MPA.182
- *Typ A: Instrument approach with a MDH/DH at or above 250 ft.*
- *Typ B: Instrument approach with a DH below 250 ft.*

TRANSPORT STYRELSEN

AMC6 CAT.OP.MPA.182

Table 2 — Basic fuel scheme — planning minima — aeroplanes
Destination alternate aerodrome, fuel ERA aerodrome, isolated destination aerodrome

Type of approach operation	Aerodrome ceiling (cloud base or vertical visibility)	RVR/VIS
Type B instrument approach operations	DA/H + 200 ft	RVR/VIS + 800 m
Type A instrument approach operations	DA/H or MDA/H + 400 ft	RVR/VIS + 1 500 m
Circling approach operations	MDA/H + 400 ft	VIS + 1 500 m
Crosswind planning minima: see Table 1 of **AMC3 CAT.OP.MPA.182**		
Wind limitations should be applied taking into account the runway condition (dry, wet, contaminated).		

TRANSPORT STYRELSEN

Skillnader nu och från den 30 oktober

Basic Fuel scheme with varitation

- Taxi fuel- operatören kan använda sig av statistical taxi fuel
- Contingency fuel 3% - Fuel consumption monitoring system

- Planning minima - Databaserat färdplanerings system och Operational control system som inkluderar flight monitoring och (LVO approach)
- Två olika planeringstabeller för alternativflygplats beroende på om operatören har LVO eller inte. AMC8 CAT.OP.MPA.182 eller AMC9 CAT.OP.MPA.182

TRANSPORT STYRELSEN

AMC8 & AMC9 CAT.OP.MPA.182

Table 3 — Basic fuel scheme with variations — planning minima — aeroplanes
Destination alternate aerodrome, fuel ERA aerodrome

Row	Type of approach operation	Aerodrome ceiling (cloud base or vertical visibility)	RVR/VIS
1	Type B instrument approach operations	DA/H + 200 ft	RVR/VIS + 550 m
2	3D Type A instrument approach operations, based on a facility with a system minimum of 200 ft or less	DA/H or MDA/H* + 200 ft	RVR/VIS** + 800 m
3	Two or more usable type A instrument approach operations***, each based on a separate navigation aid	DA/H or MDA/H* + 200 ft	RVR/VIS** + 1 000 m
4	Other type A instrument approach operations	DA/H or MDA/H + 400 ft	RVR/VIS + 1 500 m
5	Circling approach operations	MDA/H + 400 ft	VIS + 1 500 m
Crosswind planning minima: see Table 1 of AMC3 CAT.OP.MPA.182			
Wind limitations should be applied taking into account the runway condition (dry, wet, contaminated).			

* The higher of the usable DA/H or MDA/H.
** The higher of the usable RVR or VIS.
*** Compliance with point CAT.OP.MPA.182(f) should be ensured.
Note: The operator may select the most convenient planning minima row. For example, aerodrome with two type A approaches: one ILS CAT I (DA 350 ft/DH250 ft/550 m) another VOR/DME (MDA 650 ft/1 500 m). The operator may use Row 2 instead of Row 3.

Table 4 — Basic fuel scheme with variations — planning minima
Destination alternate aerodrome, fuel ERA aerodrome, isolated destination aerodrome

Row	Type of approach	Aerodrome ceiling (cloud base or vertical visibility)	RVR/VIS
1	Two or more usable type B instrument approach operations to two separate runways***	DA/H* + 100 ft	RVR** + 300 m
2	One usable type B instrument approach operation	DA/H + 150 ft	RVR + 450 m
3	3D Type A instrument approach operations, based on a facility with a system minimum of 200 ft or less	DA/H or MDA/H* + 200 ft	RVR/VIS** + 800 m
4	Two or more usable type A instrument approach operations ***, each based on a separate navigation aid	DA/H or MDA/H* + 200 ft	RVR/VIS** + 1 000 m
5	One usable type A instrument approach operation	DA/H or MDA/H + 400 ft	RVR/VIS + 1 500 m
6	Circling approach operations	MDA/H + 400 ft	VIS + 1 500 m
Crosswind planning minima: see Table 1 of AMC3 CAT.OP.MPA.182			
Wind limitations should be applied taking into account the runway condition (dry, wet, contaminated).			

* The higher of the usable DA/H or MDA/H.
** The higher of the usable RVR or VIS.
*** Compliance with point CAT.OP.MPA.182(f) should be ensured.
Note: The operator may select the most convenient planning minima row. For example, aerodrome with two type B approaches: one CAT3 (0 ft/75 m) another CAT1 (200 ft/550 m). The operator may use Row 2 and use CAT3 (0 + 150 ft/75 + 450 m) instead of Row 1 CAT1 (200 + 100 ft/550 + 300 m).

TRANSPORT STYRELSEN

Skillnader nu och från den 30 oktober

Individual fuel schemes

- Inga planeringstabeller för alternativflygplatser
- AMC1 CAT.OP.MPA.180, Vad ska göras innan ett approval
- AMC8 CAT.OP.MPA.181, Fuel consumption monitoring system
- AMC3 CAT.OP.MPA.185(a), Committing to land at a specific airport

New definitions in Annex I Reg. 2021/1296

- **Replaced** - (26) '**contingency fuel/energy'** means the fuel/energy required to compensate for unforeseen factors that could have an influence on the fuel/energy consumption to the destination aerodrome;
- **New** - '(31a) '**current fuel/energy scheme'** means the approved fuel/energy scheme that is currently used by the operator;

TRANSPORT STYRELSEN

- **New** - ‘(49d) ‘**flight following’** means the recording in real time of departure and arrival messages by operational personnel to ensure that a flight is operating and has arrived at the destination aerodrome or an alternate aerodrome;
- **New** - (49e) ‘**flight monitoring**’ means, in addition to the requirements defined for flight following: (a) operational monitoring of flights by suitably qualified operational-control personnel from departure throughout all phases of the flight; (b) communication of all available and relevant safety information between the operational-control personnel on the ground and the flight crew; and (c) critical assistance to the flight crew in the event of an in-flight emergency or security issue, or at the request of the flight crew;’
- **New** - (50b) ‘**flight watch**’ means, in addition to all elements defined for ‘flight monitoring’, the active tracking of a flight by suitably qualified operational-control personnel throughout all phases of the flight to ensure that the flight is following its prescribed route without unplanned deviations, diversions or delays;’;

CAT.OP.MPA.200

- Special refuelling or defuelling of the aircraft’
  - Har genomfört en riskbedömning;
  - Har tagit fram procedures; och
  - Har etablerat ett utbildningsprogram- för personal som är involverad.
  - Special refuelling or defuelling applies to:
  - refuelling med en motor igång eller rotorer I rörelse;
  - refuelling/defuelling medan passagerare går ombord, är ombord eller stiger av och refuelling/defuelling med wide-cut fuel.

Prior approval by the competent authority.

TRANSPORT STYRELSEN

Att tänka på

- Vilket/vilka fuel scheme passar våran operation.
  - Klarar vi oss med Basic fuel scheme, eller ska vi ansöka om en variation? Har vi ett Fuel consumption monitoring system? (contingency fuel 5%)
  - Har vi datoriserat färdplanerings system och Operational control system med flightmonitoring (LVO)- (Planning minima)
  - Hur påverkar detta vår produktion?

TRANSPORT STYRELSEN

Att göra lista

- Checklista på TS hemsida
- Fyll i berörda delar av checklistan
- Skicka in checklista, manualrevision tillsammans med Form 2
- Ansök om prior approval för Fuel scheme och Tankning med passagerare ombord
- Senast 30 dagar innan den 30 oktober.
- EASA Fuel manual

TRANSPORT STYRELSEN

Webinar 07 juli 2022

Home / Newsroom & Events / Events / Webinar on Fuel Management Rules

Webinar on Fuel Management Rules

Online

Organised by: EASA

Description

Agenda

Registration

07 Jul 2022

13:30 - 16:00 CET (UTC +2)

Add to Calendar

Print to PDF

TRANSPORT STYRELSEN

AOC-seminarium

AWO/LVO, fuel scheme och planeringsregler

TRANSPORT STYRELSEN

Planning minima (1)

- NPA 2018/06 did not change the concept – one step right
- EASA Opinion 02/2020
  - Changed the concept to specified increments
  - Had considerable impact on planning minima (RVR&MDH/DH)
  - Particularly difficult at night and in northern Sweden
- The issue was raised with EASA who suggested AltMoC
- Other Nordic States had the same problem
- EASA agreed to creating a new AMC to address issues
- A total of 129 Cat I runways were reviewed
  - Slides 61 show the impact if not acted upon
  - Slides 62-64 show the impact after implementing the new AMC

Planning minima (2)

AMC6 CAT.OP.MPA.182 – Opinion version – Increments

- Type B Instr Approach Operation: +200ft/800m
- Type A Instr Approach Operation: +400ft/1500m

AMC8 CAT.OP.MPA.182 Revised version – Increments

- Type B Instr Approach Operation: +200ft/550m
- Type A Instr Approach Operation with system minima ≤200ft: +200ft/800m
- Other type A Instr Approach Operation: +400ft/1500m

Altn Plan Min - Opinion 02/2020

- Results of AMC6 CAT.OP.MPA.182 vs NPA 2018/06
- Sweden 54 CAT I runways
  - 26% – RVR affected positively (RVR reduced)
  - 36% - RVR affected negatively (RVR increased)
  - Median value DH/MDH 0 ft
  - Median value RVR 300 m increase
- Denmark 26 CAT I runways
  - 4% – RVR affected positively (RVR reduced)
  - 96% - RVR affected negatively (RVR increased)
  - Median value DH/MDH 0 ft
  - Median value RVR 400 m increase

Altn Plan Min - Opinion 02/2020 (2)

- Results of AMC6 CAT.OP.MPA.182 vs NPA 2018/06
- Finland 28 CAT I runways
  - 18% – RVR affected positively (RVR reduced)
  - 82% - RVR affected negatively (RVR increased)
  - Median value DH/MDH 0 ft
  - Median value RVR 300 m increase
- Norway 21 CAT I runways and mostly type A IAops.
  - 4% – RVR affected positively (RVR reduced)
  - 81% - RVR affected negatively (RVR increased)
  - Median value DH/MDH 100 ft increase
  - Median value RVR 550 m increase

Altn Plan Min - Opinion 02/2020 (3)

- Results of AMC6 CAT.OP.MPA.182 REV vs NPA 2018/06
- Sweden 54 CAT I runways
  - 44% (26%) – RVR affected positively
  - 26% (36%) - RVR affected negatively
  - Median value DH/MDH 0 ft
  - Median value RVR 0 m (300 m increase)
- Denmark 26 CAT I runways
  - 35% (4%) – RVR affected positively
  - 54% (96%) - RVR affected negatively
  - Median value DH/MDH 0 ft
  - Median value RVR 100 m (400 m) increase

Altn Plan Min - Opinion 02/2020 (4)

- Results of AMC6 CAT.OP.MPA.182 REV vs NPA 2018/06
- Finland 28 CAT I runways
  - 43% (18%) – RVR affected positively
  - 43% (82%) - RVR affected negatively
  - Median value DH/MDH 0 ft
  - Median value RVR 0 m (300 m increase)
- Norway 21 CAT I runways
  - 25% (4%) – RVR affected positively
  - 75% (81%) - RVR affected negatively
  - Median value DH/MDH 100 ft increase
  - Median value RVR 350 m (550 m) increase

Altn Plan Min - Opinion 02/2020 (5)

- Results of AMC6 CAT.OP.MPA.182 REV vs NPA 2018/06
- Norway 21 CAT I runways REV 2 - add-on 200ft/1000m
  - 40% (4%) – RVR affected positively
  - 60% (81%) - RVR affected negatively
  - Median value DH/MDH 0 ft (100 ft increase)
  - Median value RVR 350 m (550 m) increase
- Norway 21 CAT I runways REV 2 - add-on 200ft/800m
  - 40% (4%) – RVR affected positively
  - 60% (81%) - RVR affected negatively
  - Median value DH/MDH 0 ft (100 ft increase)
  - Median value RVR 150 m (550 m) increase

Altn Plan Min - Opinion 02/2020 (6)

- Compensating factors for reduced add-on values
  - Length of flight – trip time 6 hours
    - Less probability of large weather changes
  - Computerized flight planning
    - Improved precision in flight planning
  - Flight montoring system & 2 pilot operation
    - Improved capability for weather monitoring

- Compensating factors for further reduction of add-on
  - Approach based on precision approach facility CAT I (or better)
    - Few cases involving very high minima

Frågestund Fuel/Energy

SWEDISH TRANSPORT AGENCY

Tack för idag!

Frågor:

Kontakta respektive PI

TRANSPORT STYRELSEN