Sektionen för flygbolag och säkerhetsorganisationer

**Electronic Flight Bag System – EFB**

|  |  |  |
| --- | --- | --- |
| Fylls i av TSL | Operatör: |       |
| Ärendenummer:  | TSL       |
| Handläggare/inspektör: |       |

**Dokumentets innehåll – Rubriknummer**

1. **Inledning av operatörs implementeringsfaser**
2. **Information – Övergripande EFB System**
3. **Ansökan**
4. **Compliancechecklista**
5. **EFB safety impact information to operators. Accident and incidents including EFB systems**
6. **FAQ, vanliga frågor om EFB**

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| **1. INLEDNING OCH OPERATÖRS IMPLEMENTERINGSFASER** |
| **Inledning** |
| Operatören önskar godkännande för flygoperativt bruk av Electronic Flight Bag System, EFB.Målet med checklistan är att ge en granskningsprocess som säkrar en flygsäkerhetsnivå som är lika bra, eller bättre, än tidigare använd metod med pappersdokument eller annan EFB.Checklistan ger information om hur en ansökan kan byggas upp. Granskningsmomentet bygger stegvis granskning beroende på ansökt nivå av hårdvara respektive mjukvara. Denna compliance-checklista är ett arbetsverktyg. Berörda regler och teknik är under kontinuerlig utveckling. Detta ställer krav på att både operatör och myndighet i dialog betraktar EFB ur ett systemperspektiv och ur ett flygsäkerhetsperspektiv. Det är operatörens ansvar att presentera kunskap och uppfyllande av styrande dokument. AMC 20-25 Inledning (Purpose and Scope) ger:*The evaluation of an EFB may have both an airworthiness and an operational aspect depending on the category/type of EFB/application used and, therefore, where necessary, to make a complete evaluation of an EFB system, there is a need for close coordination between the two processes.* |
| **Arbetet med implementering och granskning av EFB för ett godkänt system genomförs i sju faser:** |
| **1. Information mellan operatör och myndighet.**   Compliancelista nedan. **2. Operatör klassificerar sitt EFB system enligt AMC 20-25 kapitel 5 samt bygger upp ansökan,**  **genomför arbetet med att möta kraven och fylla i compliancelista.**  - Checklista för initial ansökan är utformad i samma struktur som moment 6 nedan, Final Operational Report. Detta ger att samma arbete inte behöver genomföras två gånger under implementering av  EFB, utan endast kompletteras med erfarenheter och riskanalys efter genomförd  valideringsperiod. * Operatör genomför (Initial) Operational Evaluation test enligt AMC 20.25 mom 7.14

 *Denna fas kan operatör genomföra, som all verksamhet, med stöd av underleverantör. Men operatör är alltid dialogpart*  *med myndighet och helt ansvarig för produkten.* 1. **Ansökan till myndighet enligt bifogad compliancechecklista.**
2. **Granskningsfas.**

Myndighet genomför desktop granskning och EFB demonstration genomförs.  *Eventuella kompletteringar begärs in, ops demo kan genomföras i simulator eller på kontor. Operatör kan under denna fas*  *genomföra utbildning av besättningar och personal som berörs av kommande valideringsfas. Observera dock att ett*  *myndighetsgodkännande av utbildningsprogram alltid krävs innan det tillämpas av operatör.*  1. **Godkännande för start av 6 månaders valideringsperiod.**

Mitigating measures. *Paperbackup eller inte i cockpit styrs av vald compliancemetod enligt AMC 20-25 mom 7 och 7.14*  *Tid för valideringsperiod styrs av operatörs test och operation enligt AMC 20-25 mom 7.14.1*1. **Operatör avslutar valideringsfas med att sammanställa Final Operational Report och**

 **riskanalys.** *Enligt AMC 20-25 mom 7.15 med appendix I*1. **Godkännande för full EFB operation.**
 |
| **2. INFORMATION – ÖVERGRIPANDE EFB SYSTEM**  |
| **Electronic Flight Bag hos en AOC operator är ett komplett system:**En operatörs EFB i flygoperativt bruk ska betraktas ur ett systemperspektiv. Den enhet som är gränssnittet mot besättningsmedlemmen kan var t.ex. en pekplatta, eller annan form av skärm. Förutom detta krävs ett flertal komponenter för ett fungerande EFB system. Detta är bl.a. tester, mjukvara, EFB administration, statuskontroll och utbildning.Detta framgår även ur AMC 20-25 och ICAO definition av termen EFB, AMC 20-25 mom 4.6 Electronic Flight Bag (EFB): An information system for flight deck crew members which allows storing, updating, delivering, displaying, and/or computing digital data to support flight operations or duties.**Relevanta regler och stödjande dokument:**Publiceras i AMC 20-25 mom 3 Reference Documents.**Klassificering av hårdvara:**EFB hårdvara klass 1, 2 och 3 har utgått. AMC 20-25 definierar två klasser av hårdvara: Portable and installed.* En portabel EFB har flera möjliga konfigurationer (AMC 20-25 mom 5.1.1)
	+ - No mounting device or holder for viable stowage (Only Non-Critical Phases)
		- Viwable Stowage (Se checklista samt AMC 20-25)
		- Mounted (Se checklista samt AMC 20-25)
* En Installed EFB är en del av flygplanets konfiguration (STC eller TC) och kräver därmed luftvärdighetsgodkännande (AMC 20-25 mom 5.1.2). Varianter kan även förekomma där endast vissa delkomponenter har STC.

EFB Mindmap.jpg |
| **3. ANSÖKAN Försättsblad och inledning till ansökan ska innehålla följande:** |
| * Härmed ansöker AOC\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

om implantering eller förändring av Electronic Flight Bag EFB System i enlighet med Kommissionens Förordning 965/2012 (EASA-OPS) inklusive AMC 20-25. Samtliga berörda moment enligt moment 4 -Compliancechecklista- och stödjande dokument bifogas ansökan. Signatur intygar att samtliga berörda moment i regelverk och checklista har granskats av operatör och redogörs i bifogad komplett checklista samt bifogat stödjande dokumentation och manualrevisioner.Accountable manager signatur intygar att operatörens ledningssystem, Management System, inklusive Compliance Monitoring, Safety Management och Management of change har anpassats för anökan.* Signatur Accountable Manager:
* Tel och Mail:
* Signatur NP Flight Ops:
* Tel och Mail:
* Signatur NP Crew Training:
* Tel och Mail:
* Signatur Utsedd EFB Administratör:
* Tel och Mail:
 |
| **4. COMPLIANCE LIST EFB AMC 20-25** **Inklusive operators (Initial) Operational Evaluation test mom 7.14**Checklista för initial ansökan är utformad i samma struktur som moment för Final Operational Report efter genomför evalueringsperiod. Detta ger att samma arbete inte behöver genomföras två gånger under implementering av EFB. Istället fokuseras det slutgiltiga arbetet med konkreta erfarenheter och riskanalys efter genomförd valideringsperiod. *Denna fas kan operatör genomföra, som all verksamhet, med stöd av underleverantör. Men operatör är*  *alltid dialogpart med myndighet och helt ansvarig för produkten.* |
| **System description and classification of EFB system**  |
| **System description** | **Ref i inskickat material** |  **TSL notering** |
| [ ]  A general description of the proposed EFB system  |       |       |
| [ ]  EFB Hardwareclass. Mera information i Checklista för hårdvara samt AMC 20-25* + Portable (AMC 20-25 mom 5.1.1)
		- No mounting device or holder for viable stowage (Only Non-Critical Phases of flight)
		- Viewable Stowage (Se checklista samt AMC 20-25)
		- Mounted (Se checklista samt AMC 20-25)
	+ Installed (AMC 20-25 mom 5.1.2)
 |       |       |
| [ ]  EFB Host Platform. Make and type (AMC 20-25 mom 4.8, 5 and 5.1) |       |       |
| [ ]  Mounting device (if applicable according to Hardwareclass above) |       |       |
| [ ]  Hardware for viewable stowage (if applicable according to Hardwareclass above) |       |       |
| [ ]  Operating system |       |       |
| [ ]  Data Transfer Device[ ]  Mobile network. [ ]  WiFi.[ ]  Other, type:*Note: Operators certification of hard/software to disable network sending unit during critical phases of flight required and procedures to assure network sending unit disabled during critical phases of flight required. Ref CAT.GEN.MPA 140 with GM1.* |       |       |
| **Software applications (AMC 20-25 mom 5.2 samt Appendix C och F)** | **Ref I inskickat material** | **TSL notering** |
| [ ]  List of Type A applications installed (paragraph 5.2.1 and appendix A)  |       |       |
| [ ]  List of Type B applications installed (paragraph 5.2.2 and appendix B)* + Airport Moving Map Display (AMMD) application with own-ship position. (AMC 20-25 mom 5.2.2.1 med Appendix B och H)
 |       |       |
| [ ]  List of miscellaneous (non-EFB) software applications installed (paragraph 5.2.3, and 6.2.2.3) |       |       |
| **EFB to be used the following phases of flight:** | **Ref I inskickat material** | **TSL notering** |
| [ ]  On ground |       |       |
| [ ]  In flight cruise only |       |       |
| [ ]  In all phases of flight, including critical phases according to OPS definitions. |       |       |
| **Hardware (relevant information or references)** **For portable EFB used without installed resources:** | **Ref I inskickat material** | **TSL notering** |
| [ ]  EMI compliance demonstration (paragraph 6.2.1.1)  |       |       |
| [ ]  Lithium battery compliance demonstration (paragraph 6.2.1.2)  |       |       |
| [ ]  Depressurisation compliance demonstration (paragraph 6.2.1.4) |       |       |
| [ ]  Details of the power source (paragraph 6.2.1.3)  |       |       |
| **Hardware (relevant information or references)****For portable EFB served by installed resources:**  | **Ref I inskickat material** | **TSL notering** |
| [ ]  Details of the airworthiness approval for the mounting device (paragraph 6.1.1.1.1) |       |       |
| [ ]  Description of the placement of the EFB display (paragraph 6.1.1.1.2)  |       |       |
| [ ]  Details of the use of installed resources (paragraph 6.1.1.1)  |       |       |
| [ ]  EMI compliance demonstration (paragraph 6.2.1.1)  |       |       |
| [ ]  Lithium battery compliance demonstration (paragraph 6.2.1.2)  |       |       |
| [ ]  Depressurisation compliance demonstration (paragraph 6.2.1.4)  |       |       |
| [ ]  Details of the power source (paragraph 6.1.1.1.3)  |       |       |
| [ ]  Details of any data connectivity (paragraph 6.1.1.1.4)  |       |       |
| **Hardware (relevant information or references)****For installed EFB:**  | **Ref I inskickat material** | **TSL notering** |
| [ ]  Details of the airworthiness approval as installed equipment (paragraph 6.1.1.2)  |       |       |
| **Certification documentation**  | **Ref I inskickat material** | **TSL notering** |
| [ ]  Limitations contained within the AFM (paragraph 6.1.2.1)  |       |       |
| [ ]  Guidelines for EFB application developers (paragraph 6.1.2.2)  |       |       |
| [ ]  Guidelines for EFB system suppliers (paragraph 6.1.2.3)  |       |       |
| **Specific considerations for performance applications**  | **Ref I inskickat material** | **TSL notering** |
| [ ]  Details of performance data validation conducted (paragraph 7.5)  |       |       |
| **Operational assessment**  | **Ref I inskickat material** | **TSL notering** |
| [ ]  Details of the EFB risk assessment conducted (paragraph7.2)  |       |       |
| [ ]  Details of the human machine interface assessment conducted for Type A and B Software applications (paragraph7.4)  |       |       |
| [ ]  Details of flight crew operating procedures (paragraph7.6): * + Procedures for using EFB systems with other flight crew compartment systems (paragraph7.6.1)
	+ Flight crew awareness of EFB software/database revisions (paragraph7.6.2)
	+ Procedures to mitigate and/or control workload (paragraph7.6.3)
	+ Flight crew responsibilities for performance calculations (paragraph7.6.4)
 |       |       |
| [ ]  Details of proposed compliance monitoring oversight of the EFB system (paragraph7.7)  |       |       |
| [ ]  Details of EFB system security measures (paragraph7.8)  |       |       |
| [ ]  Details of EFB administration procedures including provision of the EFB policy and procedures manual (paragraph 7.10 & paragraph 7.10.1)  |       |       |
| [ ]  Details of the electronic signatures procedure (paragraph 7.9)  |       |       |
| [ ]  Details of the system for routine EFB System maintenance (paragraph 7.11)* + Hardware maintenance
	+ Mounting Device Maintenance
	+ Describe procedure for EFB update of EFB OS.
	+ Who has authorization to perform update?
	+ How is updated EFB checked before operational use to assure updated OS will not interfere with EFB applications?
	+ EFB Applications Update procedure.

*Information:* *Flight Crew Awareness of EFB Software/Database Revisions:**The operator should have a procedure in place to allow flight crews to confirm prior to flight the revision number and/or date of EFB application software including where applicable, database versions. An example of a date sensitive revision is an aeronautical chartdatabase on a 28-day AIRAC revision cycle. Procedures should specify what actions to take if the software applications or databases loaded on the EFB system are out-of-date.* |       |       |
| [ ]  Details of flight crew training (paragraph 7.12): * + Initial training
	+ Differences training
	+ Recurrent training
 |       |       |
| [ ]  Report of the operational evaluation test (paragraph 7.13): * + Proposals for the initial retention of paper backup (paragraph 7.13.1)
	+ Proposals for the commencement of operations without paper backup (paragraph 7.13.2)
 |       |       |
| [ ]  EFB platform/hardware description  |       |       |
| [ ]  Description of each software application to be included in the assessment (see Appendix F) |       |       |
| [ ]  Risk assessment summary for each application and mitigation means put in place |       |       |
| [ ]  Human factors assessment for the complete EFB system, human machine interface and all software applications; * + Pilot workload in both single-pilot and multi-crew flown aircraft
	+ Size, resolution, and legibility of symbols and text

For navigation chart display: access to desired charts, access to information within a chart, grouping of information, general layout, orientation (e.g., track-up, north-up), depiction of scale information |       |       |
| [ ]  Operator training  |       |       |
| [ ]  EFB administrator qualification  |       |       |
| **5. EFB safety impact information to operators. Accident and incidents including EFB**  **systems.** |
| Some recent events highlight that the design of EFBs may directly contribute to the occurrence of incidents or accidents. A few examples can be mentioned: * As a result of its investigation of the July 31, 1997, accident involving a McDonnell Douglas MD-11 that crashed while landing on runway 22R at Newark International Airport, the NTSB determined that some flight crew members may lack proficiency in the operation of airplane performance computing devices and that confusion about calculated landing distances may result in potentially hazardous miscalculations of available runway distances after touchdown;
* On 14 October 2004, a B747-200 crashed on take-off from Halifax International Airport, Canada, and was destroyed by impact forces and a post-crash fire. The crew had calculated incorrect V speeds and thrust setting using an EFB take-off performance application. The TSB determined that among the causes and contributing factors, it is likely that the flight crew member who used the EFB to generate take-off performance data did not recognise that the data were incorrect for the planned take-off weight in Halifax. Furthermore, the company did not have a formal training and testing programme on the EFB, and it is likely that the user of the EFB in this occurrence was not fully conversant with the software;
* On December 8, 2005, a Boeing 737 ran off the departure end of runway 31C after landing at Chicago Midway International Airport. Contributing to the accident were the programming and design of its on-board performance computer, which did not present inherent assumptions critical to pilot decision-making.

Another factor observed by the NTSB was that the airplane performance data programmed into the performance application by the airline was less conservative than the performance data recommended by the manufacturer. The NTSB concluded that if the manufacturer’s recommended airplane performance data were used in the airline performance calculations, the resulting negative stopping margins would have required the pilots to divert; * On August 16, 2008, a Boeing 737 left the ground 160 m beyond the provisional end of the runway (there was ongoing construction work). The airplane struck some lights, then, during the rotation, destroyed some markers on the safety-barrier positioned in front of the construction zone. The investigation determined that this serious incident was caused by the crew’s failure to take into account the length of the runway available for take-off in their on-board performance application. The airline had not established any procedure for the use of this application;
* On March 20, 2009, an Airbus A340-541 with 18 crew and 257 passengers, sustained a tail strike and overran the end of the runway on departure from Melbourne. The investigation found that the accident resulted from the use of erroneous take-off performance parameters. Those erroneous parameters were themselves a result of an incorrect take-off weight inadvertently entered into the EFB (262.9 tonnes instead of 362.9 tonnes) during pre-departure. Due to a number of factors, the incorrect data entry passed through all the subsequent checks without detection. The report highlights that the design flow of information from the EFB into the aircraft systems and flight documentation was complex, increasing the risk of error;
* On November 26, 2010, an Airbus A340 attempted to take-off on a taxiway, at Hong Kong International airport. The abnormal manoeuvre was detected by the ground controller, who promptly instructed the crew to stop rolling. In view of the serious nature of the incident, a detailed investigation was conducted and identified that one of the causal factors were the difficulties experienced by both the Captain and the First Officer in stowing the EFB at a critical point of taxiing shortly before take-off. There was no evidence to suggest that the use of the EFB computers in the cockpit had been subject to thorough safety assessment and a sufficiently comprehensive study on the ergonomics aspects of their usage in the cockpit.
* During 2013 an biz-jet portable EFB mounted in viable stowage configuration with suction cups on pilot´s side window came loose and fell on switch related to autopilot. Autopilot function was temporarily degraded before resetting.

Furthermore, a study from the Volpe Center17 identified a total of 67 EFB-related occurrences that were extracted from the online ASRS database dating from 1995 through 2009. In addition, ATSB18 (Australia) and BEA19 (France) studies reported that there were numerous incidents and accidents related to erroneous take-off parameters. The studies highlighted that serious take-off performance parameter-related events occurred at a rate of at least one per year. If nothing is done, with the proliferation of the umber of the EFB and the number of applications residing on them, the situation may deteriorate even further in the future.17 Chandra, D.C. and Kendra, A. (2009). *Review of Safety Reports Involving Electronic Flight Bags*. (DOT-VNTSC-FAA-10-08.) USDOT Volpe Center: Cambridge, MA. 18 ATSB AR2009-052 Take-off Performance Calculation and Entry Errors: A Global Perspective. 19 Laboratory of Applied Anthropology. (2008). *Use of erroneous parameters at take-off* (No. DOC AA 556/2008). Paris: Laboratory of Applied Anthropology.  |
| **6. FAQ, VANLIGA FRÅGOR OM EFB** |
| 1. **Krävs särskilt tillstånd från myndigheten för att använda EFB i kommersiell flygoperation.**
	* Ja. Ansökan enligt bifogad blankett och komplett compliance-checklista. Tillstånd ges sedan med beslutsbrev som specificerar tillståndets omfattning och AOC / Ops Spec uppdateras med tillståndet under rubriken ”Other”.
	* EFB Portable / A kräver ej separat operationellt tillstånd, förutom de delar som påverkar manualverkk. Dock är praktiskt bruk och nyttan av denna mycket begränsat för en operatör.
2. **Krävs EMI test för PED som redan är godkänd inom EU som EFB i likvärdig operation/flygfas?**
	* Detta kan vara godtagbart om de tidigare genomförda tester som önskas tillgodoräknade berör likadan utrustning och flygplanstyp. EMI testmetod beskrivs i AMC 20-25 mom 6.2.1.1 samt rapid decomp enligt mom 6.2.1.4 och båda dessa mot berörd flygplanstyp.
3. **Vilken standard krävs för EFB batterier?**
	* Standard för EFB batteri beskrivs detaljerat i AMC 20-25 mom 6.2.1.2.
	* The operator is responsible for the maintenance of EFB system batteries and should ensure that they are periodically checked and replaced when required.
	* Normally the internal battery cell is tested according to standard UL1642 if applicable. Then the battery is tested to additional standards e.g UL 2054. It is the operator’s responsibility to show compliance with hardwarde battery standard to fulfill requirements in, or include, UL1642.
	* Se även GM2 CAT.GEN.MPA.140 Portable electronic devices
		+ *FIRE CAUSED BY PEDS*

*A detailed discussion of fi re caused by PEDs can be found in CAA UK CAP 789 edition 2, chapter 31, section**6 Fires in the cabin caused by PEDs23 and CAA PAPER 2003/4, Dealing With In-Flight Lithium Battery Fires in Portable Electronic Devices.** + *Observera att denna tabell även innehåller standards och information som inte godtas inom ramen för ett EFB system. Syftet är att redogöra förhållandet mellan olika standards för enskild battericell och batteripack.*

Källa: http://www.ul.com/global/documents/offerings/industries/hightech/batteries/*Tabel är endast exempel. Kotnrollera uppdaterad version hos källan.*1. **Är flightmode godtagbart i ett EFB system?**
	* Ja detta kan vara godtagbart inom ramen för ett godkänt EFB system. Detta berör endast C-PED, dvs hårdvara vars konfiguration och egenskaper är testade och kända. Ref: GM1 till CAT.GEN.MPA 140
2. **Behöver man ansöka om uppdatering av EFB?**
	* Detta krävs oftast inte för uppdatering av befintliga applikationer. Metod och begränsningar för detta beskrivs i AMC mom 7.3 ”Changes to EFB”.
	* Operatör är alltid ansvarig för en procedur där uppdateringar testas före operativt bruk.
	* Tillstånd krävs för ny type B mjukvara.
3. **Krävs en EFB manual?**
* Ja, se appendix AMC appendix G samt fråga nedan

.1. **Vilka EFB Procedurer krävs?**
* Specificeras i AMC 20-25 7.11.1 The EFB policy and procedures manual.
* Kompletterande information:

**Flight Crew Awareness of EFB Software/Database Revisions.**The operator should have a procedure in place to allow flight crews to confirm prior to flight the revision number and/or date of EFB application software including, where applicable, database versions.**Normal Procedures**Procedures required for normal operational use shall be presented in operations manual.**Non-Normal procedures.**Procedures shall be established for use in case of fire, battery leakage, smoke, failure and other non-normal situations which can be caused by EFB system.**EFB Unusable** Are there any aircraft system failure procedures (i.e. electrical smoke, fire, etc.) that could render the EFB unusable? ⎯ If yes, is this incorporated into procedures, checklists, etc.? **Procedures to Mitigate and/or Control Workload**Procedures should be designed to mitigate and/or control additional workloads created by using an EFB system. The operator should develop procedures such that both flight crew members do not become preoccupied with the EFB system at the same time. Workload should be allocated between flight crew members to ensure ease of use and continued monitoring of other flight crew functions and aircraft equipment. These procedures should be strictly applied in flight and should specify the times at which the flight crew may not use the EFB system.**Defining Flight Crew Responsibilities for Performance Calculations**Procedures should be developed that define any new roles that the flight crew and dispatch office may have in creating, reviewing, and using performance calculations supported by EFB systems.1. **Krävs pappersbackup om vi har 2 separata EFB plattformar installerade i cockpit?**
	* Detta beror på operatören val av dispatch requirements och val av implementeringsmetod. Se AMC 20-25 mom 7.4, 7.13, 7.14 och Appendix K.
2. **Hur upprättar vi ”Dispatch requirements”?**
	* Grundförutsättning – Dispatch requirement se referenser i fråga ovan.
	* Det finns flera grader av ”EFB failures” för dispatch bedömning:
		+ EFB total loss
		+ EFB redundancy loss (1 av 2)
		+ EFB hosted application falure
	* Bedömning beror även på hur EFB används. EFB info till crew är:
		+ Prämärinfo
		+ Sekundärinfo/komplement till papper
		+ Backup till annan EFB
	* MEL info kan finns i ATA 46-20 : *(M)(O) ”May be inoperative provided alternate procedures are established and used where operating procedures are dependent upon the use of the affected EFB”.* Observera dock att detta endast kan brukas som ett exempel. Operatören är ansvarig för dispatch requirements och den riskbedömning som hör till dessa.
	* Vanligen CAT C item (10 days)
	* Observera att EFB är ett system med flera delkomponenter är tex en C-PED (iPad). Om en mounting device eller device för ”Viawble stowage” finns måste även dessa tas med i dispatch requirements. Funktionen av dessa påverkar även i vilka flygfaser EFB systemet kan brukas.
3. **Måste vi träna våra besättningar i bruk av EFB före operativ start av evalueringsperioden?**
	* Ja. Detta beskrivs i AMC 20-25 mom 7.13 med appendix E. Omfattning beror på typ och klass på ansökt system. Dock ska alltid någon typ av utbildning alltid genomföras före start av operation. Mera information finns i :
		+ AMC 20-25 mom 7.13 (Flight Crew Training)
		+ AMC 20-25 mom 7.5 (Human Factors)
		+ AMC 20-25 mom 7.11 (EFB Administratör)
		+ AMC 20-25 Appendix E.
4. **Hur ska en riskanalys utformas inför ansökan?**
	* Detta beskrivs i AMC 20-25 mom 7.2. Riskbedömning utifrån det akuella systemet är en mycket viktig del, både i operatörens ansökan, och i

fortsatt operativt bruk.1. **Ska EFB specificeras i MEL?**
	* Dispatch requirements för EFB presenteras i AMC 20-25 mom 7.4. *”In case of partial or complete failure of the EFB, alternative dispatch procedures should be followed. These procedures should be included either in the Minimum Equipment List (MEL) or in the Operations Manual and ensure an acceptable level of safety.” Detta ger att operator kan implementera kriteria för dispatch i OM-A eller OM-B/MEL.*
2. **Vilka dokument styr AMMD (Airport Moving Map Display)?**
	* AMC 20-25, Type B material och Appendix H → ETSO-C165(.).
		+ ”Watchdog” som tar bort gammal information efter 5 sek
		+ Data produktion enligt DO-200(.) standard
		+ Databas enligt DO-272(.) medium data quality
		+ LOA Type 2
		+ Own ship position ska raderas över 80 kt
		+ Total system accuracy: 50m (95%)
		+ DO-257() 2.1, 2.2, 2.3
		+ Inbyggda tablet GPS (t.ex. iPad) stöds inte av dessa dokument. Datasäkerhet och noggrannhet är okänd och inte certifierad. (DO-257(.) 2.1.10)
		+ GPS antenn inuti flygplan stöds ej.
		+ Blåtand GPS mottagare betraktas som T-PED och kräver ED-130(.) klassificering.
		+ Own-Ship position under flygning betraktas ha ”major effect on safety in case of display of misleading information” (ETSO-C165/TSO-C165)
		+ Slutsats av beskrivna dokument: Own-ship in flight bedöms inte som en möjligt EFB application.
		+ Moving map funktion kan dock bedömas som en Typ B applikation.
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