



Explanatory Note to Decision 2021/002/R

Update of the AMC & GM to Subpart FC of Part-ORO (evidence-based training (EBT))

RELATED NPA/CRD 2018-07 — OPINION No 08/2019 — RMT.0599

EXECUTIVE SUMMARY

Following the adoption of:

- Commission Implementing Regulation (EU) 2020/2036 of 9 December 2020 amending Regulation (EU) No 965/2012 as regards the requirements for flight crew competence and training methods and postponing dates of application of certain measures in the context of the COVID-19 pandemic; and
- Commission Implementing Regulation (EU) 2020/2193 of 16 December 2020 amending Regulation (EU) No 1178/2011 as regards the requirements for flight crew competence and training methods, and as regards the reporting, analysis and follow-up of occurrences in civil aviation,

the objective of this Decision is to facilitate the implementation of the newly introduced or amended flight crew training requirements that are intended to improve pilot competencies by updating the associated acceptable means of compliance (AMC) and guidance material (GM).

The present Decision and the adoption of the above-mentioned Regulations are parts of a global safety initiative endorsed by the International Civil Aviation Organization (ICAO), whose objective is to determine the relevance of the existing pilot training according to aircraft generation. In particular, they constitute a second step in the context of European Union rulemaking actions to implement EBT. The first step was completed in 2015 with the publication of ED Decision 2015/027/R that provided guidance material to allow the implementation of a ‘mixed EBT’ which maintains the current operator proficiency check (OPC) and licence proficiency check (LPC). This Decision completes the second step initiated by the above-mentioned Regulations that amended Regulation (EU) No 965/2012 (Air OPS Regulation) and Regulation (EU) No 1178/2011 (Aircrew Regulation) to allow authorities to approve the baseline EBT, which replaces OPC and LPC. This will allow a single philosophy of recurrent training within the airline. EBT is intended to improve safety by enhancing the capability of flight crews to operate the aircraft in all flight regimes by recognising and managing unexpected situations. The EBT concept is designed to maximise learning and minimise formal checking. Further work is foreseen in the context of the activities of RMT.0599 to allow expansion of EBT to the operator conversion course and initial type rating, as well as to other types of aircraft (e.g. helicopters and business jets).

The impact assessment (IA) detailed in NPA 2018-07 and Opinion No 08/2019 showed that the implementation of EBT by the operator on a voluntary basis is the preferred option in regulating recurrent training and checking of flight crew. The IA illustrates that the adopted rules in combination with the AMC & GM issued with this Decision contribute to significant improvement in safety by strengthening the competencies of flight crews while providing a cost-efficient and socially acceptable framework.

Action area:	Competence of personnel		
Related rules:	AMC & GM to Part-DEF, Part-ARO and Part-ORO of the Air OPS Regulation, and AMC & GM to Part-FCL and Part-ARA of the Aircrew Regulation		
Affected stakeholders:	Member States, pilots, instructors, examiners, approved training organisations and operators		
Driver:	Safety	Rulemaking group:	No
Impact assessment:	Yes	Rulemaking Procedure:	Standard

● EASA rulemaking process

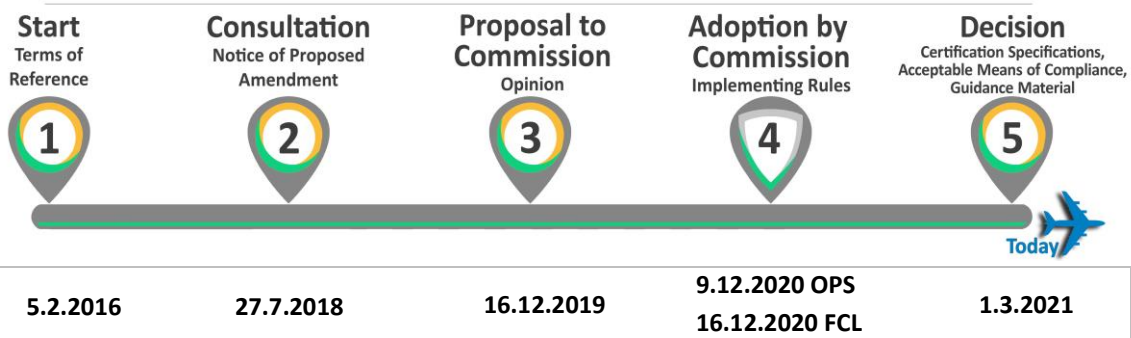


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1. About this Decision

The European Union Aviation Safety Agency (EASA) developed ED Decision 20XX/XXX/R in line with Regulation (EU) 2018/1139¹ ('Basic Regulation') and the Rulemaking Procedure².

This rulemaking activity is included in the European Plan for Aviation Safety (EPAS) [2020-2024](#) under rulemaking task (RMT).0599. The scope and timescales of the task were defined in the related ToR³.

The draft text of this Decision has been developed by EASA based on the input of Rulemaking Group (RMG) RMT.0599. All interested parties were consulted through [NPA 2018-07](#)⁴. 726 comments were received from interested parties, including industry, national aviation authorities (NAAs) and social partners.

EASA reviewed the comments received during the consultation with the support of Review Group (RG) RMT.0599. The comments received and the EASA responses to them were presented in Comment-Response Document (CRD) 2018-07⁵. Based on the comments received, EASA published Opinion No 08/2019 on 16 December 2019 which was addressed to the European Commission. The related EU Regulations 2020/2036⁶ and 2020/2193⁷ were adopted on 9 and 16 December 2020 respectively.

The final text of this Decision, with the AMC and GM, has been developed by EASA based on the input of Rulemaking Group (RMG) RMT.0599. This group is divided in the:

- (a) [Main Group](#), which ensures consistency across the different tasks of RMT.0599. It also deals with other updates of ORO.FC;
- (b) [Evidence-based training \(EBT\) subgroup](#), which is responsible for developing the EBT concept; and
- (c) [Helicopter subgroup](#), which develops and updates the helicopter training requirements including EBT.

¹ Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139>).

² EASA is bound to follow a structured rulemaking process as required by Article 115(1) of Regulation (EU) 2018/1139. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the 'Rulemaking Procedure'. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by EASA for the issuing of opinions, certification specifications and guidance material (<http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure>).

³ <https://www.easa.europa.eu/sites/default/files/dfu/ToR%20%26%20Concept%20Paper%20RMT.0599%20Issue%201.pdf>

⁴ In accordance with Article 115 of Regulation (EU) 2018/1139 and Articles 6(3) and 7 of the Rulemaking Procedure.

⁵ <https://www.easa.europa.eu/document-library/comment-response-documents/crd-2018-07-b>

⁶ Commission Implementing Regulation (EU) 2020/2036 of 9 December 2020 amending Regulation (EU) No 965/2012 as regards the requirements for flight crew competence and training methods and postponing dates of application of certain measures in the context of the COVID-19 pandemic (OJ L 416, 11.12.2020, p. 24) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R2036&qid=1610360456556>).

⁷ Commission Implementing Regulation (EU) 2020/2193 of 16 December 2020 amending Regulation (EU) No 1178/2011 as regards the requirements for flight crew competence and training methods, and as regards the reporting, analysis and follow-up of occurrences in civil aviation (OJ L 434, 23.12.2020, p. 13) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R2193&qid=1610360487565>).

Due to the novelty of the EBT concept, the final text of this Decision was further consulted: EASA organised two workshops⁸ with the participation of industry representatives and performed seven rounds of focused consultation chaired by the [project management of RMT.0599](#) with:

- (1) the [Netherlands Aerospace Centre \(NLR\)](#) with regard to instructor concordance and grading;
- (2) the Spanish competent authority ([AESA](#)) and Iberia group for the implementation of the EBT programme;
- (3) the Italian competent authority ([ENAC](#)) and Alitalia and IATA and Airbus with regard to equivalency of malfunctions;
- (4) CAA Denmark ([Trafikstyrelsen](#)) and Thomas Cook Scandinavia on the oversight and follow-up of the EBT programme;
- (5) NLR, Boeing, Iberia, Airbus, Lufthansa and the ATPG with regard to instructor competencies; and
- (6) [AESA](#) Spain and [DGAC France](#), Lufthansa, Iberia, Wizzair with regard to the amendments for the EASA committee.

The major milestones of this rulemaking activity are presented on the title page.

⁸ [1st Workshop on the Implementation of the Evidence-based Training](#) in Feb 2017 and [Workshop on Competency Based Training and Assessment \(CBTA\), including Evidence Based Training \(EBT\)](#) in May 2019.



2. In summary — why and what

2.1. Why we need to amend the AMC & GM

A further analysis of the rationale and objectives addressed by this proposal is provided in [Notice of proposed Amendment 2018-07\(A\) Update of ORO.FC — evidence-based training subtask](#) in the Impact Assessment chapter.

2.1.1 Why we need new rules on EBT in Europe

As also stated in ICAO Doc 9995 AN/497 ‘Manual of Evidence-based Training’ First edition - 2013 – Chapter Background, aircraft design and reliability have improved steadily and significantly over time; yet, accidents still occur, even in cases when the aircraft and systems were operating without malfunction. It is impossible to foresee all plausible accident scenarios, especially in today’s aviation system where its complexity and high reliability mean that the next accident may be something completely unexpected.

In addition to this, the wealth of accident and incident reports and the provision of flight data analysis offer the possibility to identify risks encountered in actual operations and therefore offer the industry with the opportunity to tailor training programmes in order to mitigate those risks that flight crew members face in operations.

EBT addresses both elements (prepare the pilot for the unexpected and mitigate operational risks) by moving from task-based training to prioritising the development and assessment of key competencies, leading to a better training outcome. The scenarios recommended in EBT are simply a vehicle and a means to assess and develop competence. Mastering a finite number of competencies should allow a pilot to manage situations in flight that are unforeseen by the aviation industry and for which the pilot has not been specifically trained.

Furthermore, this approach is also supported by scientific studies such as the [‘Manual Operation for 4th Generation Airliners’](#) financed by the European Commission. In its ‘Final Report Summary’, the following is stated:

‘5.2. Training Development

A possible solution identified to improve flight training would be to train competencies instead of pre-described flight maneuvers, many of those being non-technical. Such competency transfer between scenarios could create more resilient flight crews that are more prepared to handle operational events instead of the scripted and sometimes predictable scenarios currently used in training. A way to do this would be the implementation of Evidence-Based Training (EBT) concepts. To support this training methodology, this deliverable presents a scenario development method to generate scenarios for competency-based training.’



2.1.2 Safety recommendations (SRs) — outcome of the EASA safety assessment

The following safety recommendations (SRs) addressed to EASA from aircraft accident investigation reports published by the designated safety investigation authority⁹, have been considered during this RMT.

FRAN-2013-017	The French Accident Investigation Board recommends that EASA, in coordination with manufacturers, operators and major non-European aviation authorities ensure that go-around training integrates instruction explaining the methodology for monitoring primary flight parameters, in particular, pitch, thrust then speed.
Evaluation of the SR	This RMT addresses the SR through the transposition of Appendices 2 to 6 to ICAO Doc 9995 where all the following are required at a frequency of twice per year (frequency A): <ul style="list-style-type: none"> — the training topics: <ul style="list-style-type: none"> — monitoring, cross-checking, error management, mismanaged aircraft state; and — go-around management; and — the manoeuvres training on: <ul style="list-style-type: none"> — go-around, all engines operative; — go-around, all engines operative followed by a visual circuit, manually flown; and — go-around, all engines operative during flare/rejected landing.

FRAN-2013-018	The French Accident Investigation Board recommends that EASA, in cooperation with the national civil aviation authorities and major non-European aviation authorities, ensure that during recurrent periodic training, training organizations and operators give greater importance to the assessment and maintenance of the monitoring capabilities of public transport pilots.
Evaluation of the SR	This RMT addresses the SR through the transposition of Appendices 2 to 6 to ICAO Doc 9995 where the training topic: ‘Monitoring, cross-checking, error management, mismanaged aircraft state’ is required at a frequency of twice per year (Frequency A).

FRAN-2013-022	The French Accident Investigation Board recommends that EASA review regulatory requirements for initial and periodic training in order to ensure that go-arounds with all engines operating are performed sufficiently frequently during training.
Evaluation of the SR	This RMT addresses the SR through the transposition of Appendices 2 to 6 to ICAO Doc 9995 where all the following are required at a frequency of twice per year (frequency A): <ul style="list-style-type: none"> — the training topic ‘Go-around management’; and

⁹ Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC (OJ L 295, 12.11.2010, p. 35) (<http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1479716039678&uri=CELEX:32010R0996>).

	<ul style="list-style-type: none"> — the manoeuvres training on: <ul style="list-style-type: none"> — go-around, all engines operative: high energy, initiation during the approach at 150 to 300 m (500 to 1 000 ft) below the missed approach level off altitude; — go-around, all engines operative followed by a visual circuit, manually flown; and — go-around, all engines operative: during flare/rejected landing.
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FRAN-2013-033	The French Accident Investigation Board recommends that EASA, in cooperation with the national civil aviation authorities and major non-European aviation authorities, <u>ensure</u> that the risks associated with dispersion <u>and/or channelized</u> attention during the go-around, to the detriment of the primary flight parameters, be taught to crews.
Evaluation of the SR	<p>This RMT addresses the SR through the transposition of Appendices 2 to 6 to ICAO Doc 9995 where all the following are required at a frequency of twice per year (frequency A):</p> <ul style="list-style-type: none"> — the training topics: <ul style="list-style-type: none"> — monitoring, cross-checking, error management, mismanaged aircraft state; and — go-around management; and — the manoeuvres training on: <ul style="list-style-type: none"> — go-around, all engines operative: high energy, initiation during the approach at 150 to 300 m (500 to 1 000 ft) below the missed approach level off altitude; — go-around, all engines operative followed by a visual circuit, manually flown; and — go-around, all engines operative: during flare/rejected landing.

FRAN-2013-035	The French Accident Investigation Board recommends that EASA, in coordination with manufacturers, operators and major non-European aviation authorities, study whether to extend these measures to other procedures requiring high workload in a short time frame.
Evaluation of the SR	This RMT addresses the SR through the transposition of Appendices 2 to 6 to ICAO Doc 9995 where training topic 'Competencies non-technical (CRM)' and 14 other example scenarios where the competency 'workload management' is trained, are required at a frequency of twice per year (Frequency A) — crew resource management (CRM) includes communication, leadership and teamwork, problem-solving and decision-making, situation awareness, and workload management.

FRAN-2014-005	The French Accident Investigation Board recommends that EASA, in coordination with national authorities, make changes to the training requirements for pilots so as to
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	include periodic reminders on the effects of contaminants such as ice on stall and loss of control on take-off.
Evaluation of the SR	<p>This RMT addresses the SR through the transposition of Appendices 2 to 6 to ICAO Doc 9995 where training topic ‘adverse weather’ is addressed at a frequency of twice per year (Frequency A).</p> <p>Furthermore, for CAT, EASA is taking benefit of this recurrent training and checking scheme to mandate recurrent flight crew upset prevention and recovery training (UPRT) (see ED Decision 2015/012/R¹⁰, published on 4 May 2015). The related AMC1 ORO.FC.220&230 identifies icing and contamination effects as key components of the upset prevention training programme, and recurrent training now covers all upset aspects over a period not exceeding 3 years. In EBT, these provisions still apply.</p>

FRAN-2015-062	<p>[unofficial translation]: EASA should define the terms on how an operator can set up a risk-based training as described in Doc 9995.</p> <p>[French] [original text] - L’AESA définit les modalités permettant à un exploitant de mettre en oeuvre la formation basée sur les risques telle que précisée dans le doc OACI 9995 de l’OACI. [Recommandation 2015-062].</p>
Evaluation of the SR	<p>This RMT addresses the SR through the transposition of ICAO Doc 9995.</p> <p>Furthermore, ED Decision 2015/027/R¹¹, published on 16 December 2015, enables the implementation of EBT according to the principles established in ICAO Doc 9995 taking into account the European Union regulatory framework.</p>

FRAN-2015-063	<p>[unofficial translation]: EASA promotes CAT operators to consider issues related to CRM and wind shear in the EBT scenario.</p> <p>[French] - L’AESA incite les exploitants de transport aérien commercial à prendre en compte des problématiques relatives au CRM et au cisaillement de vent dans la conception des scénarii EBT. [Recommandation 2015-063].</p>
Evaluation of the SR	<p>This RMT addresses the SR through the transposition of Doc 9995.</p> <p>Furthermore, ED Decision 2015/027/R, published on 16 December 2015, contains new GM to support the implementation of EBT by operators, to be conducted in flight simulation training devices (FSTDs), according to the principles established in ICAO Doc 9995. The GM is associated with the existing points (a), b) and (f) of ORO.FC.230 ‘Recurrent training and checking’ and ORO.FC.A.245 ‘Alternative training and qualification programme’ (see Organisation Requirements for Operators - Flight Crew (ORO.FC) of the Air OPS Regulation¹²).</p> <p>CRM and wind shear are specifically addressed in the recurrent assessment and training matrices in ICAO Doc 9995, to which the new GM refers.</p>

¹⁰ <https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2015012r>

¹¹ <https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2015027r>

¹² Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1) (<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012R0965&rid=1>).

2.1.3 ICAO amendments

Following the work initiated by the Flight Crew Licensing and Training Panel (FCLTP)¹³, in 2006 ICAO published Doc 9868 'Procedures for Air Navigation Services — Training (PANS-TRG)' — a document that contains procedures for the development and implementation of a competency-based training programme to support the Annex 1¹⁴ requirements. This was followed in 2013 by an amendment of the aforementioned document for the introduction of EBT, which was accompanied by ICAO Doc 9995. The intention was to provide guidance to civil aviation authorities (CAAs), operators and approved training organisations (ATOs) on the recurrent assessment and training of pilots referred to in ICAO Annex 6 'Operation of Aircraft' and ICAO Annex 1 'Personnel Licensing', 1.2.5 'Validity of licenses'. Finally, through Amendment 2 to Doc 9868 (also issued in 2013), procedures for EBT were introduced in order to provide a means of assessing and training key areas of flight crew performance in a recurrent training system. In addition, more detailed guidance on qualifications of the instructor was provided.

2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. This Decision will contribute to the achievement of the overall objectives by addressing the issues outlined in Section 2.1.

The specific objectives of this Decision are, therefore, to:

- (a) update the flight crew training means of compliance in order to improve assessment and training of human factors; in particular, the personnel competence; and
- (b) provide additional efficiency in the field of flight crew training while achieving a smooth transition to competency-based training.

In order to meet the specific objectives, this Decision:

- (a) maintains the high aviation safety level by:
 - (1) ensuring that the recurrent training and checking programmes are adequate to provide pilots with the necessary knowledge, skills and attitudes (KSA) to be competent in their job — under this objective, EASA proposed the adopted rules and issues the AMC &GM of this Decision to implement EBT as a first step towards the full implementation of competency-based training across Subpart FC of Part-ORO; and
 - (2) addressing the SRs outlined in Section 2.1.2 'Safety recommendations';
- (b) ensures harmonisation with ICAO by aligning the European rules with the latest amendments outlined in Section 2.1.3 'ICAO amendments', especially with regard to EBT; and
- (c) contributes to the production of efficient regulations by adapting the necessary training standards and rules to ensure that the level of safety can only be positively affected by:
 - (1) introducing performance-based regulation principles;

¹³ Meeting held in Montreal, from 8 to 19 December 2003.

¹⁴ International Standards and Recommended Practices ICAO — Annex 1 to the Convention on International Civil Aviation — Personnel Licensing.



- (2) ensuring consistency of training-related rules and means of compliance across the applicable parts of Annex III (Part-ORO) to the Air OPS Regulation and Annex I (Part-FCL) to the Aircrew Regulation¹⁵; and
- (3) ensuring the correct balance between implementing rules (IRs) and AMC & GM on the subject issue.

2.3. How we want to achieve it — overview of the amendments

This section contains the rationale behind the amendments to the implementing rules (IRs) adopted by the European Commission. The font colour used for the explanatory notes is blue.

Annex I (Definitions) to Regulation (EU) No 965/2012

SEE IMPLEMENTING RULES IN [COMMISSION IMPLEMENTING REGULATION \(EU\) 2020/2036 of 9 December 2020](#).

Explanatory note to Annex I (Definitions) to Regulation (EU) No 965/2012

competency

The definition proposed has been transposed from ICAO Doc 9868 ‘PANS-TRG’ TRG Amendment 5.

competency-based training

The definition proposed has been transposed from ICAO Doc 9995:

‘Competency-based training. Training and assessment that are characterized by a performance orientation, emphasis on standards of performance and their measurement and the development of training to the specified performance standards.’

Competency-based training and EBT — use of the wording ‘assessment and training’

This provision uses the wording ‘assessment and training’ instead of ‘training and assessment’ because it reflects better the model used in EBT. Currently, EBT is used for airline pilots, who are current on type. Therefore, the phases of EBT focus first on assessment, to then develop the competencies in the subsequent phases (training).

The traditional use of the phrase ‘training and assessment’ is appropriate for initial type ratings and initial issues of licences where the pilots are not yet proficient, and they need to acquire a new type rating. In these cases, the sequence of ‘training’ first and then ‘assessment’ is appropriate.

competency framework

The term ‘identified competencies’ has been used to refer to the competencies the operator must choose to develop a competency framework (e.g. the nine competencies of EASA that include the eight competencies of ICAO Doc 9995¹⁶ plus ‘Application of Knowledge’). These competencies are also called ‘core competencies’.

¹⁵ Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 311, 25.11.2011, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1528301490110&uri=CELEX:32011R1178>).

¹⁶ ICAO Doc 9995 AN/497 ‘Manual of Evidence-based Training’, first edition, 2013.

‘unforeseen threats and errors’ has been used to provide a link to resilience, as the concept of resilience is very important to aviation safety.

The definition is based on the Doc 9995 definition of ‘core competencies’:

‘Core competencies. A group of related behaviours, based on job requirements, which describe how to effectively perform a job and what proficient performance looks like. They include the name of the competency, a description, and a list of behavioural indicators’.

competency

A competency is manifested and observed through behaviours that mobilise the relevant knowledge, skills and attitudes (KSA) to carry out activities or tasks under specified conditions. Trainees successfully demonstrate a competency by meeting the associated competency standard.

The definition has been created based on:

- Amendment 175 to ICAO Annex 1 ‘Personal licensing’; and
- ICAO Doc 9995.

The ICAO Doc 9995 references used were:

- ‘7.8.5.1 To be competent in any job, a person requires a certain amount of knowledge, an adequate level of skills, and a particular set of attitudes’.
- ‘7.8.5.4 To be competent, a pilot requires capabilities across a range of knowledge, skills and attitudes (KSA)’.

equivalency of malfunctions

The definition has been created to clarify the rules of equivalency of malfunctions. It is a new definition, which is not included in ICAO Doc 9995 AN/497 ‘Manual of Evidence-based training’, first edition, 2013.

evaluation phase

The evaluation phase is the first assessment of competencies to identify individual training needs. On completion of the evaluation phase, any areas that do not meet the minimum competency standard will become the focus of the subsequent training.

evidence-based training

The definition has been transposed from ICAO Doc 9995.

in-seat instruction

Effective monitoring and error detection are increasingly important when operating highly reliable, automated aircraft. Multiple data sources illustrate substantial rates of undetected error. Error management is reported as a very significant countermeasure in current operations with one accident study espousing that it is the most significant tool available to pilots for the prevention of accidents. Furthermore, multiple data sources show that there is a high level of intentional non-compliance and so any error management strategy must include greatly reducing its incidence. Error management skills are subject to decay. Error management currently does not form part of any strategy developed through the regulation of flight crew training; consequently, it is lacking in most training programmes.



It is a key topic and needs to be incorporated into training strategies in order to raise flight crew situation awareness and further develop the professional capabilities of pilots.

When in training, flight crews are usually highly vigilant, and therefore the performance observed may not be representative of performance in normal routine operations. After extensive discussion, the worldwide international subject matter experts (SMEs) group that developed material for ICAO Doc 9995 concluded that an effective means to provide reliable exposure in FSTD training is to use a method called in-seat instruction (ISI). This is also an effective means to provide the recovery element of UPRT; data from loss of control – in flight (LOC-I) events regularly indicate a cognitive impairment of the pilot flying (PF) with the pilot monitoring (PM) often demonstrating a higher level of situation awareness (SA). When the PF does not immediately respond to and act on monitoring calls, the PM takes control and recovers the aircraft. This approach is supported by both Airbus and Boeing in their guidance in recovery FSTD training and has been integrated within the EBT programme.

instructor concordance

The definition has been based on the ICAO Doc 9995 definition of inter-rater reliability.

Inter-rater reliability is a term not easily translated into all the languages of the European Union; therefore, a synonym for inter-rater reliability was used: ‘concordance’.

In statistics, inter-rater reliability, inter-rater agreement, or concordance, is the degree of agreement among raters.

line-orientated flight scenario

The definition has been based on the ICAO Doc 9995 definition of line-oriented flight scenario.

‘Line-oriented flight scenario. Training and assessment involving a realistic, “real time”, full mission simulation of scenarios that are representative of line operations.’

manoeuvres training phase

This is not a real-time training but allows crews the time to practise and improve performance in largely psychomotor skill-based exercises. Repositioning of the flight simulation in order to focus training on the intended manoeuvres will be a commonly used FSTD feature for this phase.

mixed EBT programme

The definition proposed has been inspired by ICAO Doc 9995 Chapter 4.2, paragraph 4.2.1, point (b).

‘(b) Mixed implementation. Implementation of a mixed EBT programme means that some portion of a recurrent assessment and training is dedicated to the application of EBT. This is a means of achieving a phased implementation where, for example, the CAA regulations or rules permit such a programme as part of the operator’s specific training and assessment, but preclude such a programme for the revalidation or renewal of pilot licences. This phased implementation recognizes the potential for such an EBT programme to be developed and implemented in advance of any future enabling regulatory changes, which may then permit total implementation.’

Scenario-based training phase

The definition for SBT has been based on the following ideas:



- Wherever possible, consideration should be given towards variations in the types of scenario, times of occurrences and types of occurrences, so that the pilots do not become overly familiar with repetition of the same scenarios.
- Variations should be the focus of EBT programme design, but not left to the discretion of individual instructors in order to preserve programme integrity and fairness.

The definition has been based on ICAO Doc 9995 Chapter 3.8:

- ‘c) Scenario-based training phase. This phase forms the largest phase in the EBT programme, and is designed to focus on the development of competencies, whilst training to mitigate the most critical risks identified for the aircraft generation. The phase will include the management of specific threats and errors in a real-time line orientated environment. The scenarios will include critical external and environmental threats, in addition to building effective crew interaction to identify and correct manage errors. A portion of the phase will also be directed towards the management of critical system malfunctions. For this programme to be fully effective, it is important to recognise that these predetermined scenarios are simply a means to develop competency, and not an end or ‘tick box’ exercise in themselves’.

GM to Annex I (Definitions) to Regulation (EU) No 965/2012

Behaviour

This term appears in the definition of performance criteria. It has been transposed from ICAO Doc 9995.

It is important to highlight the wording of ‘capable of being measured’; this does not mean that the observer may be able to measure it, as the observer has obvious technical or human limitations that may prevent the measurement of the behaviour.

Conditions

This definition has been introduced because it is frequently used in the context of competencies and observable behaviours. The definition has been transposed from the working paper to ICAO Doc 9868 ‘PANS-TRG’, AN-WP/9237 Appendix A page A3 ‘preliminary review of proposed amendments to Annex 1 and the Doc 9868 ‘PANS-TRG’ following its Amendment 5 with additional proposals developed by the ‘competency-based training and assessment task force’.

Evaluation phase

Further guidance is provided in this GM to complement the definition provided in the IR.

Facilitation technique

Primary technique that should be used for EBT and competency-based training.

Monitoring

Monitoring is the fundament of threat and error management. Monitoring is embedded in the competency framework provided in ORO.FC.231, and its behaviour indicators are spread out in different competencies.



Observable behaviour

The definition has been transposed from the ICAO Doc 9841 definition. However, it has been slightly amended to express the idea that although the observable behaviour is ‘capable of being measured’ as per the definition of ‘behaviour’, the instructor may be unable to measure it. This limitation (being unable to measure a behaviour) occurs due to the obvious technical or human limitations of the instructor. In other words, it is very difficult to observe and measure ‘all’ and ‘every single’ behaviour that occur in an aircraft or in a simulator of aircraft for a long period of time (e.g. 8 hours of a module).

‘Performance criteria’

The definition has been transposed from ICAO working papers for Doc 9868 ‘PANS-TRG’.

Train-to-proficiency

This text has been based on GM15 Annex I on UPRT and is referred to within the context of EBT.

Practical assessment

Although ICAO Doc 9995 follows an approach where summative assessment is performed at the end of the evaluation as follows:

‘3.6.2 The evaluation phase of each module will periodically be the focus of licence renewal or revalidation and may ultimately be the means by which Licensing Authorities continue to ensure that competence is maintained to hold a professional licence and type rating as applicable.’,

ICAO Doc 9868 ‘PANS-TRG’, Third Edition, published in November 2020 contains paragraph 4.4.1.2.2 which is moving the summative assessment, that otherwise would be made in the evaluation phase, to the end of the module. This ensures that no pilot is allowed to fly if found NOT competent.

Below an extract of ICAO Doc 9868 ‘PANS-TRG’

‘4.4.1.2 Assessment methods

4.4.1.2.1 The primary method for assessing performance is the conduct of practical assessments, which should serve to verify the integrated performance of competencies. It may be necessary to supplement practical assessments with other forms of evaluation. The supplemental evaluations may be included as a result of regulatory requirements and/or a decision that these methods are necessary to confirm that competence has been achieved.

4.4.1.2.2 Practical assessments take place in either a simulated or operational environment. There are two types of practical assessment: formative assessments and summative assessments. Formative and summative assessments are conducted based on 4.6.6 and 4.6.7.

4.4.1.2.2.1 Formative assessments

4.4.1.2.2.1.1 Formative assessments are a part of the learning process. Instructors provide feedback to the trainee on how they are progressing toward the interim or final competency standard. This type of assessment enables the trainee to progressively build on competencies already acquired and should aid learning by identifying gaps as learning opportunities. If trainees receive feedback or are assessed only at the end of the training, they will have no opportunity to use that information to improve their performance. The frequency and number of formative assessments may vary depending on the duration of the training and the syllabus structure and its assessment plan (see 4.6).



4.4.1.2.2.1.2 Formative assessments should serve to:

- a) motivate trainees;
- b) identify strengths and weaknesses; and
- c) promote learning.

4.4.1.2.2.2 Summative assessments

4.4.1.2.2.2.1 Summative assessments provide a method that enables the instructor/assessor to work with a trainee to collect evidence of the competencies and performance criteria to be demonstrated with respect to the interim or final competency standard(s). Summative assessments are carried out at defined points during the training and/or at the end of training. During summative assessments, the decision is either 'competent' or 'not competent' with respect to the interim or final competency standard(s). However, this can be further developed into a more refined grading system with a scale of judgements to improve feedback for the trainee and training personnel.

4.4.4.1.2.2.2 Summative assessments that are conducted during the course to evaluate the progress of the trainee are typically carried out by the instructing team. It may be advantageous if the instructors conducting these assessments were different from the instructors who routinely work with the trainee. Summative assessments conducted at the end of training and that lead to the issue of a licence and/or rating have both legal and safety implications. Therefore, the personnel carrying out these assessments should have the necessary competencies to assess objectively and meet the authority's requirements. Such personnel should be provided with the tools necessary to collect evidence in a systematic and reliable manner in order to ensure inter-rater reliability.

4.4.1.2.3 The list of methods below that supplement practical assessments is not intended to be restrictive. Any suitable supplemental method for assessing competence may be used. Other methods may include projects and group assignments.'

Annex II (Part-ARO) to Regulation (EU) No 965/2012

Explanatory note to Annex II (Part-ARO) to Regulation (EU) No 965/2012

ARO.OPS.226 Approval and oversight of evidence-based training programmes

SEE IMPLEMENTING RULES IN [COMMISSION IMPLEMENTING REGULATION \(EU\) 2020/2036 of 9 December 2020](#).

Explanatory note to ARO.OPS.226

This IR contains the approval and oversight provisions to ensure a safe EBT programme. The provisions follow the concept already described in:

- point (a)(2) of ARO.GEN.200 regarding the training and qualification of the inspectors;
- the associated AMC2 ARO.GEN.200(a)(2) point (a) as regards the initial training programme for the instructors; and
- AMC4 ARO.GEN.200(a)(2)) concerning inspector qualification for CAT operations.

The requirements on training in ARO.OPS.226 are further developed in AMC1 ARO.OPS.226(a).



As regards the general structure of the rule, ARO.OPS.226 has been based on the new proposed rule ARO.OPS.225 as proposed in [Opinion No 02/2020](#) on fuel schemes.

ARO.OPS.226 point (c)(1)

Due to the complexity of the EBT programme and the necessary maturity that the operator needs to demonstrate to ensure a good implementation of EBT, EASA decided to require the resolution of level 1 findings before approving full EBT. This is in line with the proposal of the RMG which agreed with the text ‘resolution of significant findings’.

ARO.GEN.350 provides a definition of level 1 finding.

‘ARO.GEN.350

- (a) (...)
- (b) A level 1 finding shall be issued by the competent authority when any significant non-compliance is detected with the applicable requirements of Regulation (EC) No 216/2008 and its Implementing Rules, with the organisation’s procedures and manuals or with the terms of an approval, certificate, specialised operation authorisation or with the content of a declaration which lowers safety or seriously hazards flight safety. The level 1 findings shall include:
- (1) failure to give the competent authority access to the facilities of the organisation in accordance with point ORO.GEN.140 of Annex III (Part-ORO) to this Regulation, or for balloons operators in accordance with points BOP.ADD.015 and BOP.ADD.035 of Annex II (Part-BOP) to Regulation (EU) 2018/395, during normal operating hours and after two written requests;
 - (2) obtaining or maintaining the validity of the organisation certificate or specialised operations authorisation by falsification of submitted documentary evidence;
 - (3) evidence of malpractice or fraudulent use of the organisation certificate or specialised operations authorisation; and
 - (4) the lack of an accountable manager.(...)

ARO.OPS.226 point (c)(2)(ii) wording ‘EBT programme suitability’

The wording refers to ORO.FC.231:

‘The operator may substitute the requirements of ORO.FC.230 by establishing, implementing and maintaining a suitable EBT programme approved by the competent authority.’

AMC1 ORO.FC.231(a) provides a more detailed presentation of the suitability of an operator’s EBT programme.

The terms ‘suitability’ and ‘suitable’, as well as terms similar to them, are used across the Air OPS Regulation (and the associated AMC and GM) more than 300 times. Furthermore, the term ‘suitability’ is used more than 50 times including the IR. For instance, in CAT.GEN.MPA.175 we read the phrases ‘suitability of the flight crew in respect of the work environment’ and ‘psychological attributes and suitability of the flight crew’.

ARO.OPS.226 point (c)(2)(iii)

EBT programmes require extensive use of data and suitable records systems.



This is already required by the operator as per ORO.GEN.220 and ORO.MLR.115; therefore, it has been overseen in the past.

However, for the initial approval, the competent authority should verify that the operator is compliant as EBT will increase the workload and usability of the record-keeping system; therefore, this may be a first indication of an operator's maturity to implement EBT.

The wording used 'the adequacy of the operator's record-keeping system, in particular with regard to flight crew training, checking and qualifications records' refers to ORO.MLR.115 points (c) and (d) and the related AMC1 ORO.MLR.115, GM1 ORO.MLR.115(c), and GM1 ORO.MLR.115(d).

ARO.OPS.226 point (c)(2)(iv)

This provision allows the competent authority to access pilot grading results. This already applies today and EBT will not change the current situation. The competent authority is allowed to access the pilot records (ORO.GEN.140 'Access') to verify 'the suitability of the operator's grading and assessment scheme'.

Furthermore, the access to records and grading data for the verification of the grading system is also recognised at ICAO level (see ICAO Doc 9379 'Manual of Procedures for Establishment and Management of a State's Personnel Licensing System' (Part I: General principles and organization Chapter 2 - The Licensing Authority, paragraph 2.8 Record-keeping)).

ARO.OPS.226 point (d)

The periodic oversight plan follows the following principles:

- A performance-based safety objective is provided in the IR.
- A more detailed criterion is then provided in the associated AMC1 ARO.OPS.226(d) 'Approval and oversight of EBT programmes OVERSIGHT PLAN — PERIODIC ASSESSMENT TO VERIFY THE COMPLIANCE OF THE EBT PROGRAMME'
- Then, GM addressing an important criterion that competent authority should oversee is developed — GM1 ARO.OPS.226(d) 'EFFECTIVENESS OF THE OPERATOR'S EBT PROGRAMME'.

The provision is linked to another IR (ARO.GEN.350) that provides a reference when continuing compliance is not ensured.

'ARO.GEN.350

- (1) In the case of level 1 findings the competent authority shall take immediate and appropriate action to prohibit or limit activities, and if appropriate, it shall take action to revoke the certificate, specialised operations authorisation or specific approval or to limit or suspend it in whole or in part, depending upon the extent of the level 1 finding, until successful corrective action has been taken by the organisation.'

The intent of this rule also includes the need for the competent authority to have periodic observations of the training session; however, this requirement has not been included as AMC2 ARO.GEN.305(b) already provides for such a requirement:

'AMC2 ARO.GEN.305(b) Oversight programme

PROCEDURES FOR OVERSIGHT OF OPERATIONS



(...)

- (b) Audits and inspections, on a scale and frequency appropriate to the operation, should cover at least:
- (1) infrastructure,
 - (2) manuals,
 - (3) training,
- (...)
- (c) The following types of inspections should be envisaged, as part of the oversight programme:
- (1) flight inspection,
 - (2) ground inspection (e.g. documents and records),
 - (3) training inspection (e.g. ground, aircraft/FSTD,
- (...)'

Point (b) normally means a desktop audit (documentation), and point (c) normally means visit/inspection; therefore, observation of the training session.

ARO.OPS.226 point (d) wording 'EBT programme'

The term 'EBT programme' referred to in the rule is also contained in ORO.FC.231 point (a) 'EBT programme'. While the table of assessment and training topics is a generic programme for an aircraft generation, the 'EBT programme' is specific to a particular operator and it encompasses all the requirements contained in ORO.FC.231 from point (a) to point (i).

The 'EBT programme' is an approved programme for CAT aircraft. The reason for this approval is the existing provision ORO.FC.145 point (c); thus, 'EBT programme' encompasses an approved process by the competent authority.

ARO.OPS.226 point (e)

The intention behind the requirement in point (e) is to offer the support and expertise of EASA in regard to EBT to the competent authority when approving and implementing an alternative means of compliance (AltMoC) related to EBT. The intention is NOT to replace the authority in the evaluation and approval of an AltMoC.

Recurrent training of pilots is a critical safety element.

ICAO, IATA and EASA envisage the EBT requirements as a risk-based and data-driven regulation, having the roots of such regulation in the EBT DATA REPORT.

The EBT DATA REPORT is a +700-page document published by IATA in 2012. To fully understand the document, advanced knowledge in data management and statistics, as well as other skills may be required. Normally, a researcher or an accident investigation officer possesses such knowledge — not an OPS inspector. Therefore, the information contained in the EBT DATA REPORT is not always easy to find for a regular inspector.



As the majority of the provisions are linked to a reason, finding or conclusion in the EBT DATA REPORT, the review of the EBT DATA REPORT may be necessary in order to understand the implications of the proposed deviation (AltMoC).

EASA and IATA are currently involved in a revision of the EBT DATA REPORT that should be published in 2021. Furthermore, EASA foresees a continuous process of reviewing the operational risks, identifying findings, publishing an EBT DATA REPORT to then update the table of assessment and training topics (amongst others). This process puts additional pressure on the authorities because the knowledge of the EBT DATA REPORT is dynamic and has to be updated. This challenge is especially relevant for those authorities that do NOT participate in the development of the EBT DATA REPORT, that is the majority of the authorities in Europe.

Knowledge of the EBT DATA REPORT may only be necessary to:

- 1- develop the regulatory material for EBT, or
- 2- help in understanding the impacts of a deviation (AltMoC).

From an efficient point of view, it may be more efficient to transfer the necessary knowledge of the EBT DATA REPORT on a case-by-case basis (AltMoC), from EASA to the authority. EASA already has the required knowledge because it was necessary to develop the EBT regulation. Requiring the authorities of Europe to acquire the same expertise would be NEITHER efficient NOR effective.

There may be an additional benefit in this provision, which is to ensure a level playing field in the implementation of EBT.

The only burden for the authority is to send a notification to EASA, which can be done with a simple email.

AMC and GM to Annex II (Part-ARO) to Regulation (EU) No 965/2012

AMC1 ARO.OPS.226 Approval and oversight of evidence-based training programmes

Explanatory note to AMC1 ARO.OPS.226(a)

AMC1 ARO.OPS.226(a)

The intention of EASA is not to substitute the existing requirements in AMC4 ARO.GEN.200(a)(2) regarding the qualification of the inspector for the EBT programmes. On the contrary, the EBT training requirements are additional to those contained in AMC4 ARO.GEN.200(a)(2).

Only the EBT training course is required for inspectors and not the EBT assessment of competence (demonstration). This approach follows the concept already introduced in the regulation for the Fatigue Risk Management System course.

Since the EBT paradigm is mainly under the supervision of the operator, including the licensing issue, the inspector needs to have an acute understanding of the principles, philosophy and application of EBT concepts, in order to understand the performance of the operator.

The demonstration of the acceptable level of knowledge of the inspector can be achieved through an on-the-job training.

AMC1 ARO.OPS.226(a) wording 'technical training'



The use of the term ‘technical training’ refers to AMC2 ARO.GEN.200(a)(2) point (a)(11).

‘AMC2 ARO.GEN.200(a)(2) Management system
QUALIFICATION AND TRAINING — INSPECTORS

(a) Initial training programme:

The initial training programme for inspectors should include, as appropriate to their role, current knowledge, experience and skills in at least all of the following:

(...)

(11) technical training, including training on aircraft-specific subjects, appropriate to the role and tasks of the inspector, in particular for those areas requiring approvals.’

GM2 ARO.OPS.226(a) Approval and oversight of evidence-based training programmes

Explanatory note to GM2 ARO.OPS.226(a)

The GM provides further details on the learning objective ‘acquire the ability to recognise the EBT programme suitability’ contained in point (b)(2) of AMC1 ARO.OPS.226(a).

AMC1 ARO.OPS.226(c) Approval and oversight of evidence-based training programmes

Explanatory note to AMC1 ARO.OPS.226(c)

This AMC has been introduced to guide the competent authority on the main characteristics of an EBT programme. It may be used by the competent authority to develop checklists for audits.

AMC1 ARO.OPS.226(d) Approval and oversight of evidence-based training programmes

Explanatory note to AMC1 ARO.OPS.226(d)

The list has been derived by a read-through of ORO.FC.231 and all ARO.GEN, ARO.OPS requirements for approval and oversight.

This list may be supported by a checklist similar to that developed by EASA for mixed EBT implementation.

AMC1 ARO.OPS.226(d) points (b) and (c)

The intent of EASA when drafting points (b) and (c) was to ensure that the competent authority has sufficiently qualified inspectors to oversee the EBT programme. EASA also provided the items that should be reviewed in the periodic oversight plan so that appropriate resources are planned.

AMC1 ARO.OPS.226(d) point (c)(1)

This means that the operator should demonstrate to the competent authority that it has a method to collect, analyse and act upon the data from the EBT programme. It is expected that this would normally be discussed in regular meetings (the training standards meetings or similar format). Minutes of the meetings should be kept. In the training standards meetings, the operator would review the data and revise the programme as necessary. This is also provided for in ORO.GEN.200(a)(5) of the Air OPS Regulation.

AMC1 ARO.OPS.226(d) point (c)(3) wording ‘relevance of the operator’s EBT programme’

Relevance means that an EBT programme both includes the features contained in AMC1 ORO.FC.231(a) and continuously identifies the operator’s operational risks to feed the operator’s EBT programme.

There was a discussion in EASA and the RMG whether clarifying ‘EBT effectiveness’ and ‘EBT relevance’ was necessary. These are important elements of the EBT programme (verifying performance output).

AMC1 ARO.OPS.226(d) point (c)(8)

The competent authority should verify compliance with the provision of record-keeping under ORO.GEN.220 and ORO.MLR.115. Data collection and record-keeping are a key part of the EBT system.

AMC1 ARO.OPS.226(d) point (c)(10) wording ‘continuing standardisation of EBT instructors’

This provision includes training and concordance assurance of the instructor.

Verifying concordance should be preferably a data-driven process.

SPT.012 ARO.OPS.226(d) — safety promotion task 012 — safety material for EBT — EBT INSTRUCTOR STANDARDISATION**CONTINUING STANDARDISATION OF EBT INSTRUCTORS**

Generally speaking, a good standardisation of the EBT instructors is normally based on three main areas:

- (a) Training
- (b) Concordance assurance programme. The programme should be functional. In practical terms, this may include the identification from a data point of view of the four types of instructors that may require standardisation: the instructors that grade very high, the instructors that grade very low, the instructors that grade always the standard (e.g. 3), and the instructors whose grading is either very high or very low and with hardly any standard grades.
- (c) Guidance of the operator on how to grade

GM1 ARO.OPS.226(d) point (b)

This point has been introduced to guide the competent authority to verify the results of the competencies. These grading results may have variations, and those variations are acceptable. These variations occur for several reasons; for example, due to variations in the difficulty of the EBT programme. Therefore, the effectiveness of the EBT programme should be considered from a holistic view. For instance, a temporary decrease of pilot grading in core competencies does not necessarily mean a lack of effectiveness. Operators designing modules with numerous difficult events could end up in a decrease in the grading results of some competencies and vice versa.



Annex III (Part-ORO) to Regulation (EU) No 965/2012**ORO.FC.146 Personnel providing training, checking and assessment**

SEE IMPLEMENTING RULES IN [COMMISSION IMPLEMENTING REGULATION \(EU\) 2020/2036 of 9 December 2020](#).

Explanatory note to ORO.FC.146***ORO.FC.146(c)***

EBT is a paradigm shift and instructors play a key role in the delivery of the programme. EASA found necessary to add an EBT course on top of the qualification required in the Aircrew Regulation.

ICAO Doc 9995 requires this training as well:

‘6.3.2 Instructors should undergo suitable training in order to adapt to the needs of training within an EBT programme. Training should provide the framework for existing instructors to develop their competence to undertake EBT assessment and training’.

ORO.FC.146(c) wording ‘for an EBT programme’

This wording ‘for an EBT programme’ is used instead of ‘operator holding an approval for EBT’ or other wordings that could be possibly used in order to allow:

- contracted activities under ORO.GEN.205; and
- that other aspects of the training programme which are not linked to the EBT programme itself could be delivered by other personnel who are not EBT instructors.

ORO.FC.146(c) wording ‘hold an Annex I (Part-FCL) instructor or examiner certificate’

The rule restricts the possibility of instructors that hold a certificate issued by a third country to become EBT instructors. By using the wording ‘hold an Annex I (Part-FCL) instructor or examiner certificate’, only instructors or examiners that hold a certificate issued in accordance with the EU regulatory framework can deliver EBT. The reasons for such a provision according to the RMG are the following:

- The EBT programme, being based on competencies, does not have the same prescriptive components as a task-based checking under Appendix 9 to Part-FCL. Therefore, the RMG, in an effort to ensure standardisation and integrity of the licence revalidation under EBT, wanted to put into place some level of control of instructor qualification.
- To ensure alignment between Part-ORO of the Air OPS Regulation and Part-FCL of the Aircrew Regulation, the requirement of FCL.900 point (c) must be reproduced in Part-ORO. Therefore, only holders of European instructors’ certificates (with a European pilot licence or with a pilot licence issued by a third country but subject to FCL.900 (c)) are allowed to provide training to European licence holders.
- The instructor qualification requirements are in Part-FCL and additional training requirements are provided in Part-ORO. Therefore, the EBT system relies on the prerequisite of instructor qualification and standardisation in Part-FCL. Foreign certificates may or may not provide the



same level of qualification and standardisation as that provided in Part-FCL; therefore, EU instructor certificates have been required.

- The level of complexity of the oversight will increase due to the different standards for instructor certificates in the non-EU countries. Furthermore, the national authority performs the oversight of the EBT programme, while EASA performs the oversight of the third-country ATOs. Allowing third-country instructors will overcomplicate the oversight for the national authority.
- Furthermore, the situation where an instructor that holds a pilot licence issued by a third country provides training, only occurs when the operator has subcontracted its training to an ATO under ORO.GEN.205. In this situation, the efforts of standardisation are already big. Considering that a small number of non-standardised data introduced in the EBT system can have big implications in the results of the programme, then only Part-FCL certificate holders should be allowed to provide EBT as they are standardised in EBT by the ATO.
- The RMG was also concerned with the delivery of the EBT programme, as they believe that the quality of the delivery of the operator's EBT programme could be compromised; since Europe is the first region delivering full EBT, Part-FCL certified instructors may better guarantee the consistency and philosophy of EBT. This is particularly important as at a later stage, in the context of the activities of RMT.0599, initial type rating courses may be subject to EBT.

Note: Individual European certified trainers with a European pilot licence are allowed to provide EBT even if they are not the operator or ATO staff members. This is allowed under ORO.FC.205 on contracted activities.

ORO.FC.146(c) wording 'the operator's EBT instructor standardisation'

The RMG was reluctant to allow the EBT instructor to revalidate the EBT instructor certificate under an ATO not belonging to an airline, and therefore the requirements for the assessment have been contained in the operators' requirements. Hence, the revalidation of the EBT instructor certificate requires an operator.

Following the concept already described in Subparts J and K of Part-FCL, the instructors should complete a course to become EBT instructors. This standardisation is composed of a training course and the assessment of competence, which follows the logic of Part-FCL. For example, FCL.930 'Training course', FCL.935 'Assessment of competence', and FCL.940.TRI TRI 'Revalidation and renewal' illustrate the situation for instructor courses and assessment:

'FCL.940.TRI TRI — Revalidation and renewal'

(a) Revalidation

- (1) Aeroplanes. For revalidation of a TRI(A) certificate, the applicant shall, within the last 12 months preceding the expiry date of the certificate, fulfil one of the following 3 requirements:
 - (i) conduct one of the following parts of a complete type rating training course: simulator session of at least 3 hours or one air exercise of at least 1 hour comprising a minimum of 2 take-offs and landings;
 - (ii) receive instructor refresher training as a TRI at an ATO;



- (iii) pass the assessment of competence in accordance with FCL.935.

[...]

The RMG believes that it must be an operator EBT instructor training. Therefore, the instructor course is operator-specific. However, credits are foreseen in point (d) of AMC1 ORO.FC.146(c) when an instructor has experience in EBT, allowing for a shorter training course.

ORO.FC.146(c)

The sentence ‘Completion of the operator’s EBT initial standardisation will qualify the instructor to perform EBT practical assessment’ has been introduced because in the Aircrew Regulation the instructors do not have the privilege to perform EBT practical assessment. For example, the current FCL.905.TRI.TRI only provides the instructor with a privilege to ‘instruct for’:

‘FCL.905.TRI TRI — Privileges and conditions

The privileges of a TRI are to instruct for [...]

This provision introduces the link to Part-FCL for the EBT proficiency check in accordance with Appendix 10 (EBT practical assessment), and the wording ‘EBT practical assessment’ provides the link to Appendix 10 point 6 ‘The EBT practical assessment must be conducted in accordance with the operator’s EBT programme’.

The use of ‘completion’ means also that the instructor successfully passed the instructor standardisation. In ORO.FC.231 (a)(3), this concept is already covered for the module; completion of an EBT module means to complete the programme (syllabi) and reach an acceptable level of performance. The same concept should be used for the instructor standardisation course: 1- the instructor has completed the syllabi for the EBT course, 2- an acceptable level of performance is reached (assessment of competence).

For info, ORO.FC.231(a)(3)(i)

- (i) completes a minimum of two modules within the validity period of the type rating, separated by a period of not less than 3 months. The module is completed when: (...)

ORO.FC.146(c)(2) wording ‘EBT practical assessment’

This wording is a transposition of the ICAO wording ‘practical assessment’ contained in ICAO Doc 9868 ‘PANS-TRG’ paragraph 4.4.1.2.2.

Furthermore, practical assessment is defined in the new GM to definitions in Subpart ORO.FC.

ORO.FC.146(d)

The use of a suitably qualified commander, as in AMC1 ORO.FC.230 (3)(v), has been retained under EBT.



ORO.FC.231 Evidence-based training

SEE IMPLEMENTING RULES IN [COMMISSION IMPLEMENTING REGULATION \(EU\) 2020/2036 of 9 December 2020](#).

Explanatory note to ORO.FC.231

The EBT programme and philosophy are intended to be applied as the means of assessing and training key areas of flight crew performance in a recurrent training system. This is referred to in ICAO Annex 6, Operation of Aircraft, Part I, International commercial Air Transport — Aeroplanes, SARP 9.3, Flight crew member training programmes, and 9.4.4, Pilot proficiency checks. In addition, it is also referred to in ICAO Annex 1, Personnel Licensing, 1.2.5, Validity of licenses.

The EBT programme considers the differences between aeroplane generations by tailoring the recurrent training programme to the aeroplane generation. The paradigm shift proposed under the EBT programme is not simply to replace a set of critical events with a new set, but to use the events as a vehicle for assessing and developing crew performance across a range of competencies. In addition, EBT refocuses the instructor population onto analysis of the root causes to correct inappropriate actions, rather than simply asking a flight crew member to repeat a manoeuvre with no real understanding as to why it was not successfully flown in the first instance. Finally, it is acknowledged that in today's high-fidelity simulator environment, very sophisticated training tools exist that are often not used effectively, as regulation focuses much more on checking. EBT seeks to redress the imbalance between training and checking. It recognises that an assessment of competence is necessary, but once completed, pilots learn more effectively when being trained by competent instructors to perform tasks and manage events measured according to a given set of observable behaviours (OBs), while not under test conditions.

The data analyses undertaken to support the EBT programme illustrate inadequacies in the perpetuation of historical airline flight training regimes and identify areas in which major change is necessary. They strongly support the implementation of such a change in both the regulation and development of recurrent airline pilot assessment and training. Finally, they identify the areas for improvement, providing the prioritisation of relevant training topics to guide in the construction of suitable EBT programmes.

ORO.FC.231 point (a)(1) wording 'a suitable EBT programme'

AMC1 ORO.FC.231(a) provides a more detailed presentation of the suitability of an operator's EBT programme.

The term 'suitable' is used in the Air OPS Regulation more than 200 times (IR, AMC and GM). In fact, there are many IRs using 'suitable' such as ARO.RAMP.120 '... instructional requirement suitable for the type of training provided', ORO.AOC.100 '... management are suitable and properly matched to the scale and scope of the operation', CAT.GEN.MPA.180 '... suitable aeronautical charts for the route of the proposed flight', CAT.OP.MPA.151 'suitable precautionary landing sites', CAT.POLA.245 '... a suitable glide path reference system', etc.

The term 'EBT programme' referred to in the AMC is contained in ORO.FC.231 'Evidence-based training'. While the table of assessment and training topics is a generic programme in an aircraft generation, the 'EBT programme' is specific to a particular operator and it encompasses all the requirements contained in ORO.FC.231 from point (a) to point (i).



The 'EBT programme' is an approved programme for CAT aircraft. The reason for this approval is the existing provision ORO.FC.145 point (c), thus 'EBT programme' encompasses a process approved by the competent authority.

ORO.FC.231 point (a)(1) wording 'demonstrate its capability to support the implementation'

The EBT training programme is intended to be implemented by phases, from a legacy training or other alternate training programmes such as the alternative training and qualification programme (ATQP) to a full EBT programme in accordance with ORO.FC.231.

Mixed EBT or ATQPs are intended to provide (or have provided) enough experience for an operator to be ready to implement an EBT programme in accordance with ORO.FC.231.

Also, this period should provide the competent authority with enough information on the resources needed to perform oversight of operators implementing an EBT programme in accordance with ORO.FC.231.

This assures a robust and standardised EBT implementation in accordance with ORO.FC.231 across the spectrum of airlines with different levels of experience in and resources for this kind of programmes.

ORO.FC.231 point (a)(1) wording 'equivalent level of safety'

The wording has been transposed from the IR on ATQP (ORO.FC.A.245). The wording 'equivalent level of safety' is also used in other provisions across the Air OPS Regulation (e.g. minimum cabin crew, alternative means of compliance, etc.).

ORO.FC.231 point (a)(2) wording '3 year programme'

'3-year programme' instead of '3-year cycle', as provided in ICAO Doc 9995. It has been used because:

- (a) the European rules generally use 'programme' instead of 'cycle' (see Part-ORO); and
- (b) of the definition of 'cycle' that expresses the notion of a 1-year period. Therefore, if '3-year cycle' is used, it may be confusing.

ORO.FC.231 point (a)(2)(iv) 'evaluation'

The evaluation phase should consist of a line-orientated flight scenario during which there are one or more occurrences for evaluating one or more key elements of the required competencies. The root cause/contributing factor should be identified rather than the symptoms of any deficiency.

This is not intended to be a comprehensive assessment of all areas of competency, nor a demonstration of all critical flight manoeuvres.

During the evaluation phase, for any competency observed below minimum:

- specific training needs should be determined; and
- the subsequent SBT includes remediation and the flight crew member is not released to line flying until an acceptable level of performance is reached.

ORO.FC.231 point (a)(2)(iv) 'training'

The intent of the regulator is to complete the training phase after the evaluation phase, while the phases included in the training phase (MT and SBT) can be performed in any order.



- (A) An evaluation phase, comprising a line-orientated flight scenario (or scenarios) to assess competencies and identify individual training needs; and
- (B) A training phase, comprising:
- the manoeuvres training phase, comprising training to proficiency in certain defined manoeuvres; and
 - the scenario-based training phase, comprising line-orientated flight scenario(s) to develop competencies and address individual training needs.

ORO.FC.231 point (a)(2)(iv)(A)

The evaluation phase is a first look to assess competencies, determine training system effectiveness and identify individual training needs. On completion of the evaluation phase, any areas that do not meet the minimum competency standards will become the focus of the subsequent training.

ORO.FC.231 point (a)(2)(iv)(B)

‘The training phase shall be conducted in a timely manner after the evaluation phase’

The intent of this provision is to clarify the need to perform the training phase after the evaluation phase. In addition, the phrase ‘in a timely manner’ has been introduced to stress the need to define a period in which the training will be provided.

ORO.FC.231 point (a)(3)(i) wording ‘type rating’

The use of the term ‘type rating’ clarifies the expiry date, as the validity of the type rating is up to the end of the month. Therefore, the intention of EASA is to ensure two modules a year (each module composed of two simulator sessions).

ORO.FC.231 point (a)(3)(i) wording ‘by a period of not less than 3 months’

The RMG discussed ICAO Annex 6 Part I Chapter 9 SARP 9.4.4 ‘Pilot proficiency checks’ where two checks a year are required, performed at least 4 months apart:

‘9.4.4 Pilot proficiency checks

9.4.4.1 The operator shall ensure that piloting technique and the ability to execute emergency procedures is checked in such a way as to demonstrate the pilot’s competence on each type or variant of a type of aeroplane. Where the operation may be conducted under instrument flight rules, the operator shall ensure that the pilot’s competence to comply with such rules is demonstrated to either a check pilot of the operator or to a representative of the State of the Operator. Such checks shall be performed twice within any period of 1 year. Any two such checks which are similar and which occur within a period of 4 consecutive months shall not alone satisfy this requirement.’

The RMG considered that these checks are not similar, as they are not repetitive training tasks or events, but evaluations in different scenarios. Therefore, a 3-month period is consistent with the European regulatory framework where the OPC in ATQP (ORO.FC.A.245) has a validity period of 6 months with the possibility to do it 3 months in advance.

Furthermore, according to ICAO Doc 9995, this document is a means of compliance with the Annex 6 SARP 9.4.4.



'This manual is intended to provide guidance to Civil Aviation Authorities, operators and approved training organizations in the recurrent assessment and training of pilots referred to in Annex 6 to the Convention on International Civil Aviation, Operation of Aircraft, Part I, International Commercial Air Transport — Aeroplanes, paragraphs 9.3, Flight crew member training programmes, and 9.4.4, Pilot proficiency checks.'

ORO.FC.231 point (a)(3)(i)(B) wording 'acceptable level of performance'

The wording 'acceptable level of performance' has to be defined following the requirements laid down in point (d).

'The operator shall use a grading system to assess the pilot competencies. The grading system shall ensure:

- (i) a sufficient level of detail to enable accurate and useful measurements of individual performance;
- (ii) a performance criterion and a scale for each competency, with a point on the scale which determines the minimum acceptable level to be achieved for the conduct of line operations. The operator shall develop procedures to address low performance of the pilot;'

The reason for not including the word 'minimum' is that the operator may require a level of performance higher than the minimum. The fact that the operator can impose higher requirements to its pilots is accepted today, through the OPC where the operator defines its own level of pilot performance.

Furthermore 'acceptable level' is used already in the Air OPS Regulation both in the IRs and the AMC & GM (e.g. SPA.SET-IMC.105 'an acceptable level of turbine engine reliability is achieved in service by the world fleet').

Note: EASA uses 'acceptable level of competence' when speaking about the EBT programme and 'acceptable level of performance' in the context of assessment of the EBT competencies.

ORO.FC.231 point (a)(4) 'instructor concordance'

It is imperative that instructor concordance is regulated as a core aspect of an EBT programme, and should be held to high standards, as it is one of the most critical drivers of data quality in an EBT programme. Concordance should be required to prevent drift in instructor quality over time, especially in the non-technical competencies.

ORO.FC.231 point (a)(5) wording 'line operations'

The use of the term 'line operations' allows for training flights. At the same time, it restricts line flying when minimum performance is not achieved. EBT is an FSTD programme; therefore, the recommendation is to provide such remedial training in the FSTD. However, the operator is allowed to conduct training flights and the pilot should be permitted to be trained in flight, assuming the minimum performance for line operations was achieved, for example, when a pilot obtains a grade 2 in application of procedures (PRO). This is especially relevant in small aircraft models, and although most of those models are not yet permitted in EBT, EASA has plans to incorporate them in the future.

The term 'line operations' is used in the Air OPS Regulation and although no definition is provided, its meaning is obvious.



ORO.FC.231 point (a)(5)

If low performance is observed and there is no immediate opportunity for remedial training (e.g. unforeseen circumstances, sessions separated by several days apart with flight duty in the middle, etc.), the pilot should be removed from line operations until an acceptable level of performance can be achieved.

ORO.FC.231(b)

Why is there a need to require a competency framework?

Mastering a defined number of competencies should allow a pilot to manage most of the situations in flight. The main benefit of a competency-based approach to training is its potential to encourage and enable individual aviation professionals to reach their highest level of operational capability while ensuring a basic level of competence as a minimum standard. This approach is supported by the study of [MAN4GEN](#).

Legacy training and checking, and ATQP v EBT

The major difference between ATQP and EBT lies in the approach taken to identify the KSA for the successful performance in the job. ATQP and traditional training (Appendix 9) focus on a task-based approach of the pilot role by identifying the job-related tasks (and subtasks), which are then used to identify a list of KSA required for successful pilot performance. On the other side, the EBT approach starts with the performance indicators/observable behaviours of exemplary pilots to define an official list of observable behaviours (see list of OBs in the EBT competency framework) to then group them in competencies (see list of the EASA EBT competency framework — nine competencies). Through this process, the nine EBT competencies are related to effective or superior performance. Therefore, the question is not which KSA are required to perform the tasks of an airline pilot (ATQP approach) but which KSA do superior performers airline pilots possess and use (EBT approach).

PRINCIPLES OF A COMPETENCY FRAMEWORK

- The purpose of competency-based assessment and training is to assess and train the capacity of an individual to perform at the standard expected in an organisational workplace.
- There is an explicit link between competencies and training, required performance on the job, and assessment.
- Competencies are formulated in a way that ensures they can be developed, observed and assessed consistently in a wide variety of work contexts for a given aviation profession or role.
- Each stakeholder in the process (including the trainee, instructor, training organisation, operator and regulator) has a common understanding of the competency requirements.
- Clear performance criteria are established for assessing competence.
- Evidence of competent performance is valid and reliable.
- Instructors' and assessors' judgements are calibrated to achieve a high degree of inter-rater reliability.
- The assessment of competencies is based on multiple observations across multiple contexts.
- A relevant competency framework is clearly defined for a particular role.



- To be considered competent, an individual demonstrates an integrated performance of all the required competencies to a specified standard.

ASSUMPTIONS

- All tasks performed by aviation professionals require the application of a relevant set of competencies.
- Aviation professionals apply the same set of competencies in a given role throughout their career but with different degrees of performance.

ORO.FC.231(c)

This requirement has been transposed from ICAO Doc 9995 paragraphs 3.6.6 and 3.6.7, with the necessary amendments, into the European regulatory system.

‘3.6.6 Quality management. The training system performance should be measured and evaluated in respect of the organizational objectives. Monitoring should include a feedback system to identify trends and ensure corrective action where necessary. The quality system of the operator or training organization, as defined in Doc 9841, the Manual on the Approval of Training Organizations, should monitor alignment with the EBT assessment and training guidelines recommended in this manual.

3.6.7 Feedback system. For the purpose of collecting data from an EBT programme, and making adjustments and continuous improvement to the training system, an operator should implement a performance feedback system utilising defined metrics (see paragraph 5.3)’.

ORO.FC.231(c) point (1)(ii)

The requirement has been transposed from ICAO Doc 9995 paragraph 3.6.6 ‘... should monitor alignment with the EBT assessment and training guidelines recommended in this manual. ...’. The interpretation of this paragraph was the following: as one of the main objectives of the EBT programme is to develop pilot competencies, the sentence in 3.6.6 was transformed to ‘develops pilot competencies’.

ORO.FC.231(c) point (2)

‘ORO.GEN.200 Management system

- (a) The operator shall establish, implement and maintain a management system that includes:
 - (1) (...)
 - (4) maintaining personnel trained and competent to perform their tasks;’

ORO.FC.231(d)

The paradigm shift from legacy training and checking programmes is a move away from checking the execution of predefined manoeuvres and tasks, based on the quality of execution. Remediation in these cases often leads to simple task repetition without an understanding of the underlying causes of ineffective performance.

To be consistent with the central philosophy of EBT, the assessment should be completed at key points during the module, and the performance should be evaluated against each of the defined competencies, using the most relevant OBs to the performance observed. The instructor should take



an overview of everything observed during the phase, and using a methodology similar to that published, award grades in each competency only.

The grading system should be used for crew assessment, in addition to providing quantifiable data for the measurement of the training system performance. It can range from a simple ‘acceptable/unacceptable’ grading performance system to a gradual relative measurement system.

ORO.FC.231(d) wording ‘a grading system to assess’

The provision has been transposed from ICAO Doc 9995 paragraph 3.6.3:

‘3.6.3 Assessment and grading system. A full description of the competencies is provided in Appendix 1 to Part II. It is essential to note that an operator intending to use this framework should in addition develop a clear assessment and grading system for expected crew performance. Competencies are a fundamental component of the grading system. It is not the intention of this document to fully describe a grading system, but a grading system should be used for crew assessment, in addition to providing quantifiable data for the measurement of the training system performance. It can range from a simple ‘acceptable/unacceptable’ grading performance system to a graduated relative measurement system.’

ORO.FC.231(d) point (1)(iii)

Data integrity is the maintenance of, and the assurance of the accuracy and consistency of, data over its entire life-cycle and is a critical aspect of the design, implementation and usage of any system which stores, processes, or retrieves data.

Any unintended changes to data as the result of a storage, retrieval or processing operation, including malicious intent, unexpected hardware failure, and human error, is failure of data integrity.

ORO.FC.231(d) point (2)

Why do we need a verification of the grading system?

The EBT grading system provides a norm-referenced system, although it contains some characteristics of a criterion-referenced system.

Glasser (1963) formalised the concept of criterion-referenced testing (CRT). The development of a CRT entails, firstly, a statement of behavioural objectives and then a systematic generation of test items designed to unambiguously ascertain to what degree these objectives have been met. Standards of performance are set using minimal levels of competence before the test is applied.

The elements of the development of a CRT (e.g. to unambiguously ascertain) are difficult to achieve in the EBT system for certain OBs and grading, especially as regards non-technical skills, associated OBs and their grading. For example, a grade 3 (‘The pilot communicated adequately, by regularly demonstrating many of the observable behaviours when required, which resulted in a safe operation’) in communication will require that all OBs are clearly and unambiguously defined. As an example, the OB ‘Uses eye contact, body movement and gestures that are consistent with and support verbal messages’ would require further criteria in the context of a particular scenario to reach the ‘unambiguously ascertain to what degree the objective has been met’ explained by Glasser (1963). These criteria could be at least 20 seconds of eye contact along with a body movement of three gestures (e.g. indicating with the arm the side of the aircraft affected) that support the verbal message of the explanation of an engine problem to the cabin crew.



Today, the revalidation of licences is based on a criterion-referenced system for the conduct of the training, tests and checks of Appendix 9 with regard to technical competencies (see FLIGHT TEST TOLERANCE, Appendix 9 to Part-FCL of the Aircrew Regulation). For the non-technical competencies, a norm-referenced system may be provided (see ORO.FC.115 &215 of the Air OPS Regulation).

Today, the European aviation system uses a criterion-referenced system for revalidation of pilot licences to ensure a level playing field (one of the aims of the Basic Regulation — see Article 1). EBT proposes a norm-referenced system. In order to combine both methods, a feedback process is proposed. This process is recommended in different scientific works. From all the scientific works, the RMG provided a reference to the book ‘Criterion-referenced and norm-referenced assessments: compatibility and complementarity’ author: Beatrice Lok, Carmel McNaught & Kenneth Young.

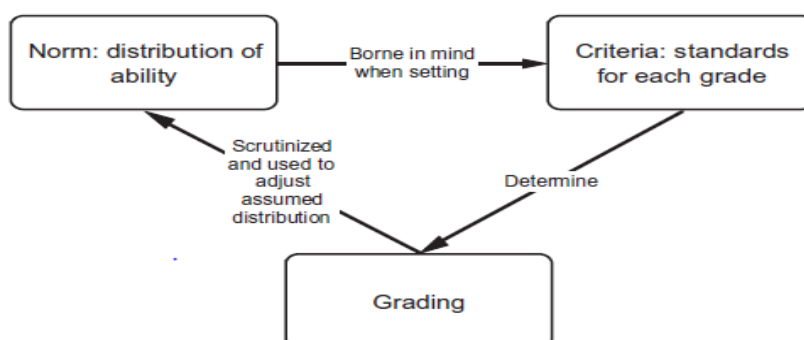
An extract is provided to support the need for the verification of the grading system in EBT. The book proposed a yearly verification of the grading system; however, the RMG opposed this proposal and instead EASA proposed a one-time feedback every 3 years.

‘Feedback process:

There is no need to choose between norm referencing and criterion referencing. They are both present.

- Not only are they both present, but with the caveat about minor adjustments from year to year, they are consistent. Thus, it is possible both to define rubrics (criterion referencing) and to prescribe grade-distribution guidelines (norm referencing), provided the latter contains a degree of flexibility.
- The presence of norm referencing and criterion referencing in a loop enables the generation of both useful feedback to learners and useful summative information to external stakeholders.
- The use of criteria allows meaningful reference to higher-order learning outcomes. While these are inevitably ambiguous and even unknown to external stakeholders, the simultaneous use of norm referencing *allows the* interpretation of these criteria to be supported by norm comparisons, and to guard against grade inflation.
- Since these steps are all in a loop, there is no need to argue which one comes first.
- The entire approach is coherent with modern quality-assurance and fitness-for purpose concepts.’

Assessment & Evaluation in Higher Education



Feedback loop.

ORO.FC.231(e) point (1)

This approach allows to match the detailed provisions with regard to the FSTD required to deliver the EBT programme with the requirements to certify the FSTD which are contained in CS-FSTD — see <https://www.easa.europa.eu/regulations>.

Therefore, the IR provides the safety objective and remains technology agnostic to allow a proper evaluation of the regulatory framework.

ORO.FC.231(g) and related AMC and GM

The RMG developed a definition of the concept as follows: ‘‘equivalency of approaches’ refers to approaches relevant to operations determined by a defined method, leading to a reduced frequency of approaches with an increased focus on the operational relevance rather than just on the conduct of an approach which is not realistic in the operational context’.

— Introduction

ICAO Doc 9995 recommends approach clustering (‘equivalency of approach types’) as a way to avoid repetitive training on approaches that require the same actions by the pilot (‘underlying elements of flight crew performance to conduct them’). It also recommends avoiding those approaches that are typically flown during line operations (‘Frequency of training may be reduced for types of approaches that are conducted regularly in line operations.’). However, ICAO Doc 9995 does not explain how to carry out an ‘equivalency of approach types’ process.

Additionally, the recurrent training requirements specified in Part-SPA do not reflect the reality of normal operations. For instance, the use of the HUD in generation 3 and 4 aircraft types is usually mandated by the operator for all phases of flight, and therefore the requirement to carry out the approaches for recurrent training specified in Part-SPA does not reflect the EBT concept of incorporating approaches that are not conducted regularly in line operations.

— Approach types

The industry has moved from essentially three different approach genres (non-precision, precision and low-visibility operations (LVOs)) to a multitude of different approaches utilising satellite- and ground-based enhancements. This has given way to the curved approaches and approaches with varying gradients. While an aircraft’s acquisition of the flight path has changed, the ‘underlying performance’ for crews to perform the approaches has changed only a little, as the OEMs have made the pilot interface with the autopilot and the displays very similar to conventional approaches (i.e. ILS). The main change from a pilot’s viewpoint is the introduction of HUD and emergency vision assurance system (EVAS).

Essentially, ICAO Annex 6 has delineated the approach types as two-dimensional (2D) and three-dimensional (3D) approaches, and Type A and B in accordance with the ‘achieved’ minima. Most generation 3 and 4 aircraft types have the same autopilot/pilot interface and displays for all 3D approach methods, irrespective of whether or not the approach is Type A or Type B. Variations do exist for the conduct of 2D methods depending on OEM.

ICAO Doc 9995 groups aircraft into generations, with the biggest groups being the generation 4 and 3 jets. The delineation between the two generations is based upon whether or not the aircraft has fly-by-wire and flight envelope protections. While this delineation is entirely relevant and useful to derive recurrent training programmes, it does not necessarily reflect the



avionics capability or the pilot's interface with the autopilot. For example, the 747-8 sits in generation 3 as it has conventional flight controls. Therefore, by clustering aircraft in accordance with the EBT generation would unnecessarily penalise some aircraft types.

— HUD and EVAS

Generation 4 and generation 3 aircraft types fitted with a HUD utilise it for all approaches, irrespective of whether or not they are Type A or Type B utilising 3D or 2D methods. This is the standard mode of operation.

Similarly, the use of EVAS, although not currently fitted to generation 3 and 4 aircraft types, is again the standard mode of operation and utilised for all approaches. For recurrent training, flying additional approaches to revalidate the use of the HUD is simply replicating normal line operations with a little benefit. The operator can assure themselves of pilot proficiency in the use of HUD and EVAS, if fitted, through the 'line evaluation of competence', when it will be used in the real operational context.

— Go-around training

Go-around training is not considered in this section because the go-around training frequency is defined by the table of assessment and training topics, and is in excess of that required by Part-SPA.

— Approach clustering

In the absence of guidance in ICAO Doc 9995, the principles used for malfunction clustering have been adopted to create a similar concept for approach clustering. Two principles in particular have been considered:

- approaches that place an additional demand on a proficient crew; and
- approaches should be selected according to certain characteristics.

For the first principle, the emphasis has been changed from 'significant demand' to 'additional demand'. This is because the approach will normally be flown at the end of a scenario within the SBT. That scenario will have included malfunctions and other training topics that have already added 'significant demand' on the crew. The approach chosen should therefore contain good training value and realism, without compromising the learning by adding workload on top of workload. For example, a scenario involving a significant malfunction has better value and realism if concluded with an autoland rather than a circling approach.

For the second principle, the concept of approach characteristics has been adopted. ICAO Doc 9995 lists eight 'parameters' that can be used in a clustering process; however, many seem to be types of approaches rather than characteristics. Instead, it was determined that approach characteristics can be divided into three groups, which are listed in the AMC with examples given in the GM.

— Types and frequency of approach training

As stated earlier, the EBT generation delineation of aircraft types is not useful when comparing avionics and pilot interface/display information. Many generation 3 and 4 aircraft types have a single button push for all approaches, with little or no changes in the displayed information. It



would seem therefore appropriate to analyse the aircraft in these generations to review the appropriate types to develop an ‘approach generation/group’.

A focus of EBT is to remove extraneous training for which there is little safety benefit, or evidence of need, and in particular, those approaches that are regularly performed in line operations. Additionally, an operator will seek a simple system that allows for the variation in the definition of training topics throughout the semester to cater for the trainees’ needs. Mandating repetitive approaches would not be beneficial to the operator or the trainee alike.

Using the frequencies defined in ICAO Doc 9995, and applying the emphasis intended by EBT, the following has been derived.

Type	Flight method	Phase	Frequency
A	3D	EVAL & SBT	B
B	3D	EVAL & SBT	B
A	2D	MT	B

The operator’s policy generally defines which flight method should be used on line operations to conduct this kind of approaches.

These recommendations should be followed by crews during EVAL.

During SBT or MT, it should be considered interesting to adapt the conduct of the selected approaches in order to develop specific competencies.

There is no intention to define here that a pilot has to be pilot flying (PF) for each approach; this is because it is part of the line-orientated scenarios. Any approach that is required to be flown specifically in the PF role should be classified as ‘skills retention’; therefore, it should be trained in the MT.

The above approaches should be flown simulating normal operations. An enhanced vision system (EVS) or enhanced flight vision system (EFVS) or head-up display (HUD) should be utilised if required in normal operations.

The allocation of the types of approaches into either the EVAL and SBT or the MT is determined by the purpose of the exercise. For the 3D approaches, these are the most commonly flown in normal operations, and would therefore be the most relevant and realistic to be included in training scenarios. They will additionally be chosen to place an additional demand on a proficient crew.

In contrast, a 2D approach is typically flown less frequently, and normally only if a 3D approach is unavailable due to aircraft or airport downgrade. For some modern aircraft types (e.g. A380, Boeing 787), multiple, unrealistic failures should occur before a 2D approach is required. Additionally, the flight crew procedures to fly a 2D approach typically demand more automation management skill than a 3D approach. The MT is precisely what this is for: to enable the pilot to retain the skill to fly low-probability but higher-risk manoeuvres. The principle behind this type of training is skills retention.

The B frequency has been considered appropriate for two reasons. Firstly, to align with the malfunction clustering B frequency, and secondly to fit in with the requirements of EVAL and



SBT. In a typical EBT programme, there will be 8 to 10 approaches in these phases per year. As noted earlier, it would be inappropriate to add approaches with additional workload to scenarios that already place a significant demand on a proficient crew. Therefore, mandating at least two 3D approaches of different flight methods with additional demand per year has been considered the correct number.

ORO.FC.231(h) wording ‘competence’

The heading of the rule is ‘line evaluation of competence’. The word ‘competence’ has been selected instead of ‘competency’, because EASA wanted to reflect that an assessment of the competencies must be made and the pilot has to reach a certain level of performance: ‘competence’.

ORO.FC.231(h)(1)

The safety objective is stated in the IR. The sentence ‘undertake a line evaluation in an aircraft to demonstrate the safe, effective and efficient conduct’ has been transposed from ICAO Doc 9995, FOREWORD and in Part I, paragraph 1.6:

‘The aim of this programme is to develop and evaluate the identified competencies required to operate safely, effectively and efficiently in a commercial air transport environment’

‘Normal line operations’ has been used because ORO.FC.230 point (c)(1) uses the same wording: ‘(1) Each flight crew member shall complete a line check on the aircraft to demonstrate competence in carrying out normal line operations described in the operations manual.’ The provision on the line evaluation of competence is intended to have the same scope as the line check currently has. Obviously, this implies successful demonstration of competence in the management of any abnormal or emergency situations that may occur during the flight. Therefore, the use of ‘normal line operations’ does not refer to the malfunctions; it refers to a normal flight (not test flight, not maintenance flight, etc.).

ORO.FC.231(h)(1) wording ‘in an aircraft’

The wording ‘in an aircraft’ is used in this IR to remove any ambiguity as to where the line evaluation may be undertaken. The RMG noted that in GM1 ORO.FC.230 point (c) there is a mention of ‘line check and proficiency training and checking’ in an FSTD. This will not be transferred into GM1 ORO.FC.231.

ORO.FC.231(h)(3)(i)

The intent of this rule is to continue to permit those operators who had been conducting ATQPs for more than 24 months and can, therefore, continue to apply a 24-month line evaluation (check under ATQP) periodicity when they transition to an EBT programme. It is worthy of note that this does not apply under the mixed EBT implementation phase. ORO.FC.230 and ORO.FC.245 remain applicable.

Under this IR, it is left to the discretion of the competent authority whether it will grant a 24-month validity period for line checks to those operators who had not previously conducted an ATQP. However, the competent authority shall ensure that the operator is fully conversant with a competency-based evaluation system prior to applying this rule.

The reason behind allowing extensions of validity periods in the line evaluation of competence (line check) is the following:

- Legacy training requires one line check per year.



- ATQP provides an alleviation of one line check every 2 years because it requires a line-orientated evaluation (LOE) per year. That means that two LOEs substitute one line check.
- EBT provides more opportunities than the ATQP for LOE, because in EVAL and in SBT both scenarios are line-orientated flights and required twice per year (EBT requires two modules a year).

ORO.FC.231(h)(3)(i)

The 3-year extension of the 'line evaluation of competence' is subject to a line-orientated safety audit programme. The wording that described the intent of such a programme has been transposed from ICAO Doc 9803 Line operations safety audit (LOSA) 'It is an organizational tool used to identify threats to aviation safety, minimize the risks such threats may generate and implement measures to manage human error in operational contexts'.

ORO.FC.231(i)(1)

The provision has been drafted as follows:

- (a) Transposition of the existing ORO.FC.230 of the Air OPS Regulation:

'(...)

- (d) Emergency and safety equipment training and checking

Each flight crew member shall complete training and checking on the location and use of all emergency and safety equipment carried. The validity period of an emergency and safety equipment check shall be 12 calendar months.

(...)

- (f) Each flight crew member shall undergo ground training and flight training in an FSTD or an aircraft, or a combination of FSTD and aircraft training, at least every 12 calendar months. (...);

- (b) Combination of the two points;

- (c) Removal of the word 'check' because in EBT the concept of checking is removed. Also, in the industry, training and checking are combined; therefore, the text has been amended to reflect the industry's practice; and

- (d) Finalisation of the provision by adjusting the text to the EBT regulation.

ORO.FC.231(i)(2)

The provision has been transposed from ORO.FC.A.245 of the Air OPS Regulation and reworded as appropriate. The alleviation is consistent with the existing alleviation provided for the ATQP.

ORO.FC.232 EBT programme assessment and training topics

SEE IMPLEMENTING RULES IN [COMMISSION IMPLEMENTING REGULATION \(EU\) 2020/2036 of 9 December 2020](#).

ORO.FC.232(b)(1)

The provision follows the principles of ICAO Doc 9995. In fact, the definition of EBT in ICAO Doc 9995 highlights this principle.



‘Evidence-based training (EBT). Training and assessment based on operational data that is characterized by developing and assessing the overall capability of a trainee across a range of core competencies rather than by measuring the performance in individual events or manoeuvres.’

The table defines also the frequency of training those topics. The programme is described at AMC level. This means that an AltMoC can be also used to demonstrate compliance with the IR (in accordance with ORO.GEN.120 of the Air OPS Regulation). However, in order to seek for an approval, the operator should demonstrate that this change of the programme is subject to a proper study of the operational risks. Such a large study was conducted by a collaborative group (industry and the regulator) in the IATA EBT DATA REPORT. If operators would like to modify the ‘table of assessment and training topics’, a similar work must be carried out.

AMC and GM to Annex III (Part-ORO) to Regulation (EU) No 965/2012

GM1 ORO.FC.115 Crew resource management (CRM) training

Explanatory note to GM1 ORO.FC.115 point (a)

This point has been amended to clarify that the training in the non-operational environment should include both classroom training and computer-based training, while the one in the operational environment includes both FSTD and aircraft when both are available. When the FSTD is not available, then it may only be aircraft.

AMC1 ORO.FC.146(c) Personnel providing training, checking and assessment

Explanatory note to AMC1 ORO.FC.146(c)

AMC1 ORO.FC.146(c) point (a)

The review group has decided to introduce this provision for the following reasons:

The requirement proposed in point (a) is similar to the existing requirement that must be fulfilled by the examiners. As the EBT instructor is performing ‘assessments’, there was a consensus in the group to align both requirements due to the social implications.

According to FCL.1025, the examiner must conduct six proficiency checks every 3 years. As a module is equivalent to a proficiency check, the EBT instructor is required to follow the same approach.

Although legacy instructors are required to revalidate only one session in the preceding 12 months, the review group believes that this approach is incorrect due to the challenges associated with EBT. Additionally, the review group believes that more training of the instructors should improve safety.

Finally, the EBT instructor is required to perform a refresher training every year. Therefore, it is reasonable to complete six EBT phases (EVAL or SBT) every 3 years to ensure practical training (on-the-job training).

AMC1 ORO.FC.146(c) wording ‘EBT instructor – initial standardisation programme’

The wording in point (a) of AMC1 ORO.FC.146(c) ‘EBT instructor initial standardisation programme’ is using ‘EBT’ and also in each of the two parts of it: ‘EBT instructor training’ and ‘EBT assessment of competence’, to ensure they are both specific for EBT. The use of ‘EBT assessment of competence’ is to ensure that the EBT instructor is allowed to revalidate the instructor certificate when the EBT

assessment of competence and the assessment of competence for the revalidation of the instructor are combined. The RMG was reluctant to allow the EBT instructor to revalidate the EBT instructor certificate under an ATO not belonging to an airline, and therefore the requirements for the assessment have been contained in the operators' requirements. Hence, the revalidation of the EBT instructor certificate requires an operator.

Following the concept already described in Subparts J and K of Part-FCL, the instructors should complete a course to become EBT instructors. This standardisation is composed of a training course and the assessment of competence, which follows the logic of Part-FCL. For example, FCL.930 'Training course', FCL.935 'Assessment of competence', and FCL.940.TRI TRI 'Revalidation and renewal' illustrate the situation for instructor courses and assessment:

'FCL.940.TRI TRI — Revalidation and renewal

(a) Revalidation

- (1) Aeroplanes. For revalidation of a TRI(A) certificate, the applicant shall, within the last 12 months preceding the expiry date of the certificate, fulfil one of the following 3 requirements:
 - (i) conduct one of the following parts of a complete type rating training course: simulator session of at least 3 hours or one air exercise of at least 1 hour comprising a minimum of 2 take-offs and landings;
 - (ii) receive instructor refresher training as a TRI at an ATO;
 - (iii) pass the assessment of competence in accordance with FCL.935.

[...]

The RMG believes that it must be an operator EBT instructor training. Therefore, the instructor course is operator-specific. However, credits are foreseen in point (d) of AMC1 ORO.FC.146(c) when an instructor has experience in EBT, allowing for a shorter training course.

AMC1 ORO.FC.146(c) point (b)

Point (b) provides the prerequisite for the pilot who delivers the EBT instructor training (ground course). The only prerequisite is that this pilot has completed the EBT instructor training. This pilot does not need to be a qualified instructor under Part-FCL of the Aircrew Regulation.

This requirement is less stringent than the one for the person who delivers the assessment of competence (see requirement AMC1 ORO.FC.146(c) point (g)). The person who delivers the assessment of competence needs to receive an EBT instructor training and be a qualified examiner in accordance with Part-FCL of the Aircrew Regulation.

AMC1 ORO.FC.146(c) point (c)

The syllabus for the EBT instructor training course has been taken from ICAO Doc 9995 and the IATA/ICAO/IFALPA Evidence-Based Training Implementation Guide.

The volume of training of the EBT instructor initial standardisation course is addressed in the new GM1 ORO.FC.146(c).



AMC1 ORO.FC.146(c) wording ‘EBT assessment of competence’

The wording ‘assessment of competence’ has been used for consistency purposes between Part-ORO of the Air OPS Regulation and Part-FCL of the Aircrew Regulation and to allow a combined assessment of the revalidation of the EBT instructor in Part-ORO and the revalidation of instructor’s certificate in accordance with FCL.935.

AMC1 ORO.FC.146 (c) point (e) wording ‘complete an EBT assessment of competence’ versus ‘passed an EBT assessment of competence’

The verb ‘passed’ is usually used in Part-FCL — for example, in FCL.905.FI.FI, FCL.915 and FCL.940.SFI.SFI. On the contrary, in Part-ORO, ‘complete’ is the one usually used — for example, in ORO.FC.105, ORO.FC.120, and ORO.FC.130. As the rules on EBT are contained in Part-ORO, EASA has decided to use ‘complete’.

The assessment of competence has been introduced as an AMC to be consistent with the CRM provision, for which also the assessment of competence is at AMC level. Furthermore, in order to ensure an equivalent level of safety in the case of an application of an AltMoC, ORO.GEN.200 ensures the competence of the personnel.

AMC1 ORO.FC.146(c) point (f) ‘validity period of 3 years’

This provision has been transposed from the Aircrew Regulation as regards what applies in relation to instructors’ and examiners’ validity period.

Furthermore, this provision is also included Doc 9995 paragraph 6.3.5:

‘All instructors should receive annual refresher training, and be re-assessed in the competencies specified in 6.3.3 every three years.’

The 12-month transition period to complete the assessment of competence has been transposed from FCL.940.TRI TRI — ‘Revalidation and renewal’ of the Aircrew Regulation.

AMC1 ORO.FC.146(c) point (g)(1)

The requirement was originally transposed from the existing ICAO Doc 9995 and the Explanatory Note to ED Decision 2015/027/R on mixed EBT.

‘A person nominated (refer to ICAO Doc 9995 AN/497 ‘Manual of Evidence-based training’ first edition 2013 paragraph 6.3.4) by the operator for the conduct of competency assessments of EBT examiners and instructors should be a person who holds a certificate equivalent to that being assessed, provided that he or she has completed the training and assessment indicated in ICAO Doc 9995 paragraph 6.3’.

That’s why point (g) of this AMC uses ‘conducted by a person nominated by the operator.’

However, to be consistent with Part-FCL of the Aircrew Regulation and ORO.FC.146(c), a further clarification has been introduced as the ICAO provision does not provide details. Therefore, it requires an assessment of competence performed in the FSTD before receiving the EBT instructor qualification. To maintain legal consistency between the assessment of competence referred to in Part-FCL and the EBT assessment of competence proposed in this provision (OPS), EASA has decided that only personnel holding a certificate with privileges to perform assessment of competence are allowed to perform such a ‘test’. When revalidating an instructor or examiner licence in accordance with the Aircrew Regulation, the provision is already there. Therefore, this requirement does not add an extra burden to the

operators. The only exception to such statement (no extra burden to the operators) would be during the transition period from legacy training to EBT, where the instructor/examiner revalidation may not match with the assessment of competence of EBT required during the initial EBT course. After the transition phase, the operator will roster the instructor/examiner revalidation in combination with an EBT assessment of competence when required.

AMC1 ORO.FC.146(c) point (g)(1) wording 'is qualified in accordance with Annex I (Part-FCL) to Regulation (EU) No 1178/2011 to conduct an assessment of competence'

This provision has been introduced to ensure that an examiner will perform the EBT assessment of competence.

This provision is already required in the assessment of competence for the instructor in Subpart J of Part-FCL of the Aircrew Regulation.

The intention of EASA is to combine the assessment of competence for EBT and the assessment of competence to revalidate the instructor certificate, thus this provision should not add any further requirement or cost.

There was a discussion in the RMG whether this person should be a current examiner or not. If not, then the word 'held' could be used in the provision.

The proposal to allow NON-current examiners would allow more flexibility. This is important when the EBT is introduced for the first time in the airline. This option deviates from the concept of instructor course in Part-FCL of the Aircrew Regulation.

EASA expects that most of the courses for EBT will be combined with Part-FCL instructor courses. Therefore, at the end, the assessment of competence is expected to be performed by a current qualified examiner anyway. Thus, the option of NON-current examiner has been discarded and in order to be consistent between Part-FCL and Part-ORO, EASA has decided that only current examiners will conduct the EBT assessment of competence.

AMC2 ORO.FC.146(c) Personnel providing training, checking and assessment

Explanatory note to AMC2 ORO.FC.146(c)

The wording used has been based on the requirements pertaining to the revalidation for instructors and examiners in accordance with Subparts J and K of Part-FCL of the Aircrew Regulation.

Following the concept above, the revalidation for EBT instructor will be based on the completion of one full simulator session of EBT every 12 months; for that reason, the AMC requires an EVAL or SBT. EASA is aware that this would mean in reality the combination of evaluation plus manoeuvres training/validation (mixed EBT) and a scenario-based training. Additionally, an assessment of competence every 3 years is required.

Point (b) of AMC2 ORO.FC.146(c)) provides the requirement for EBT refresher training. This training may satisfy the requirement of FCL.940.TRI(a)(1)(ii) concerning instructor refresher training, if accepted by the competent authority.

This requirement has been proposed to ensure standardisation of the instructors.

Furthermore, the need for concordance assurance has been introduced considering ICAO Doc 9995 Attachment to Chapter 1 step 9.



9**	Instructor training and standardization.	4.1.1 and 6.3 of Part I	Instructor EBT programme standardisation, which should be a formalized approach to ensure a consistent and standardised approach to the EBT programme prior to implementation, including practical training reinforcing application of the assessment and grading system and maximising inter-rater reliability.
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GM1 ORO.FC.146(c) Personnel providing training, checking and assessment

Explanatory note to GM1 ORO.FC.146(c)

The transition to EBT involves a paradigm shift in the focus of training. To maximise the safety benefits of the programme, EBT instructors should be mentored to ensure that practice develops according to the expectations of the operator. EBT instructors delivering a standardisation course should be carefully selected and trained so that the standardisation activity provides the maximum benefit.

The syllabus described in AMC1 ORO.FC.146(c) provides enough granularity for a performance-based rule. Therefore, EASA decided not to include a prescriptive requirement regarding the number of hours needed to deliver the EBT instructor course; instead, the information is provided in point (e) of this GM.

However, EASA acknowledged the novelty of the EBT programme where the instructor training course is a fundamental element. Therefore, it was decided to provide GM that would include some references regarding the length of the EBT instructor course in order to promote a successful discussion between the operator and the competent authority where the focus is on the outcome of the course (provided at the level of the AMC) rather than on the prescription of 14/21/24 hours (provided at the level of GM).

GM1 ORO.FC.146(c) point (c)

The consultation of the NPA showed that the GM needed further amendment to clarify the additional personnel that can deliver the EBT instructor training. Other SMEs (e.g. aviation experts, psychologists, teachers, other industries experts, etc.) can provide valuable resources to enrich the instructor training.

GM1 ORO.FC.146(c) point (e)

Given the paradigm shift in the philosophy of assessment and training of competencies, a nominal value of course duration has been included as a standardisation element.

In order to agree on a figure, EASA reviewed the rules relating to qualification of instructors (e.g. FCL.930 TRI.TRI was consulted). The 14 hours were commensurate with those required for initial qualification of instructors.

Furthermore, the IATA Evidence-Based Training Implementation Guide recommends at least a 3-day course in Appendix B. However, this appendix provides a range of duration for the course between 3 and 5 days.



GM2 ORO.FC.146(c) Personnel providing training, checking and assessment***Explanatory note to GM2 ORO.FC.146(c)***

This GM for the annual EBT instructor standardisation has been developed to clarify the intent of the provision provided in the AMC. The GM provides certain criteria on how to perform the annual instructor standardisation; however, the criteria that may be provided by the competent authority are fundamental, as training is subject to approval under OM part D and revalidations and renewal of licences are performed within an EBT programme.

The authority should exercise its oversight powers to ensure that operators provide the right amount of training and concordance assurance to their instructors.

GM2 ORO.FC.146(c) point (b)

This point of the GM has been developed following the IATA Evidence-Based Training Implementation Guide¹⁷ Chapter 4.1 'The EBT instructor'.

'The development of strong inter-rater reliability and consistency in the approach to EBT is of great importance and should not be underestimated either initially or as a focus for the continuous improvement of an EBT system. Establishing robust guidelines and thorough experience strengthens inter-rater reliability, provided that suitable mechanisms are put in place. Clear and concise instructions, accurate performance indicator descriptions and peer review all increase inter-rater reliability.'

GM3 ORO.FC.146(c) Personnel providing training, checking and assessment***Explanatory note to GM3 ORO.FC.146(c)***

This GM introduces the ICAO Pilot Instructor and Evaluator Competency Framework, which is based on the work of ICAO and IATA to promote the first competency-based approach for instructors and evaluators. EASA worked on this task with a specific task force that included representatives from the two biggest aircraft manufacturers, two of the most experienced airlines in EBT mixed and other two industry representatives including the aircrew training policy group (ATPG) and the Dutch national aerospace centre. The work has been based on the latest amendment of ICAO PNS TRG Doc 9868 third Edition 2020 which entered into force in November 2020.

The original idea to design an instructor evaluator competency set based on the same philosophy that served as the genesis for the pilot competency set: Mastering a defined set of pilot competencies should enable a pilot to perform the routine duties and manage unforeseen situations, which cannot be trained in advance.

Similarly, mastering a set of instructor and evaluator competencies (IECs) should enable an instructor and evaluator (IE) to perform instruction and evaluation duties and manage the full spectrum of assignments, from ground instruction to evaluations in dynamic flight situations.

The competency framework for instructors and evaluators has been developed based on the latest ICAO standards, EU and FAA regulations, and guidance material and best practices from the industry.

¹⁷ IATA Evidence-Based Training Implementation Guide, July 2013, 1st Edition.

The defined set of IE competencies should be applied across all types of training, from licensing to operator recurrent training, and by both operators and ATOs.

Developing both pilot and instructor competencies through a globally harmonised system of competencies will contribute to improved quality of training, enhanced safety and will also increase training efficiency.

This GM defines the IE competencies, provides their descriptions and presents the associated observable behaviours.

The competency framework may be used for instructor selection, initial standardisation, recurrent standardisation and assessment of competence for EBT instructors.

Additional information can be found through the following link: https://www.iata.org/whatwedo/ops-infra/training-licensing/Documents/guidance_material_for_instructor_and_evaluator_training.pdf

GM3 ORO.FC.146(c) | Competency ‘Management of learning environment’

The task force considered this competency relevant in the instructor course in FCL; however, for the EBT instructor course, it is less relevant because today — 2021 — most of the EBT instructors are already FCL instructors. This may change in the future as more and more instructors become EBT instructors at the same time they become FCL instructors.

GM3 ORO.FC.146(c) iOB 3.2

The term ‘objectives’ used in the description of iOB 3.2 refers to the relevance of learning objectives and how they apply in operations.

GM3 ORO.FC.146(c) iOB 3.3

To ensure consistency and accuracy of training delivery, operators and ATOs are required to maintain an approved training programme (AMC2 ORA.ATO.125 Training programme). An essential component of an approved programme is instructors’ compliance with the approved syllabi contained in the operator and ATO approved training manuals. This OB measures the instructor’s compliance with such approved programmes and syllabi.

GM3 ORO.FC.146(c) iOB 3.8

This iOB includes the idea to adjust the training to the trainee’s needs. This idea is included in the example (e.g.) and it is an addition to the existing iOB of ICAO. This addition had a general consensus agreement in the task force.

GM3 ORO.FC.146(c) iOB 4.1

This iOB4.1 differs from the one proposed through Opinion No 08/2019. The worked performed by EASA and the RMG in 2019 for the Opinion was based on the early drafts of ICAO. Thus, this ED Decision modified this iOB and others in order to ensure alignment with ICAO.

GM3 ORO.FC.146(c) iOB 4.3

This iOB 4.3 differs from the one proposed through Opinion No 08/2019. The worked performed by EASA and the RMG in 2019 for the Opinion was based on the early drafts of ICAO. Thus, this ED Decision modified this iOB and others in order to ensure alignment with ICAO. iOB 4.3, ‘follows the approved training programme’, as proposed through Opinion No 08/2019, has been transposed to iOB 3.3 following ICAO Doc 9868.



GM3 ORO.FC.146(c) iOB 4.4

To ensure legal clarity and as for part of the industry it was not clear, EASA has modified iOB 4.4 by introducing ‘between the trainees’ in the ICAO iOB ‘encourage engagement and mutual support’. This was supported by the task force.

GM3 ORO.FC.146(c) iOB 4.5

Although iOB 4.5 ‘Coaches the trainees’ is rather generic and some experts consider that it is already implicit in the whole of the other competencies, EASA and the task force agreed that alignment with ICAO was more important than an amendment of the iOB.

The understanding of the group was that this iOB includes adult learning.

GM3 ORO.FC.146(c) Assessment and evaluation

Although the task force found neither enough references to assessment nor to evaluation in the iOBs proposed by ICAO, the task force decided to make no changes or very little changes to the iOBs proposed by ICAO in order to ensure worldwide alignment.

GM3 ORO.FC.146(c) iOB 5.7

The term ‘summative’ has not been transposed. Therefore, the EASA iOB slightly differs from the ICAO proposal.

SPT.012 ORO.FC.146(c) — safety promotion task 012 — safety material for EBT — EBT INSTRUCTOR COMPETENCY FRAMEWORK**EBT INSTRUCTORS STANDARDISATION PROGRAMME DESIGN**

This safety promotion material describes a competency-based approach to the EBT instructors training using the five instructor and evaluator competencies (IECs).

A development programme for instructors and evaluators (IEs) should use a building block approach. The aim is to progress in a structured way, step-by-step, from the initial assignment through the complete spectrum of IE duties.

IEs need to be trained and assessed in all competencies to a solid foundational level of performance. However, specific assignments require special emphasis on specific competencies during training; the final competency standard for these competencies should be higher than foundational.

EBT INSTRUCTORS STANDARDISATION PROGRAMME DESIGN

There are essentially two pathways to train and standardise IEs in the IECs. The first is for those IEs that are already qualified in accordance with Annex I (Part-FCL) and must be trained and standardised to EBT standards according to ORO.FC.146. The second is for those (ab initio) IEs that are not yet qualified as such, and must be trained and standardised to comply with both Annex I (Part-FCL) as well as ORO.FC.146.

Training of IEs qualified in accordance with Annex I (Part-FCL)

For those IEs already qualified in accordance with Annex I (Part-FCL), previous experience must be reorientated to CBTA instruction. The operator EBT standardisation should put special emphasis on the competencies ‘Instruction’, ‘Interaction with the trainees’ and ‘Assessment and evaluation’. The



IE training places special emphasis on those IECs because they are the ones that differ the most from the IE-standards in Annex I (Part-FCL).

Training objectives for EBT instructor standardisation will consequently refer to the descriptions of the relevant IECs and their OBs.

All IECs must be trained and assessed, but the table below indicates which IECs also require special emphasis (SE) for the initial EBT instructor training and standardisation.

The table below shows a simplified matrix to train and assess ('TA') IEs. Depending on the IE's assignment, the competencies requiring special emphasis during training are additionally identified with 'SE'.

CBTA matrix for EBT instructor

EBT instructor competencies				
IEC1	IEC2	IEC3	IEC4	IEC5
Pilot competencies	Management of the learning environment	Instruction	Interaction with the trainees	Assessment and evaluation
TA	TA	TA-SE	TA-SE	TA-SE

Note: TA: competencies trained and assessed

SE: competencies requiring special emphasis during training

Training ab initio IEs

As the prevalence and maturity of EBT programmes grow, more and more ab initio instructors will gain their first instruction experience within a CBTA environment. These candidates must comply with both Annex I (Part-FCL) requirements and ORO.FC.146 requirements. However, due to some overlap between these qualifications, it is possible to combine them into a single instructor training programme which qualifies candidates for both Annex I (Part-FCL) as well as ORO.FC.146. Such a combined training programme would be shorter than training the two qualifications independently. In any event, the combined course must qualify the instructor for both qualifications simultaneously at the end of the course, and it must feature a test following the training of Annex I (Part-FCL) Theoretical Knowledge. The table below provides a rough sample schedule of such a combined training:

EBT instructor competencies in a combined course (FCL + ORO.FC.146)				
IEC1	IEC2	IEC3	IEC4	IEC5
Pilot competencies	Management of the learning environment	Instruction	Interaction with the trainees	Assessment and evaluation
TA	TA-SE	TA-SE	TA-SE	TA-SE

It must be noted that it is also still possible to qualify such candidates sequentially. However, in this case, they must first be qualified in accordance with Annex I (Part-FCL), before being introduced into the EBT initial instructor training and standardisation course. This is essentially in accordance with the first pathway for already qualified IEs.



In this regard (combination of the Instructor course in accordance with FCL and EBT instructor course in accordance with ORO.FC.231), the operators normally exercise a contracting activity under ORO.FC.205 and request an ATO to deliver the combined training course (FCL instructor + operator EBT instructor). As this model normally includes a combined ‘assessment of competence’, the examiner conducting this assessment should be an operator EBT instructor and additionally fulfil the FCL requirements to conduct an assessment of competence.

Competency assessment

The recommended competency assessment model for instructor competencies is the VENN model already introduced for pilots. When the VENN model is not used, the below table is recommended for the development of an alternative grading model.

Competency assessment	
Final competency standard	Operators and ATOs define in their OMs the level of performance to be achieved by the instructor and evaluator
Condition	<p>Ground training (including CRM) and flight training in aircraft and in FSTDs:</p> <ul style="list-style-type: none"> — licensing; — type rating; — conversion; — line training; and — recurrent training.

AMC1 ORO.FC.231(a) Evidence-based training

Explanatory note to AMC1 ORO.FC.231(a)

AMC1 ORO.FC.231(a) point (f)

General background about the wording ‘customisation’

The regulation usually uses the terms ‘customised’ and ‘customisation’ in the context of the operator’s EBT syllabi. The term expresses the necessity for the adaptation of the table of assessment and training topics that must be performed at operator level. Amongst others, the EBT programme is adapted to the operational risks of the airline, the different type ratings of the operator, the pilot work force, etc.

The term ‘tailored’ used in GM3 ORO.FC.231(a), point (a)(3), refers to the further ‘customisation’ of syllabi that is performed at the level of an individual pilot. In order to make a difference between the customisation at operator level (syllabi) and the customisation at individual pilot (individual syllabus), the regulation uses the word ‘tailored’, using mainly the wording ‘tailored training’. Tailored training is required in ORO.FC.231(d) (see the related AMC) and further described in GM3 ORO.FC.231(a) ‘Customisation of the EBT programme (syllabi)’.



‘Contextualise’: The verb ‘contextualise’ is used for the example scenario elements, where the operator should provide the ‘context’ (amongst others, weather of the example scenario element, area, route or aerodrome, procedures at the aerodrome (e.g. low-visibility procedures (LVPs)), etc.) of the example scenario elements provided in the table of assessment and training topics.

AMC1 ORO.FC.231(a) point (i)

The wording refers back to AMC3 ORO.FC.231(d)(1) ‘CONDUCT OF THE GRADING — ORCA’, which is the preferred methodology.

AMC1 ORO.FC.231(a) point (j)

This points refers to the EBT instructor standardisation in AMC1 ORO.FC.146(c).

AMC1 ORO.FC.231(a) point (k)

Concordance depends on the number of rating levels used, concordance measures and complexity/ambiguity of scenarios and behaviours.

The acceptance level of concordance can be defined in coordination with experts and the NAA. It can be based on earlier results.

AMC1 ORO.FC.231(a) point (n)

Facilitation is a very important part of EBT and therefore the review group has introduced this requirement.

‘SPT.012 — safety promotion task 012 — safety material for EBT — CUSTOMISATION OF SYLLABI

The syllabi can be customised at three different steps:

1. The first step would be one syllabus for the whole pilots’ population (customisation only at type rating level).
2. The second step would be syllabi for different populations of pilots (for example, all first officers, all B747 pilots, all pilots flying an Airbus model, etc.).
3. The third step would be individual syllabi tailored to the needs of individual pilots (pilot customisation).

The procedure to describe the customisation of syllabi must be described in the OM. Customisation is based on evidence that can be gathered on three different levels, two from the inner loop, one from the outer loop.

(i) Inner loop

- Individual evidence based on grading reports or questionnaires, analysed for either an individual pilot or a group of pilots (for example, all first officers, all B747 pilots, all pilots flying an Airbus model, etc.)
- Operator-specific evidence gathered from the safety management process in accordance with ORO.GEN.200

(ii) Outer loop:

- Evidence gathered from external sources like authorities (e.g. State Safety Plan, etc.), OEMs (e.g. OEBs, OSD, safety documentation such as ‘getting to grips’, etc.), etc.



AMC2 ORO.FC.231(a) Evidence-based training***Explanatory note to AMC2 ORO.FC.231(a)***

Although ORO.FC.231 exempts operators that have implemented the EBT baseline programme from ORO.FC.230 (and consequently from its AMC), the UPRT provisions have been reintroduced through this AMC2 ORO.FC.231(a) due to their importance.

ICAO Doc 9995 has not transposed the latest UPRT requirements of Doc 10011 AN/506 'Manual on aeroplanes upset prevention and recovery training' first edition -2014.

The first phase of RMT.0599 only addresses recurrent training and checking (ORO.FC.230); therefore, the requirements for the operator conversion course (ORO.FC.220) have not been amended. AMC1 ORO.FC.220&230 is linked to both IRs ORO.FC.220 and ORO.FC.230; therefore, AMC2 ORO.FC.231(a) just acknowledges the need to fulfil the UPRT provisions.



SPT.012 — Safety promotion to ORO.FC.231(a) EBT programme (UPRT)

UPSET PREVENTION AND RECOVERY TRAINING (UPRT) FOR COMPLEX MOTOR-POWERED AEROPLANES WITH A MAXIMUM OPERATIONAL PASSENGER SEATING CONFIGURATION (MOPSC) OF MORE THAN 19

The purpose of this table is to assist the operator in cross-mapping the requirements of UPRT in AMC1 ORO.FC.220&230 and explain how this objective is achieved in ORO.FC.231 EBT programmes. The example table is a compilation of the tables proposed by two different operators to their authorities.

AMC1 ORO.FC.220&230 Operator conversion training and checking & recurrent training and checking		
UPSET PREVENTION AND RECOVERY TRAINING (UPRT) FOR COMPLEX MOTOR-POWERED AEROPLANES WITH A MAXIMUM OPERATIONAL PASSENGER SEATING CONFIGURATION (MOPSC) OF MORE THAN 19 SEATS		
Current provision in AMC1 ORO.FC.220&230	Means of compliance in ORO.FC.232 – AMC ORO.FC232	Rationale
(a) Upset prevention trainings should:		
(1) consist of ground training and flight training in an FSTD or an aeroplane;	Ground training requirements are unchanged. FSTD requirements are included in the EBT programme	Applicability for EBT is determined by aircraft types and variants listed in ORO.FC.231 and only for those for which a suitably qualified FSTD is available
(2) include upset prevention elements from Table 1 for the conversion training course; and	Does not apply to recurrent training and checking	
(3) include upset prevention elements in Table 1 for the recurrent training programme at least every 12 calendar months, such that all the elements are covered over a period not exceeding 3 years.	Equivalent to the ‘B’ level within the EBT Programme, all items to be completed within the 3-year programme and some elements of UPRT to be included every year.	
(b) Upset recovery training should:		
(1) consist of ground training and flight training in an FFS qualified for the training task;	Included in the EBT programme as upset recovery. All exercises, but especially the ones in Table 2 RECOVERY FROM DEVELOPED UPSETS , should not take place during the evaluation phase and it is recommended that they should be done during the manoeuvres TRAINING.	
(2) be completed from each seat in which a pilot’s duties require him or her to operate; and		
(3) include the recovery exercises in Table 2 for the recurrent training programme, such that all the exercises are covered over a period not exceeding 3 years.		



AMC1 ORO.FC.220&230 ‘Operator conversion training and checking & recurrent training and checking’		Ground training	FSTD training	Rationale	ORO.FC.232 – AMC.ORO.FC.232 - Example – suggested relevant EBT ‘training topic and description’
Table 1: Elements and respective components of upset prevention training					
A.	Aerodynamics				
1.	General aerodynamic characteristics	•		Element A is basically fully covered by the mentioned EBT training topics and the exercises required by AMC1 ORO.FC.220&230 in the UPRT part. Aircraft handling at degraded control modes is covered by the malfunction category ‘degraded aircraft control’ and furthermore covered by component H.6. (Fly-by-wire protection degradations) and should be performed in manual and automatic flight. If aircraft and/or operator-related evidence (e.g. incidents, FDM data) indicates the need to further train a component, aircraft and/or operator-specific exercises should be added in the upset prevention training.	Automation management Manual aircraft control Upset recovery (recoveries at low and high altitude)
2.	Aeroplane certification and limitations	•			
3.	Aerodynamics (high and low altitudes)	•	•		
4.	Aeroplane performance (high and low altitudes)	•	•		
5.	Angle of attack (AOA) and stall awareness	•	•		
6.	Stick shaker or other stall-warning device activation (as applicable)	•	•		
7.	Stick pusher (as applicable)	•	•		
8.	Mach effects (if applicable to the aeroplane type)	•	•		
9.	Aeroplane stability	•	•		
10.	Control surface fundamentals	•	•		
11.	Use of trims	•	•		
12.	Icing and contamination effects	•	•		Adverse weather same as elements A 1-11
13.	Propeller slipstream (as applicable)	•	•		
B.	Causes of and contributing factors to upsets				
1.	Environmental	•		Deleted from FSTD training with Annex IV to ED Decision 2019/005/R	
2.	Pilot-induced	•			
3.	Mechanical (aeroplane systems)	•			
C.	Safety review of accidents and incidents relating to aeroplane upsets				
1.	Safety review of accidents and incidents relating to aeroplane upsets	•		Deleted from FSTD training with Annex IV to ED Decision 2019/005/R	
D.	G-load awareness and management				
1.	Positive/negative/increasing/decreasing g-loads	•	•	Specific exercises related to this element are required in the upset prevention part and have to be performed as PF, as they are not fully covered by the EBT training topic ‘Manual aircraft control’	Manual aircraft control Upset prevention/recovery (recoveries according to OEM recommendations at low and high altitudes — where there are indications of g-load, they can be included)
2.	Lateral g-awareness (sideslip)	•	•		
3.	g-load management	•	•		



AMC1 ORO.FC.220&230 ‘Operator conversion training and checking & recurrent training and checking’		Ground training	FSTD training	Rationale	ORO.FC.232 – AMC.ORO.FC.232 - Example – suggested relevant EBT ‘training topic and description’
E.	Energy management				
1.	Kinetic energy v potential energy v chemical energy (power)	•	•	Aircraft-specific UPT exercises during conversion course only, as energy management is trained during several EBT training topics	Manual aircraft control Automation management
F.	Flight path management				
1.	Relationship between pitch, power and performance	•	•	Components are fully covered by the mentioned EBT training topics. Components 5 and 6 are represented by identical EBT training topics. If aircraft and/or operator-related evidence (e.g. incidents, FDM data) indicates the need to further train an element, aircraft and/or operator-specific exercises should be added in the upset prevention training.	Automation management Manual aircraft control
2.	Performance and effects of differing power plants (if applicable)	•	•		Automation management Manual aircraft control
3.	Manual and automation inputs for guidance and control	•	•		Automation management Manual aircraft control
4.	Type-specific characteristics	•	•		Automation management Manual aircraft control
5.	Management of go-arounds from various stages during the approach	•	•		Go-around management Automation management Manual aircraft control
6.	Automation management	•	•		Automation management Manual aircraft control
7.	Proper use of rudder	•	•		Failure of the critical engine between V1 & V2 Engine-out approach & go-around Engine failure Upset prevention/recovery This training can be combined with the Table 2 exercises.
G.	Recognition				
1.	Type-specific examples of physiological, visual and instrument clues during developing and developed upsets	•	•	See example scenario elements in the respective AMC for aircraft generation	Upset prevention/recovery This training can be combined with the Table 2 exercises.
2.	Pitch/power/roll/yaw	•	•		
3.	Effective scanning (effective monitoring)	•	•		



AMC1 ORO.FC.220&230 ‘Operator conversion training and checking & recurrent training and checking’		Ground training	FSTD training	Rationale	ORO.FC.232 – AMC.ORO.FC.232 - Example – suggested relevant EBT ‘training topic and description’
4.	Type-specific stall protection systems and cues	•	•		
5.	Criteria for identifying stalls and upsets	•	•		
H. System malfunction (including immediate handling and subsequent operational considerations, as applicable)					
1.	Flight control defects	•	•	System malfunction with characteristic ‘immediacy’ and/or ‘management of consequences’	Automation management Manual aircraft control Knowledge
2.	Engine failure (partial or full)	•	•	Identical EBT training topic	Engine failure
3.	Instrument failures	•	•	System malfunction combining characteristic ‘loss of instrumentation’ with ‘immediacy’ and/or ‘management of consequences’	Automation management Manual aircraft control
4.	Loss of reliable airspeed	•	•	Same as component H.1.	Automation management Manual aircraft control
5.	Automation failures	•	•	Same as component H.1.	Automation management Manual aircraft control
6.	Fly-by-wire protection degradations	•	•	Same as component H.1.	Automation management Manual aircraft control Knowledge
7.	Stall protection system failures including icing alerting systems	•	•	Same as component H.1.	Automation management Manual aircraft control Upset prevention/recovery This training can be combined with the Table 2 exercises.
I. Manual handling skills (no autopilot, no autothrust/autothrottle and, where possible, without flight directors)					
1.	Flight at different speeds, including slow flight, and altitudes within the full normal flight envelope	-	•	Except for components 3 and 5, components are fully covered by EBT training topics, if exercises are flown without autopilot, autothrust/autothrottle and, where possible, without flight directors.	Automation management Manual aircraft control
2.	Procedural instrument flying and manoeuvring including instrument departure and arrival	-	•		Automation management Manual aircraft control
3.	Visual approach	-	•		Manual aircraft control
4.	Go-arounds from various stages during the approach	-	•		Go-around management Automation management Manual aircraft control



AMC1 ORO.FC.220&230 ‘Operator conversion training and checking & recurrent training and checking’	Ground training	FSTD training	Rationale	ORO.FC.232 – AMC.ORO.FC.232 - Example – suggested relevant EBT ‘training topic and description’
				Go-around, all engines operative Engine-out approach & go around
5. Steep turns	-	•		Manual aircraft control

Table 2: Exercises for upset recovery training

A.	Recovery from developed upsets				
1.	Timely and appropriate intervention	•	•	Strongly recommended in Manoeuvres training / ISI phase. Flight crew must be trained as PF and PM.	Upset prevention/recovery
2.	Recovery from stall events in the following configurations: take-off configuration, clean configuration low altitude, clean configuration near maximum operating altitude, and landing configuration during the approach phase.	•	•		Upset recovery Due to the protections in flight envelope in the 4th generation aircrafts, the take-off upsets can be trained as final APP stall/ Go around
3.	Recovery from nose high at various bank angles	•	•		Upset recovery
4.	Recovery from nose low at various bank angles	•	•		Upset recovery
5.	Consolidated summary of aeroplane recovery techniques	•	•		Upset recovery



AMC3 ORO.FC.231(a) Evidence-based training**Explanatory note to AMC3 ORO.FC.231(a)**

The purpose of AMC3 ORO.FC.231(a) is to allow operators to develop their own scenario elements and competency map to better reflect their operational environment, while maintaining the integrity of the EBT programme. Therefore, the training topics and frequency as per the table of assessment and training topics should not be amended by the operator as they derive directly from the 'Data report for Evidence-Based Training'¹⁸ (AMC2 to AMC7), while the example scenario elements and their associated competency map may be adapted without using the AltMoC procedure (ORO.GEN.120).

This provision is a transposition of the ICAO Doc 9995 Paragraph 1.2.8.

Purpose

To give an indication of the most likely critical competencies required for effective management of the scenario or manoeuvre (considering the management of a threat or combination of threats).

Process

The nominated person for crew training or EBT manager designs one or more example scenario elements, including a description and an outcome. The competency map process is as follows:

The competency map process should be undertaken by SMEs who hold or have held a type rating on the aeroplane type. Steps of the competency map process:

1. Using the description of the scenario element, SME instructors determine the competencies most likely to be required for effective management of the scenario element. Generally, about three competencies may be selected.
2. SME instructors determine which competencies are most likely to be the root cause(s) of poor performance.

Note 1. This is done in teams of instructors, and it is for mapping purposes only. If there is a desire to be more accurate, ask two groups of instructors to review and suggest the competencies following this methodology. Each instructor should use a scale (for example, 1 to 5) for each competency for each scenario element. The following instructors should perform the same analysis independently, and then the results are compared and reconciled by a small group of SMEs.

Note 2. It is always easy to code (SAW) or knowledge (KNO) as underlying competency, but there are almost invariably other competencies, especially when there is ineffective management, so the intent should be to balance the mapping of SAW or KNO and map the other predominant competencies within the scenario.

Note 3: A similar process is described in 'equivalency of malfunctions' (see Delphi).

AMC3 ORO.FC.231(a) point (e)

The intent of this provision is to highlight that the competency map should not drive the instructor's observations; instead, the instructor should observe the simulator session with a neutral observation, without focusing on the particular competencies mapped and make neutral assessment of all competencies.

¹⁸ IATA Data Report for Evidence-Based Training, August 2014, 1st Edition.

For the instructors, the competency map is intended to guide them on what they should expect to observe; however, this does not mean that they should ignore useful learning points for other competencies not mapped within that example scenario.

AMC4 ORO.FC.231(a) Evidence-based training

Explanatory note to AMC4 ORO.FC.231(a)

This content of this AMC has been transposed from AMC1 ORO.FC.230 point (d) with the necessary amendments. It includes the provision to allow CRM training by EBT instructors if they have completed the EBT instructors' standardisation.

This provision must be read in conjunction with ORO.FC.146; therefore, when EBT training is delivered, instructors must be provided with an EBT standardisation course. When other training is provided which is not part of EBT, then only point (b) applies (no combination with ORO.FC.146). A classic example would be 'aerodrome qualification' category C, where a regular instructor would provide such training unless the qualification is delivered in conjunction with the EBT programme.

AMC1 ORO.FC.230 point (d) reads as follows:

'(d) Personnel providing training and checking

Training and checking should be provided by the following personnel:

- (1) ground and refresher training by suitably qualified personnel;
- (2) flight training by a flight instructor (FI), type rating instructor (TRI) or class rating instructor (CRI) or, in the case of the FSTD content, a synthetic flight instructor (SFI), providing that the FI, TRI, CRI or SFI satisfies the operator's experience and knowledge requirements sufficient to instruct on the items specified in points (a)(1)(i)(A) and (B);
- (3) emergency and safety equipment training by suitably qualified personnel;
- (4) CRM:
 - (i) integration of CRM elements into all the phases of the recurrent training by all the personnel conducting recurrent training. The operator should ensure that all personnel conducting recurrent training are suitably qualified to integrate elements of CRM into this training;
 - (ii) classroom CRM training by at least one CRM trainer, qualified as specified in AMC3 ORO.FC.115 who may be assisted by experts in order to address specific areas.'

AMC1 ORO.FC.231(a)(1) Evidence-based training

Explanatory note to AMC1 ORO.FC.231(a)(1)

AMC1 ORO.FC.231(a)(1) point (a)

EASA believes that the transition from legacy training to EBT requires experience in the use of data, competency framework, grading system and instructor concordance assurance. Furthermore, a clear baseline for the training system performance must be established before any alleviation or competency-based licence revalidation can be achieved.



Finally, the competent authority must be able to transition and observe changes in the operator processes that support EBT. This requires time.

AMC1 ORO.FC.231(a)(1) point (f) and (g)

These provisions have been introduced to ensure equivalency between traditional training and EBT. There is documentation from the regulator, manufacturers and industry that may not be updated until a later stage due to the novelty of the EBT. This issue may be especially relevant when using the OSD, where credits are defined for a number of checks and training (e.g. credits are defined for line check but not yet for the line evaluation of competence). With this provision, the EBT operator is allowed to make use of such credits.

AMC1 ORO.FC.231(a)(1) point (f)

This provision has been introduced because other parts of the regulation refer back to ‘proficiency check’. For example, in SPA.LVO.120 the low-visibility training provisions have a frequency of ‘every operator proficiency check’. Therefore, this provision is needed to indicate that a complete OPC is substituted by a complete EBT module, while an LPC is completed by at least two EBT modules as described in Appendix 10 to Part-FCL.

Furthermore, this provision has been introduced in order to provide clarity in FCL.740 point (a)(3).

‘A pilot working for a commercial air transport operator approved in accordance with the applicable air operations requirements who has passed the operators proficiency check combined with the proficiency check for the revalidation of the class or type rating shall be exempted from complying with the requirement in (2)’.

The wording ‘complete’ is to ensure alignment with the current regulation — for example:

‘ORO.FC.230 Recurrent training and checking

- (a) Each flight crew member shall complete recurrent training and checking relevant to the type or variant of aircraft on which they operate.
- (b) Operator proficiency check
 - (1) Each flight crew member shall complete operator proficiency checks as part of the normal crew complement to demonstrate competence in carrying out normal, abnormal and emergency procedures.[...]

AMC1 ORO.FC.231(a)(2) Evidence-based training

Explanatory note to AMC1 ORO.FC.231(a)(2)

The AMC has been developed taking into account the existing GM5 ORO.FC.115 Crew resource management (CRM) training, RESILIENCE DEVELOPMENT.

Resilience is the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events as defined by the US [National Academies of science, engineering and medicine](#).

Surprised: (adjective) caused to feel surprise, amazement or wonder, or showing an emotion due to an unexpected event.

Unexpected: (adjective) not expected, anticipated or foreseen. Considered unlikely to happen, not to occur soon. Is used for events and behaviours that occur without warning.



Unpredictable: unforeseeable; cannot say ahead of time. Is used for events and behaviours that are difficult or impossible to predict or foresee.

Expect the unexpected

The operator can train its pilots for the unexpected so their skills of resilience are there when they need them. Resilience can be practised by starting small and growing into a more difficult situation.

AMC1 ORO.FC.231(a)(2) point (b)(2)

The experts consulted by EASA did not reach a consensus on where to include the training of the ‘dilemma’; include it together with resilience or include it as a separate item related to decision-making.

The fact is that there are numerous studies and articles related to:

- resilience and decision-making; and
- resilience and ambiguity (dilemma).

Furthermore, ambiguity and decision-making are clearly related and there are many studies and research that also relate decision-making with resilience. While some experts believe that EASA should allocate ambiguity with ‘decision-making’, other experts believe it should be included in ‘resilience’. EASA has taken the decision to include it in resilience.

GM2 ORO.FC.231(a)(2) Evidence-based training

Explanatory note to GM2 ORO.FC.231(a)(2)

This GM clarifies and complements the table of assessment and training topics in regard to ISI.

EASA has agreed that some elements in the ICAO baseline programme classified as frequency A in ISI and in regard to ‘example scenarios’ and ‘competency map’ are incorrect.

In addition, with regard to the training topic ‘monitoring, cross checking, error management, and mismanaged aircraft state’, ICAO Doc 9995 titles the topic as in-seat instruction (ISI). EASA believes there is an inconsistency because ISI is a means to deliver a training topic and not a training topic (see definition of ISI). Therefore, ISI has been removed from the training topics. Furthermore, the IATA EBT DATA REPORT does not identify that the means and the only means to deliver such topic (monitoring, cross-checking, error management, mismanaged aircraft state) should be ISI.

It also has to be noted that effective monitoring and error detection as well as error management, mismanaged aircraft state, compliance and cross-checking topics are also embedded in the observance of the behavioural indicators. This way, they are present in all of the EBT FTSD sessions, and any observance of deficiencies should be taken as a learning opportunity, identifying the root cause/contributing factor, and discussed during the subsequent ‘facilitated debriefing’.

AMC1 ORO.FC.231(a)(3) Evidence-based training

Explanatory note to AMC1 ORO.FC.231(a)(3)

The intent of the development of this AMC is to maintain the integrity of the EBT programme.

The EBT programme will be the means to revalidate pilots’ licence: the revalidation will not be based on a single simulator event, but instead on multiple simulator events. This requires clarity as to when



the pilot joined the EBT programme. Normally, this will occur in the operator conversion course where an EBT module (equivalent to an OPC) is planned. This provision also has relevance in the cases of long-term sickness or long leave of absence where the pilot discontinued the training programme.

AMC1 ORO.FC.231(a)(3) point (c)

Due to the novelty of the EBT concept, EASA has found necessary to inform the pilots in the event they fail to demonstrate an acceptable level of competence. The provision has been transposed from Part-FCL with the necessary amendments to fit Part-ORO:

FCL.740.A point (c)

‘(c) Applicants who fail to achieve a pass in all sections of a proficiency check before the expiry date of a class or type rating shall not exercise the privileges of that rating until a pass in the proficiency check has been achieved.’

The provision has been moved to AMC because the same requirement has been transposed in FCL Appendix 10 into an IR.

‘FCL.1030 Conduct of skill tests, proficiency checks and assessments of competence

(..)

(b) After completion of the skill test or proficiency check, the examiner shall:

- (1) inform the applicant of the result of the test. In the event of a partial pass or fail, the examiner shall inform the applicant that he/she may not exercise the privileges of the rating until a full pass has been obtained. The examiner shall detail any further training requirement and explain the applicant’s right of appeal; (...)

AMC1 ORO.FC.231(a)(3) point (c) wording ‘acceptable level of competence’

The intent of EASA was to use acceptable level of competence when it relates to the overall EBT programme and use the wording ‘acceptable level of performance’ when it relates to the assessment of the competencies. In other words, to demonstrate an acceptable level of competence in the EBT programme, the pilot shall demonstrate an acceptable level of performance in the EBT competencies.

AMC1 ORO.FC.231(a)(4) Evidence-based training

Explanatory note to AMC1 ORO.FC.231(a)(4)

The instructor concordance is a tool for continuous improvement of the EBT programme.

Point (a) provides a requirement from a systemic view, e.g. the programme must identify that instructors in a certain fleet have problems to grade non-technical competencies or that one competency is always graded too low. This may occur with ‘application of knowledge’ or ‘application of procedures’ where instructors identify all the time ‘knowledge’ or ‘PRO’ as the root cause for all pilots being deficient when they should not, leading thus to a low grading in ‘knowledge’ or ‘PRO’.

As a very general comment, the findings in the instructor grading may be:

- 1- too low grading (the too strict),
- 2- too high grading (the too lenient),
- 3- too many gradings in the middle (3) (the lazy),



- 4- too many extreme gradings (the unbalanced), meaning grading 1 and 5 and little number of gradings in the middle.

Point (e) ensures that each individual instructor has the necessary concordance (e.g. my instructor Nikos Papadopoulos has problems to rate FPM and therefore this has to be addressed).

GM1 ORO.FC.231(a)(4) Evidence-based training

Explanatory note to GM1 ORO.FC.231(a)(4)

Safety promotion material — appropriate metrics

EASA has planned a safety promotion task (SPT.012) to support the implementation of EBT. The following material has been developed to explain the intent of the wording used in the IR ‘appropriate methods and metrics’, and other concepts used in this regulatory proposal:

SPT.012 ORO.FC.231(a)(4) — safety promotion task 012 — safety material for EBT — CONCORDANCE

APPROPRIATE METRICS

Concordance must be assessed independently per competency, and, if possible, segregated between different levels of competency assessment. This serves to identify whether concordance varies between competencies or between levels of assessment, providing guidance that is more accurate in order to improve concordance. Assessing concordance between instructors should make use of statistical methods, gauging both individual instructor metrics as well as group instructor metrics.

Different statistics may be appropriate for different types of measurement.

Individual assessments should assess to what extent an individual aligns with predefined standards for the reference material (e.g. correlation analysis) and to what extent the individual’s ability to assess is improving or deteriorating over time (e.g. compared to previous concordance assessments). Group statistics may make use of group agreement (e.g. variance assessment) and group alignment (e.g. group averages compared to standards for the reference material). A high variance implies that a large number of instructors does not rate according to the standards set, and warrants investigation. Individual instructors that exhibit a large deviation from standards, consistent positive/negative bias or poor improvement/deterioration of their concordance with standards, must be considered for focused instructor training before re-engaged in EBT assessments. However, the investigation may determine that although an individual instructor exhibits a large deviation, the reason is not that this instructor is not standardised. The reason could be that the instructor delivers a different programme (e.g. always delivering a harder-than-usual EBT programme in preparation of command upgrades) or that the instructor provides training to a specific group of pilots (e.g. those that require remedial training).

Finally, when subcontracted instructors are used, the standardisation provided to them should be particularly considered. This group of instructors may not achieve the initially required concordance. In order to maintain the data integrity for instructor concordance, the operator should maintain data traceability for each group of instructors (airline and subcontracted) as the root cause for the good or bad performance of each group may be different given that the background and environment of each group is different. Some principles may be necessary to be applied in other groups (e.g. mature instructors v young instructors).



CONTINUOUS IMPROVEMENT OF CONCORDANCE

Metrics of instructor concordance must drive specific interventions in instructor training, the assessment framework used and/or the reference material developed. Instructor concordance must be submitted to a process of continuous improvement in order to safeguard against standards drift and concordance degradation. For this reason, these requirements do not specify statistical thresholds of minimum variance of concordance; however, improvement in concordance metrics should indicate whether the operator's concordance programme is effective. Over time, as concordance improves, so will the reliability of EBT data.

CONCORDANCE ASSURANCE AND EBT INSTRUCTOR RECURRENT STANDARDISATION

Instructor concordance may be verified by controlling the content to be assessed (standardisation reference material) such as flight recordings, scripted videos and/or case studies. This material should be of comparable complexity, ambiguity and variation to situations that the operator encounters in their EBT programme.

Within each 3-year period, reference material should address every competency at a minimum of two levels per competency, such that concordance is assessed across the wide range of competency assessment that the instructor must be proficient in. Reference material may not be presented to the same instructor within 3 years in order to maintain true assessment of an instructor's ability to assess accurately. Operators should strive to include a broad diversity of flight phases, situations and behaviours when developing reference material, and preferably integrate their own operations and standard operating procedures (SOPs).

Reference material should be assessed using the same assessment framework used for actual EBT training delivery, and preferably assess not only the competency observation, but also the ability to assess root causes and identify subsequent training needs. Reference material should be supplemented with 'correct' ratings (i.e. answer sheet), such that instructor assessment can be compared against agreed-upon standards. The answer sheet should be composed by a core group of EBT instructors; preferably, rotating members to prevent standards drift and/or lasting bias.

Instructor concordance may not be inferred from actual assessment data collected from EBT sessions when these sessions are not equivalent in terms of difficulty, competency distributions, etc. because this may not guarantee equal reference material between instructors.

INSTRUCTOR CONCORDANCE

The development of strong instructor concordance (inter-rater reliability) is critical for the validity of the EBT data collection. In a norm-referenced system, the operator must safeguard concordance between instructors. Minimum concordance standards are normally set by the operator; however, the competent authority may recommend certain criteria, especially when the revalidation of licences is performed under EBT.

Distribution of grades across the instructor community for the modules conducted should be recorded. This recording may be accessible to the instructors, normally a posteriori. Some airlines underweight the grading performed by an instructor with poor concordance to have accurate competency data. Underweight may only be needed in rare cases during mixed EBT; however, it should not happen during full EBT.



However, this standard needs to be easy for the instructors and thus allow them to focus on the observation of the students and to provide training to them rather than cross-checking complicated criteria.

INSTRUCTOR CONCORDANCE SCHEME:

(1) This is an example of a concordance scheme:

		Competencies								
		PRO	FPM	FPA	SAW	WLM	LTW	COM	PSD	KNO
Grades	1	Year 1	Year 2	Year 3	Year 1		Year 1	Year 2		Year 3
	2		Year 1	Year 2		Year 3		Year 1	Year 2	
	3	Year 3			Year 3		Year 2		Year 1	Year 2
	4		Year 3		Year 2	Year 2	Year 3			Year 1
	5	Year 2		Year 1		Year 1		Year 3	Year 3	

* It is possible to combine several competencies in a single assessment event.

(2) An unacceptable example of a concordance scheme:

	PRO	FPM	FPA	SAW	WLM	LTW	COM	PSD	KNO
1	Year 1/ Year 2/ Year 3	Year 1	Year 1	Year 1	Year 1	Year 1	Year 1	Year 1	Year 3
2	Year 1/ Year 2/ Year 3	Year 2	Year 2	Year 2	Year 2	Year 2	Year 2	Year 2	Year 3
3	Year 1/ Year 2/ Year 3	Year 3	Year 3	Year 3	Year 3	Year 3	Year 3	Year 3	Year 3
4	Year 1/ Year 2/ Year 3	Year 1	Year 1	Year 1	Year 1	Year 1	Year 1	Year 1	Year 3
5	Year 1/ Year 2/ Year 3	Year 2	Year 2	Year 2	Year 2	Year 2	Year 2	Year 2	Year 3

The following table provides an overview of the usability of different data sources:

	Uniform reference material (e.g. videos)	EBT Assessment and training Data	EBT-I dual-observations (e.g. assessments of competence)
Useable for agreement?	Yes: all instructors can observe the same content.	Yes if data normalisation is possible otherwise No: as not all instructors have observed the same content.	Partially: although the examiner should be highly standardised, not all instructors have observed the same content.
Useable for alignment?	Yes: with assessment standard attached to the material.	Yes if data normalisation is possible otherwise No: as there are no assessment standards to compare to.	Yes: a crosscheck is possible.
Useable for other analysis?	Yes: outliers (both individuals and groups) may be identified.	Partially: outliers may be <i>suspected</i> by their rating behaviour.	Yes: this allows addressing other instructor competencies beyond ability to assess.
Notes	<i>Videos should ideally be of both a sim/flight event as well as the facilitated debriefing.</i>	<i>If training data is used to identify outliers, then outlier-generated data may be valued as unreliable data for concordance purposes. The gradings are still valid for licence revalidation and the grading system (e.g. tailored training).</i>	<i>It is difficult/time consuming to ensure covering exposing instructors to enough competency-grade combinations.</i>

AMC1 ORO.FC.231(a)(5) Evidence-based training***Explanatory note to AMC1 ORO.FC.231(a)(5)******AMC1 ORO.FC.231(a)(5) point (b)(1) wording ‘unless the performance observed was below the minimum acceptable level’***

The intent of the RMG is to allow line operations as long as the observed performance of the pilot was acceptable, provided that the pilot is still in the validity period of the licence. However, if an unsafe performance was observed prior to an interruption, the candidate should not continue line operations until remedial training has been provided.

There is a similar provision in Part-FCL where pilots shall not exercise the privileges of their licence if the LPC was failed even if their licence is still within the validity period.

Description of ‘performance observed was below the minimum acceptable level’ is provided in GM2 ORO.FC.231(d)(1) on RECOMMENDED GRADING SYSTEM METHODOLOGY — VENN MODEL.

GM1 ORO.FC.231(a)(5) Evidence-based training***Explanatory note to GM1 ORO.FC.231(a)(5)***

The GM has been drafted following AMC1 ORO.FC.231(a)(5) and the existing AMC1 FCL.740(b)(1) ‘Validity and renewal of class and type ratings’. AMC1 FCL.625(c) IR — ‘Validity, revalidation and renewal’ has been also considered.

AMC1 ORO.FC.231(b) Evidence-based training***Explanatory note to AMC1 ORO.FC.231(b)***

ICAO implemented a new competency model in November 2020 (see State letter 18-77 - Annex 1 and ICAO Doc 9868 ‘PANS-TRG’ following its Amendment 5). The new competency model of ICAO is based on the original competency framework published in ICAO Doc 9995; however, it is not the same.

Background of the competency framework

The original competency framework has been developed by a large industry expert working group and has been based upon systems tested and validated in operational use.

The availability of a worldwide-harmonised framework of competencies is of great value. This competency framework can be applied to both baseline and enhanced EBT programmes.

Pilot core competencies were developed to support the EBT concept adopted by ICAO in 2013. An international industry working group was established in 2007. The EBT and Instructor Qualification Group began work in early 2008. The Group was mostly comprised of expert practitioners in pilot training from almost 50 organisations worldwide. The Group met every 2 months from early 2008 until the end of 2011.

The Group decided that the first and critical step in the development of EBT was to identify a complete framework of performance indicators, in the form of observable actions or behaviours, usable and relevant across the complete spectrum of pilot training for CAT operations. These competencies and performance indicators combine the technical and non-technical (CRM) knowledge, skills and attitudes that have been considered essential for pilots to operate aircraft safely, efficiently and effectively. The development of pilot core competencies was considered as the first important step towards the



creation of the ‘total systems approach to training’.

After extensive consultation and discussion, the framework of behaviours was developed, divided into eight core competencies, each with observable performance indicators. The competencies were published in ICAO Doc 9995. The core competencies are primarily an assessment tool, offering a different approach from the evaluation of outcomes and manoeuvres, the purpose being to understand and remediate root causes of performance difficulties, rather than addressing only the symptoms.

The purpose of these performance indicators is to underpin the creation of performance expectations at all stages of training in a pilot’s career. To complete the picture, a fair and usable system of grading performance is also required, and instructors using it should be trained and assessed themselves as competent in its use.

The publication of ICAO Doc 9995 limits the applicability of EBT to recurrent training conducted in a qualified FSTD, but it has been always anticipated that the example framework of core competencies agreed should be applied to all aspects of initial and recurrent pilot training for CAT operations, including pilot selection and instructor pre-selection.

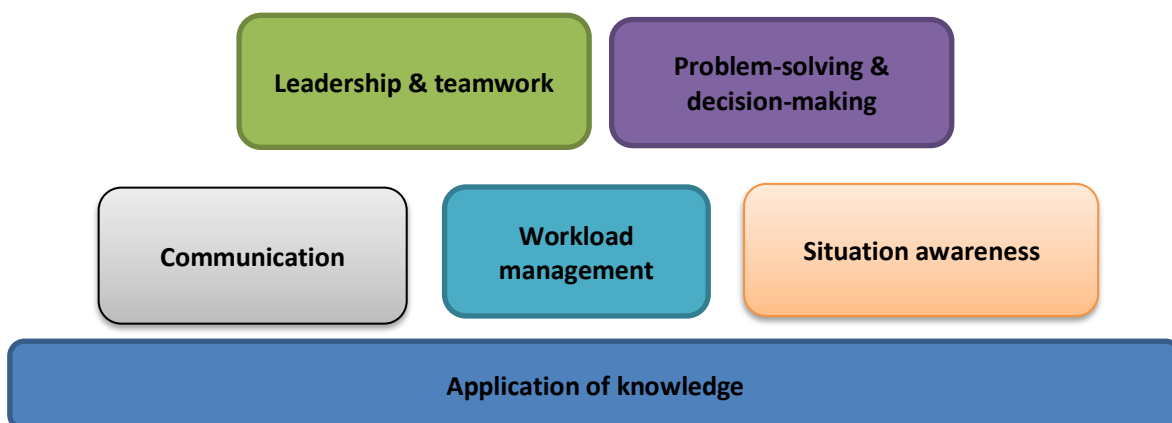
A number of ‘behavioural marker’ systems were considered, and the Group chose the most relevant and appropriate ones, and developed them further to include technical competencies and associated performance indicators.

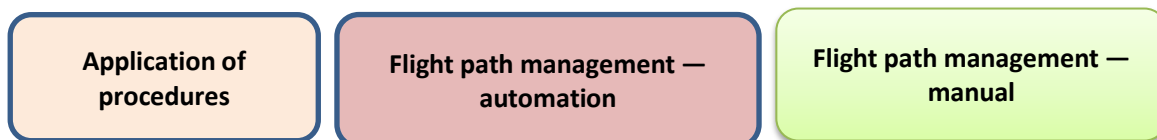
The behavioural marker system used was the one published by the UK CAA in CAP 737 in 2005, in service across a wide range of cultures since 2002. The system has been validated through operational use.

By far the most significant challenge for operators using these competency frameworks is the creation of an effective performance assessment and grading system, and subsequently the need for instructor training and the assurance of instructor concordance.

Finally, the competency framework of EBT provides a good process for the training needs analysis. The competencies in EBT provide a hierarchy and they are linked between them. There are some competencies that the pilot cannot reach without having first reached other ones. For example, in order for the pilot to have a strong competency in ‘leadership and teamwork’, it is necessary to be good at ‘communications’, and probably good at ‘workload management’. At the same time, in order to be good at ‘workload management’, being good at ‘flight path management — automation’ or ‘flight path management — manual control’, depending on the scenario, is as well necessary.

An example of a possible root cause analysis is shown below.





This approach to competencies and the interaction/relationship between them is supported by [MAN4GEN \(Manual Operation for 4th Generation Airliners\)](#). An extract of the ‘Final Report Summary’ is provided below:

‘(...) Results show that high-performing crews in this scenario were highly rated in Communication, Leadership and Teamwork, Problem Solving and Decision Making, Situation Awareness, and Workload Management. These competencies need to be paired together since some of them are a consequence of good performance in the others. For example, Communication by itself is not indicative of good performance since this competency is only a medium to propagate good behaviour in the other competencies identified here. In fact, as noticed with poor-performing crews, communication needs to be effective and clear to guarantee that the recipients understand and acknowledge what is being said. If that is not the case, it can lead to a performance decrease in the other core competencies (e.g. loss of Situation Awareness).

Reflecting on the results from this analysis, poor-performing crews showed difficulties in the competencies where high-performing crews were strong, especially during high-workload situations. These poor-performing crews completely skipped the planning flight phase which had a high impact during the execution flight phase, shown by the several below average and poor performance comments. Also, the heat-map shows that these crews already have difficulties in application of procedures (PRO) during low-workload situations (flight phases 1 and 2) and in manual flight throughout the scenario. High-performing crews, on the other hand, do not show negative comments for these competencies during these flight phases, yet positive comments were not present since conducting the required procedures here is not considered as above average performance. Despite the predictive asymmetry preventing the prediction of positive performance, it can at least be premised that poor performance for the overall flight can be predicted from low workload situations. All in all the collection of observed competencies are able to draw a clear picture of the differences between high and poor performing crews.

This analysis has identified the competencies that are most helpful in managing unexpected and challenging events, in addition to those competencies whose absence is most likely to lead to poor performance and unsafe outcomes. The desirable competencies identified by the analysis of crew responses to this scenario are: Leadership & teamwork, communication and problem solving & decision making.’

AMC1 ORO.FC.231(b) Competency framework - recommended EBT competencies (EASA competency framework)

ICAO has amended the EBT competency framework provided in ICAO Doc 9995. EASA competency framework is based on the ICAO competency framework for aeroplane pilots contained in Part II, Section 1, Chapter 1 of Doc 9868 ‘PANS-TRG’ (applicable since November 2020). For this reason, EASA proposes the core competency model of ICAO with the addition of ‘application of knowledge’.



AMC1 ORO.FC.231(b) — application of knowledge

EASA has decided to introduce ‘application of knowledge’ as an additional competency to the ICAO core competency framework. The reason behind presenting knowledge as the first one and therefore numbering this competency with the ‘zero’ (0) is that all competencies are built on the basis of knowledge. The competency however has been named ‘application of knowledge’ to indicate that it is about what the instructor is observing — observable behaviours related to knowledge; therefore, the ‘application of knowledge’.

KNO is a new competency not covered in ICAO Doc 9995. There is more information about this competency in some of the material provided by manufacturers. As an example of this, Airbus OTT 999.0012/17 provides the following reference:

‘In order to ensure that the required competencies are acquired and to perform the training on undesired aircraft state, the flight crew should be aware of the following items:

- Causes and contributing factors of undesired aircraft state
- Examples of incidents related to undesired aircraft state.

In addition, the flight crew should review all of the following items:

- The control and display systems (EFIS & ECAM):

The flight crew should know the indications provided by the display units, but also their evolution over time in order to anticipate the flying conditions.

- The flight controls systems, that include flight control laws and protections:

The flight crew should know how to handle the aircraft. In addition, the flight crew should know how the protections work, their availability, and their limits.

- The automation (Autopilot (AP), Flight Directors (FD) and Auto thrust (A/THR)):

The flight crew should know how to use the automation, their availability and their limits. The flight crew should review the practices to engage the automatisms, as well as the takeover techniques and recommendations (Airbus golden rule n°4).

- The energy management of the aircraft, that includes thrust settings:

The flight crew should understand the acceleration and deceleration capabilities of the aircraft.

- The flight envelope limitations:

The flight crew should know the flight envelope of the aircraft, in order to keep the aircraft within the environmental and aerodynamic limits and to know when the aircraft is out of these limits.

- Aircraft capability related to flight control laws:

The flight crew should know the capability of the aircraft in response to the related active flight control laws (normal, alternate and direct law).

- Procedures and techniques related to undesired aircraft state:

The flight crew should know the procedure and techniques for nose high and nose low recovery, stall recovery and unreliable airspeed.’



The example above promotes the idea of a competency related to the application of knowledge.

AMC1 ORO.FC.231(b) — Application of procedures and compliance with regulations (PRO)

EASA has introduced a change in the abbreviation of ‘application of procedures and compliance with the regulations’ because of a comment received to the NPA. Additionally, the old abbreviation (PRO) refers to application of procedures and knowledge. This is not appropriate for EASA due to the introduction of application of knowledge as a competency.

AMC2 ORO.FC.231(b) Evidence-based training

Explanatory note to AMC2 ORO.FC.231(b) Adapted competency framework

EBT and competency-based training are based on the concept that competencies are transferable. In the design of a competency-based assessment and training programme, a limited number of competencies are defined.

If an airline decides to add or remove a competency, there should be a clear and justifiable reason to do so.

Operators may develop suitable equivalent frameworks to meet their needs.

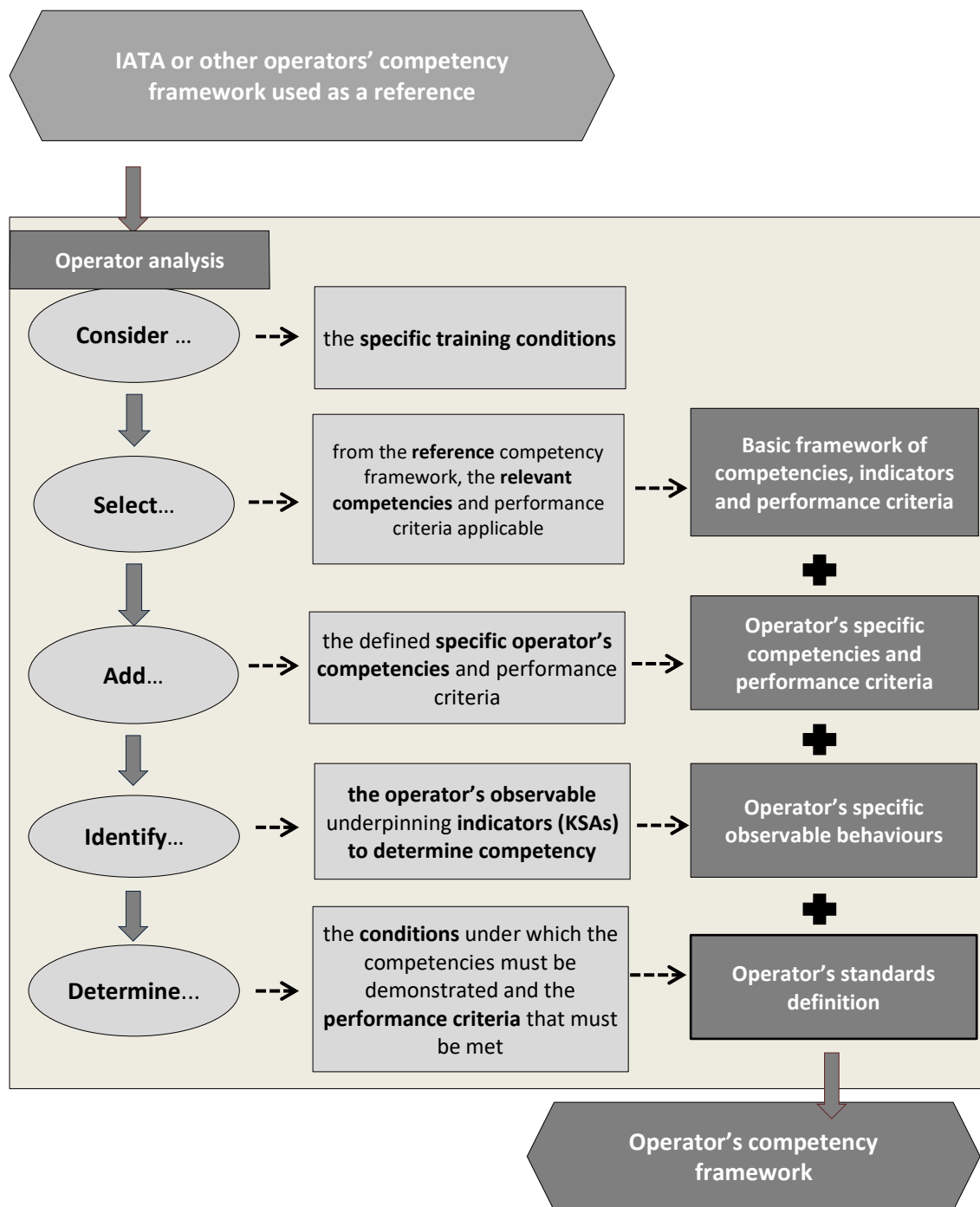
- A limited number of competencies involving knowledge, skills and attitudes should be defined.
- These defined competencies should cover more than a single situation and be consistently observable across a wide variety of contexts.

Short summary of how to develop an operator ‘COMPETENCY FRAMEWORK’ structure

A rapid analysis of the training needs and the local environment should answer the following questions:

- What is to be trained?
- What tasks does the trainee need to be able to perform by the end of the training?
- What regulatory, technical and operational knowledge is required?
- What skills are required?
- What attitudes are required?
- What are the specific conditions required for performance (i.e. level of complexity, specific requirements)?





AMC2 ORO.FC.231(b) point (c)

The use of the term ‘common language’ refers to the common language used by the operator. An IR for such requirement is provided in the Air OPS Regulation Annex IV.

CAT.GEN.MPA.120 Common language

The operator shall ensure that all crew members can communicate with each other in a common language.’



AMC1 ORO.FC.231(c) Evidence-based training**Explanatory note to AMC1 ORO.FC.231(c)**

This requirement has been transposed from ICAO Doc 9995 paragraphs 4.1.2 (d) and (e) with the necessary amendments to incorporate the ICAO proposal into the European regulatory framework.

‘4.1.2 There are various mechanisms for the implementation of EBT, which should be conducted in close consultation with the CAA and which include:

- a) the definition of an implementation and operations plan;
- b) the adaptation of the programmes defined in Appendices 2 to 7 to Part II according to the generation of aircraft (fleet) and type of operation for the operator;
- c) the EBT programme implementation (an initial limited trial phase should be considered by the CAA);
- d) the review of training effectiveness upon receipt of sufficient training system data; and
- e) the adjustment and continuous improvement of the training programme according to the training system feedback.’

AMC1 ORO.FC.231(c) point (a)

The definition has been transposed from ICAO Doc 9995 Chapter 3.6.

‘3.6.7 Feedback system. For the purpose of collecting data from an EBT programme, and making adjustments and continuous improvement to the training system, an operator should implement a performance feedback system utilising defined metrics’

However, the ICAO text has been modified to accommodate the wording to the EU regulatory system.

AMC1 ORO.FC.231(c) point (a) wording ‘continuous’

Using the term ‘continuous’ ensures that there is data collection throughout the year and not at a certain single point in time.

AMC2 ORO.FC.231(c) Evidence-based training**Explanatory note to AMC2 ORO.FC.231(c)**

The volume of training data will increase through EBT and some provision must be made for individual data protection. However, the main group RMT.0599 maintained that data protection in excess of what the GDPR offers is undesirable in a safety-critical industry as the protection of the public is of higher interest than the protection of an individual pilot. On the other hand, the representative of the pilots in the EBT subgroup RMT.0599 requested more stringent data protection requirements due to the increased volume of training data.

ORO.AOC.130 ‘Flight data monitoring – aeroplanes’ already requires a system that provides such kind of protection (individual data protection) and at the same time provides useful information to operators and authorities. The details of such protection and scope are provided in AMC1 ORO.AOC.130 points (g) and (k).

AMC2 ORO.FC.231(c) point (a)

This point has been transposed from AMC1 ORO.AOC.130 point (b) and from ICAO Doc 9859 AN/474 Safety Management Manual (SMM):



‘the sole purpose of protecting safety information from inappropriate use is to ensure its continued availability so that proper and timely preventive actions can be taken and aviation safety improved;’

AM2 ORO.FC.231(c) point (b)

This point has been transposed from AMC1 ORO.FC.130 point (k); however, some of the details have been transferred to GM2 ORO.FC.231(b).

AM2 ORO.FC.231(c) point (c)

This point has been transposed from AMC1 ORO.FC.130 point (k)(6).

This provision must be read in conjunction with ORO.GEN.140 of the Air OPS Regulation where the competent authority has access to all records:

‘ORO.GEN.140 Access

- (a) For the purpose of determining compliance with the relevant requirements of Regulation (EC) No 216/2008 and its Implementing Rules, the operator shall grant access at any time to any facility, aircraft, document, records, data, procedures or any other material relevant to its activity subject to certification, SPO authorisation or declaration, whether it is contracted or not, to any person authorised by one of the following authorities: (...)

AMC2 ORO.FC.231(c) point (d)

This point has been inspired by Regulation (EU) No 376/2014 Article 15 point 2(a).

AMC2 ORO.FC.231(c) point (e)

The principles in ICAO Annex 19 Appendix 3 Chapter 3 have been used to draft this provision.

GM1 ORO.FC.231(c) Evidence-based training

Explanatory note to GM1 ORO.FC.231(c)

This requirement has been transposed from ICAO Doc 9995 paragraph 5.3.1 with the necessary amendments to incorporate the ICAO proposal into the European regulatory framework:

‘5.3.1 Training metrics. The ‘inner loop’ within the training function is a valuable source of data. Taking full advantage of such data requires robust and well-calibrated training metrics. Typical metrics include:

- a) differences in success rates between aircraft types and training topics;
- b) distribution of errors for various training scenarios and aircraft types;
- c) skill retention capability versus skill type;
- d) the trainee’s feedback, which provides a different perspective as to the quality and effectiveness of the training product; and
- e) instructor tracking system: this system is important to measure the effectiveness of the instructor calibration process. However, it is essential to impress that the purpose of this system is not to spy on instructors or to pressure individuals to change their grading.’

GM1 ORO.FC.231(c) point (b)

This provision is a transposition from ICAO Doc 9995 paragraph 5.3.2:



‘5.3.2 Training metrics are an invaluable component in supporting an EBT programme but they must be placed in the context of operational data, because only the latter can justify the importance of a specific skill within the real operation.’

Furthermore, operational data is already required in ORO.AOC.130 and ORO.GEN.200 of the Air OPS Regulation.

GM2 ORO.FC.231(c) Evidence-based training

Explanatory note to GM2 ORO.FC.231(c)

This GM has been transposed from AMC1 ORO.AOC.130 ‘Flight data monitoring – aeroplanes’ point (k):

(...) ‘This procedure should, as a minimum, define:

- (1) the aim of the FDM programme;
- (2) a data access and security policy that should restrict access to information to specifically authorised persons identified by their position;
- (3) the method to obtain de-identified crew feedback on those occasions that require specific flight follow-up for contextual information; where such crew contact is required the authorised person(s) need not necessarily be the programme manager or safety manager, but could be a third party (broker) mutually acceptable to unions or staff and management;
- (4) the data retention policy and accountability, including the measures taken to ensure the security of the data;
- (5) the conditions under which advisory briefing or remedial training should take place; this should always be carried out in a constructive and non-punitive manner;
- (6) the conditions under which the confidentiality may be withdrawn for reasons of gross negligence or significant continuing safety concern;
- (7) the participation of flight crew member representative(s) in the assessment of the data, the action and review process and the consideration of recommendations; and
- (8) the policy for publishing the findings resulting from FDM.’

GM2 ORO.FC.231(c) – de-identified data vs anonymised data

SPT.012 — Safety promotion to ORO.FC.231(c) Data protection

DE-IDENTIFIED DATA

Anonymised data should be avoided in EBT, as in order to achieve the ultimate goal of the EBT system, which is a fully individual and personalised training programme for the pilot, the system needs to know the training history of the pilot. De-identification offers the possibility that NO human being would be able to ever have access to the identified data (or only the pilot themselves as the data belong to them), while at the same time the system is able to offer a personalised training programme.

For information, please see below general definitions of anonymisation and de-identification.



‘Anonymisation means the act of permanently and completely removing personal identifiers from data, such as converting personally identifiable information into aggregated data. Anonymised data is data that can no longer be associated with an individual in any manner.’

‘De-identification: de-identification involves the removal of personally identifying information in order to protect personal privacy. In some definitions, de-identified data may not necessarily be anonymised data and in such cases, anonymised data is a particularised subset of de-identified data.’

AMC1 ORO.FC.231(d)(1) Evidence-based training

Explanatory note to AMC1 ORO.FC.231(d)(1)

This provision has not obtained a full consensus in the EBT subgroup RMT.0599. Whereas the need for guidance for the grading system was fully supported, there was disagreement regarding the regulatory level it should have — IR, AMC or GM (e.g. GM2 ORO.FC.231(d)).

Airline associations represented in the EBT subgroup RMT.0599 believed that the operators should have the choice to use their own grading system without any involvement of the competent authority. Other stakeholders believed there should be a prescriptive approach in order to ensure that all pilots are assessed in the same way. Some of the arguments for such prescriptive approach are:

- As EASA will allow the revalidation of licences based on the EBT system and therefore based on the rate obtained within the grading system, all pilots in Europe should be graded in the same way given that pilots with a valid type rating can join any airline in the European market. Therefore, level playing field should be considered. This argument is relevant for points 1 and 2 in the scale proposed in this ED Decision.
- A standardised grading system of airlines will allow a standardised approach to grading and therefore to forms and paperwork. This may simplify bureaucracy in the competent authorities across Europe. In addition, the potential benefits this standardised approach to the grading system would bring to the oversight functions of the competent authorities were discussed.
- Data exchange: EASA consulted some data experts whether a standardised approach to the grading system could bring benefits to all stakeholders¹⁹. The conclusion is that in order to facilitate the data exchange (which is of paramount importance nowadays), it is quite important to have a common grading system. Data preparation, normalisation and standardisation can take up to 90 % of the resources, while the actual data analysis may take only 10 %. A standardised approach to grading system, competency framework and OBs could reduce the data preparation and normalisation close to 100 %. It could additionally increase data exchange between stakeholders (de-identification is ensured in accordance with the data protection regulations). Furthermore, platforms like the European Data4safety or the FAA [Aviation safety information analysis and sharing \(ASIAS\)](#) will largely benefit from a standardised approach. Note: The initiatives described above are planned on a voluntary basis and in full compliance with the GDPR.

Taking into account the above, EASA has decided to locate this provision at an intermediate regulatory level: AMC. This regulatory level allows an increased flexibility compared to IRs, whereby national authorities could approve deviations in accordance with AltMoC (ORO.GEN.120 of the Air OPS

¹⁹ The whole spectrum of stakeholders: airlines, competent authorities, accident and incident investigation authorities, safety analysts, etc. (there are plans to extend EBT to helicopters and business jets).

Regulation). Furthermore, an alternative grading system in AMC2 ORO.FC.231(d)(1) provides further flexibility to the operators.

Note: As mentioned, data exchange will be done in accordance with the data protection regulations (European and national).

On the other hand, some operators believe that in order to fulfil the 1 to 5 grading requirement, they will need to change their IT tools. This may be expensive. According to the RIA, the price of this system is around EUR 100 000 (one-off expense) and the same amount is needed every year (maintenance). For that reason, to avoid this one-off expense, the possibility for an alternative grading system was provided to allow those operators that have already invested in a system to continue to do so.

The grading provided in the AMC follows the criteria presented in the IATA Evidence-Based Training Implementation Guide, Chapter 6.4:

‘1. Fairness and accuracy

The grading system should allow the evaluation to be objective, fair, and relevant. It should be reliable, accurate, consistent and resistant to abuse, halo effects, instructor-evaluator laziness, ‘box ticking’ and bias, both positive and negative. Finally, it should ensure that pilots who are unable to fulfil competency performance expectations are not released to line service.

2. Clarity

The grading system should allow assessments to be transparent, clear, complete, unambiguous, and not subject to interpretation or confusion. It must also address the occasions where pilots do not have the opportunity to demonstrate a particular competency.

3. Usability

The grading system should be simple, easy to use, understandable, practical, manageable, accessible, uncomplicated, and resistant to unintentional errors. It should not dominate any debrief and should be compatible with facilitation. Finally, it should be compatible with any media to be used, electronic or otherwise.

4. Ease of compliance

The grading system should comply with both operator and CAA requirements. It should meet high-level regulations, allow auditing, and be traceable, explainable and long lasting. It should also ensure that any assessment is less liable to legal action.

5. Continuous improvement

The grading system should provide evidence to enable improvements in both the training system and trainee performance, for the purpose of enhancing safety. It should be meaningful, deliver useful data, identify trends, aid analysis and address existing, future or potential problems in order to improve the training system. It should enable trainees to provide feedback on their assessment in order to help improve grading consistency and the grading system. It should also enable the continuous development of the trainee’s performance.



6. Motivating

The grading system should be motivating, trustworthy, respectful, and easy to ‘sell’, so that both trainers and trainees enjoy the experience without creating fear. It should also recognize exemplary performance and promote commitment by both trainers and trainees to the assessment process.

7. Technical data management

The grading system should provide a manageable quantity of good data, be media compatible, easy to record and produce electronic data, compatible with analysis and presentation tools. It should also maintain data protection and assure controlled access.

8. Adaptability

The grading system should be adaptable, flexible and able to tailor to all facets of the operation, aircraft types and training objectives.

9. Implementation risk

The grading system should provide robust defences against the risks of ineffective implementation. The system should be comprehensible for trainers, enable efficient trainer standardisation, strong inter-rater reliability, and facilitate the identification of trainer divergence. It should be familiar to all users, cost efficient and resistant to drift and mutation.’

However, the RMG provided further guidance to expand some of the characteristics as follows:

- Fairness and accuracy: identifies evaluator divergence, facilitates instructor concordance, is not repressive, is not open to abuse, avoids positive/negative bias
- Usability: is acceptable to evaluators, avoids unintentional mistakes, is familiar and is not complicated
- Safety improvement: is compatible with facilitation, works towards excellence, is useful, identifies trends, is acceptable to operator, not costly, does not allow incompetent pass, improves system, continuous development
- Adaptability: customisable, cross-cultural.

AMC1 ORO.FC.231(d)(1) point (b)(2)

The wording ‘competent for the conduct of line operations’ means that the pilot is competent at an industry level, in order to ensure a level playing field. It is therefore NOT intended to be at an airline level. This does not mean that the airline may require more than a grade 2 to allow the pilot to operate in their aircraft.

AMC1 ORO.FC.231(d)(1) point (b) grade 5

The preferred scale of grading is 1 to 5 in order to ensure a good granularity on the pilot performance and allow the instructor to grade the norm. Although EASA allows alternative grading systems in AMC2 ORO.FC.231(d)(1) and therefore allows 1 to 4 grading, the initial intention was to measure competence performance (grade) in the same way, meaning 1 and 2 should mean the same in both grading systems as this is a key element for level playing field. Following the discussion with the RMG, EASA has decided to merge grades 4 and 5 in the alternative grading system and have only one grade: grade 4. Additionally, the equivalency of grades was extended to grade 3, and therefore in the final



proposal of EASA, grades 1 to 3 mean the same in both grading systems, while grade 4 in the alternative grading scale includes 4 and 5 in the standard EASA grading scale.

AMC1 ORO.FC.231(d)(1) point (c)

This provision is intended to ensure that the operator develops guidance for its instructors.

AMC2 ORO.FC.231(d)(1) Evidence-based training

Explanatory note to AMC2 ORO.FC.231(d)(1)

During the discussions in the context of the adoption of the EBT regulation ([COMMISSION IMPLEMENTING REGULATION \(EU\) 2020/2036 of 9 December 2020](#)), point (a) of this AMC was amended to ensure that the AltMoC procedure is used.

This AMC has been fundamentally developed for the case where a grading from 1 to 4 is used. In this case, grades 1 and 2 should be the same as for the EASA grading scale 1 to 5. Ideally, in the alternative grading system grade 4 represents the merge of grades 4 and 5 in the EASA grading system.

AMC3 ORO.FC.231(d)(1) Evidence-based training

Explanatory note to AMC3 ORO.FC.231(d)(1)

This AMC has been inspired by the IATA Evidence-Based Training Implementation Guide, Chapter 6.6.

‘6.6 TECHNIQUES TO BE APPLIED IN GRADING

Assessment is a continuous process throughout all training phases. It is the process of observing, recording, analyzing and determining crew performance against defined expectations in the context of overall performance. It includes the concept of self-critique and feedback, which can be given during training, or in summary thereafter.’

Furthermore, this technique (observe, record, classify and assess/evaluate) is widely used in the competency-based interview in the domain of human resources. An example can be found in the book ‘assessment methods in recruitment, selection and performance’ by Robert Edenborough (2005). In this context and according to the author, the process is necessary in a competency-based assessment as ‘It identifies a stepwise process that prevents a too-rapid arrival at conclusions, which is the case if such a structure is not followed.’

AMC3 ORO.FC.231(d)(1) point (b)

There is a need to ensure a level playing field. Therefore, EASA has decided to have a standard approach to grading. This is supported in the original idea of EBT as evidenced in the IATA Implementation Guide Appendix D where the crew is graded on both days.

The fact that the EBT instructor grades the performance of the pilot in the EVAL and SBT does not mean that this grading is accessible to everybody:

- From a ‘training system performance’ point of view, this information is needed to demographically assess the level of performance of the pilot community before the module.
- From a ‘nominated person flight OPS’ point of view, the information needed is whether the pilot is competent or not competent to conduct line operations. This applies to both days; otherwise, the pilot shall not fly.



The decision to recommend grading at level 1 at the end of the EVAL, MT and SBT has been supported by the IATA Implementation Guide Chapter 6.5 Figure 6.2 – ‘the 8 grading systems evaluated with scores’ where it described that grading ‘each competency on the session’ and grading ‘each competency on the session and on the scenario/manoeuvres training with the deviation below the norm’ was the system that received the highest scores.

AMC4 ORO.FC.231(d)(1) Evidence-based training

Explanatory note to AMC4 ORO.FC.231(d)(1)

Assessment and grading form an integral part of the learning process. As part of the development of EBT as a new approach to competency-based training, a pilot performance assessment and grading system is required to address the fundamental shift from previous systems which are ‘event-based’ and require the assessment of the quality of the outcome of a manoeuvre or the management of the event or threat. In certain previous systems, behavioural markers or competencies were used as assessment tools or reason codes for the outcome of the manoeuvre or of the management of the event or threat. The paradigm shift in EBT is to focus the attention to the underlying areas of flight crew member performance to determine training needs or focus. EBT is a system designed to determine areas of focus for all flight crew members and not just those whose performance is observed below a minimum acceptable level. The system is intended to fulfil the needs of operators and has been created according to a structured design process.

Rationale

The assessment and grading system should meet the needs of the following stakeholders:

- Civil aviation authority (CAA) — performance of assessments for the revalidation and renewal of flight crew licences and/or ratings
- Operator — measurement of individual, crew, fleet and operator pilot performance and identification of development needs for both individuals and the system
- Flight crew member — provision of information about performance measured during training, for the purpose of continuous development and improvement

The system has been created considering the importance of a number of design criteria. After wide consultation, criteria were considered as follows:

Fairness and accuracy, clarity, usability, ease of compliance, continuous improvement, motivation, data management, adaptability, implementation risk

Following the criteria definition, the development process was segregated in the following steps, with agreed criteria being applied at each step to determine the optimum solution:

- System definition (what to grade: the whole event, parts of the event, individual actions or a combination with different granularity): to be consistent with the aims of EBT, it should be the competencies at predetermined points during the module.
- Grading scales (considering sensitivity and the need to identify unacceptable, minimum acceptable, norm and performance above the average): a 5-point scale is commonly used with grade 1 indicating unacceptable performance, the average being grade 3; grade 2 indicates the minimum acceptable performance, and 4 and 5 indicate performance above average. There are many arguments for and against the number of points on a scale and this should be finally



determined by the operator and approved by the competent authority under the operations manual Part D.

- Word pictures: to assure the fulfilment of the criteria, in particular, fairness, accuracy and clarity, grades are described by standardised word pictures. They describe the VENN dimensions in a standardised way, and this facilitates inter-rater reliability. The VENN model described in this GM is based on the following measurements at predetermined points during an EBT module:

A = HOW WELL (e.g. The pilot communicated ineffectively...)

B = HOW OFTEN (e.g. ...by rarely demonstrating...)

C = HOW MANY (e.g. ... any of the performance indicators when required...)

D = OUTCOME (e.g. ... which resulted in an unsafe situation).

In order to ensure consistency, a grading system should also be employed for the line evaluation of competence, with information provided for remediation where performance is determined to be below the minimum acceptable level, which in the example system is 1 on a 5-point scale.

NOTE: Most of the provisions included in this AMC have been transposed from the GM that referred to VENN as proposed in the NPA. The upgrade from GM to AMC was suggested in some comments and agreed by the review group in June 2019.

‘SPT.012 — Safety promotion to ORO.FC.231(d) Grading system

For the column related to ‘how many’ (i), there was a consensus to understand:

- 1- ‘few, hardly any’ as few steps above 0 %,
- 2- ‘many’ as a majority but closer to 50 %,
- 3- ‘some’ as in between many and most,
- 4- ‘most’ as a large majority, and
- 5- ‘all, almost all’ as 100 % or close to 100 %.

Note: As a grade 2 means competent, about 50 % of the OBs must be observed. Therefore, the operator should refrain from making simple divisions and should not consider dividing 100 % by a simple 5 (corresponding to the five grades), avoiding thus to classify grade 1 as being between 0 % and 20 %, grade 2 as being between 20 % and 40 %, etc. Competencies are another mitigation layer to avoid accidents²⁰, and therefore classifying a grade 2 (competent) with only a 21 % may not be appropriate. Furthermore, although the mathematical approach above may be a tool to explain the concept and simple mathematical divisions may be helpful from a training point of view, the human behaviour may not be assessed mathematically. Experienced instructors should observe behaviours and assess competencies in a more comprehensive way than just simple mathematics.

Note: Regarding grades 3, 4 and 5, EASA changed slightly the approach proposed in Opinion No 08/2019, as the industry feedback was that most of the grades were between 3 and 4 and that

²⁰ Professor James Reason, theory of human factors - threat and error management model. See more in the book ‘Managing Maintenance Error: A Practical Guide (co-written with Alan Hobbs)’.

grade 5 was rarely used. In order to improve the granularity of the grading, the wording has been updated to encourage the industry to have a more even distribution of the gradings.

AMC4 ORO.FC.231(d)(1) point (d)

The provisions of EBT regarding grading are more detailed than those provided for legacy training in ORO.FC.230 where there is no definition of what training may be required after LPC failure or OPC failure. Remediation may include FSTD training, line flying under supervision (LIFUS), or something else depending on the circumstances (e.g. virtual reality training).

GM2 ORO.FC.231(d)(1) Evidence-based training

Explanatory note to GM2 ORO.FC.231(d)(1)

Safety promotion material — Grading system

EASA has planned a safety promotion task (SPT.012) to support the implementation of EBT. The following material has been developed:

‘SPT.012 — Safety promotion to ORO.FC.231(d) Grading system

GUIDANCE ON THE GRADING SYSTEM FOR THE INSTRUCTORS TO DETERMINE THE GRADE OF THE PILOTS

Although the regulation may provide enough material to develop a grading system, the operator is required to provide the instructors with further guidance to improve grading and instructor concordance.

Grading should look at the entire simulator session (the whole scenario), and not only at a particular scenario element (e.g. one manoeuvre or a small scenario within the simulator). Sometimes raters (instructors) tend to decide the grading of the simulator session based on one manoeuvre when the grading in EBT should look for the global assessment instead.

An example of the kind of material the operator should develop is provided below. The example has been based on the threat and error management (TEM) model. The instructor may run this model first and then proceed with the grading following the word picture. The model focuses on the determination of grading 1, 2 and what is above 2. It may not help to determine what is the actual grading of 3, 4, or 5:

- Grading of a non-intentional non-compliance (an undetected error or mistake but corrected in a timely manner with a safe outcome). There are two types:
 - Non-intentional non-compliance without consequences — trap error
- For instance, there is a mistake on the altitude selection, the crew are busy with other tasks and do not recognise the mistake when it occurs, and therefore they do not call ATC to confirm the altitude clearance. However, later and before the level bust, they initiate a dialogue and realise their possible mistake, or one of the pilots due to their awareness of the route altitudes realises a possible mistake which triggers a call to ATC to confirm the altitude and fix the error. For the competency identified as the root cause, the grade will not be 1. The example provides a reference to grade 3; it may be graded 2 or 4 depending on the rest of the simulator session. The competency will not probably be graded with 5. It should be noted that this does not prevent that other competencies



could be graded with 5 based on the evidence of this particular scenario element. PRO may not be graded with 5 because the pilot did not confirm with ATC when in doubt of an altitude clearance as required by the SOPs; however, they may be graded with 5 in SWA because they realised that the altitude selected did not make sense with the safe altitude for the route.

- Non-intentional non-compliance with consequences (undesired aircraft state associated with a reduction in margins of safety²¹) but managed by the flight crew successfully (flight crew timely switched from error management to undesired aircraft state management). Therefore, the consequences were mitigated in a timely manner (e.g. mistake in the altitude selection followed by a level bust resolved by a call of ATC or a TCAS flown to a good standard, GPWS warning followed by an escape manoeuvre performed to a good standard, etc.).

For the competency identified as the root cause, the grade should not be 1 or 5. The most probable grading reference is 2 because:

- The outcome of the situation was not unsafe (therefore, it cannot be 1). Additionally, the instructor should also ask themselves if the crew managed all the situations successfully in all of the events during the simulator session (to look for the big picture). If this was the case, then the instructor knows that grading with 1 is not possible (the outcome was NOT unsafe) and therefore the instructor is restricted to four possible gradings (2, 3, 4 or 5). Then the instructor will mentally move to the next step below.
- Was there a reduction in the safety margins? Yes, as in this example the pilots reached an undesirable aircraft state (therefore, it cannot be 5). At this moment in the process, the instructor knows the grading can be neither 1 nor 5 and will move to the next step below.
- How big was the reduction of the safety margins? Normally, grading 4 is unlikely. At this stage in the process, it will depend on the context of the situation (how dangerous was the situation?). Normally, entering in a dangerous undesired aircraft state means that some of the OBs were not demonstrated effectively; therefore, grading 4 may not be possible as grade 4 requires 'most of' the OBs to be demonstrated effectively (see VENN table). Therefore, at this point in the process, the instructor also knows that the grading cannot be 4. Then, the instructor will mentally move on to the next step below.
- In this step, the instructor will ask themselves how well the flight crew managed the situation (and the other situations in the simulator sessions). Once more, the grading should look for the global picture — that is why it is relevant to assess how well the flight crew resolved the situation of the example but also other situations in the simulator session.

²¹ See ICAO Doc 9868 'PANS-TRG' Chapter 6.7 Undesired aircraft states, point 6.7.1 'Undesired aircraft state are characterized by divergences from parameters normally experienced during operations (e.g. aircraft position or speed deviations, misapplications of flight controls, or incorrect systems configurations) associated with a reduction in margins of safety' 'undesired aircraft states must be managed by flight crews'.

How well was the situation resolved? Did the crew timely switch from error management to undesired aircraft state management? Did the crew perform the best possible escape manoeuvre and to a good standard? Depending on the rest of the simulator session, the instructor could grade 3 if the pilot/crew managed the other events in the simulator session in the best possible way and to a good standard. Otherwise, the grading will be 2.

- Intentional non-compliance but recognised and corrected in a timely manner with a safe outcome (e.g. unestablished approach followed by a go-around well below the stabilised gate). The instructor should go through the mental process described above. A summary is provided below:

For the competency identified as root cause, the probable grading (reference grading) for the simulator session will be 2 and the maximum grading may be 3. 2 is the probable grading because the situation was not unsafe as the pilot executed a go-around, but the pilot did it well below the stabilised gate (e.g. 100 feet) — meaning the reduction in the safety margins was big. Obviously, the situation cannot be considered safe because the pilot should execute the go-around no later than the stabilised gate (1 000 feet or about 500 feet as per the operator's policy). It should never be 4 or 5. It may trigger grade 1 depending on the other exercises. Note: This guidance on grading is not to be used when there is a non-compliance because a higher degree of safety dictates otherwise. In addition to the standard examples, there may be other examples for which the operator may need to decide if a higher degree of safety dictates otherwise. For example, the captain decides to take 15 seconds to refresh quickly the go-around actions and warn the first officer to be ready below 500 feet. Another example is when the crew miss the touch down zone for a bit in a long runway and decide to land instead of going around due to weather in the go-around area).

- Intentional non-compliance not corrected and continued to the end state (e.g. unestablished approach and maintained until landing)

In this example, the competency identified as the root cause should be graded 1 (failed), and the probable root cause is PRO. Furthermore, no other competency of the pilot can be graded with 5. Note: This guidance is not to be used when there is a non-compliance because a higher degree of safety dictates otherwise (e.g. unestablished approach maintained until landing due to uncontained fire or all engines flame out, etc.).

The grading should as much as possible assess 'what has happened (be objective) and not what would have happened.'

According to ICAO Doc 9868 'PANS-TRG' (State letter 18-77e) point 6.7.3 'undesired states can be managed effectively, restoring margins of safety, or can induce an additional error, leading to an incident, or accident.'

Undesired aircraft states and outcomes. 'Undesired aircraft states are transitional states between a normal operational state (i.e., a stabilised approach) and an outcome. Outcomes, on the other hand, are end states, most notably, reportable safety occurrences.' (source: skybrary.aero)



‘SPT.012 — Safety promotion to ORO.FC.231(d) Grading system and ORO.FC.146

EASA identified that, during the early implementation of mixed EBT, the competencies ‘application of procedures’ (PRO) and/or ‘application of knowledge’ (KNO) have normally the lowest grading in the airlines. The EBT manager should determine whether this information is genuine or not. For that purpose, Line Operations Safety Audit (LOSA), consultancy and other tools available in the industry could guide the EBT manager in determining the accuracy (veracity) of the grading results (PRO and/or KNO lowest grading). If the airline determines that its pilots have high standards in PRO and/or KNO, then there may be two possibilities to explain the lower grading in PRO and/or KNO:

- The instructors have a wrong understanding of the OBs and grading provisions. Normally, this is not the case, as the instructors have recently received the EBT instructor course (this text pertains to new implementations of mixed EBT). The EBT manager should verify whether the instructors clearly understand the guidelines for grading provided by the airline.
- The instructors identify the ‘training needs’ wrongly. This mistake is common in some of the airlines starting mixed EBT. Why do the instructors tend to grade PRO or KNO lower than the rest of competencies?
 - Every competency is constructed with knowledge, skills and attitudes. Knowledge is, therefore, an element of every competency; this confuses instructors, and if they are not careful, they will grade KNO or PRO lower than they should. Example: due to distractions, a captain forgets to put the anti-ice system several times. The instructor should normally identify the root cause as ‘workload management’ (WLM), or if the pilot was flying manually, it might be a problem of ‘flight path management — manual control’ (FPM) or both competencies (see ‘distraction’ in the OBs). However, when the instructor is new to EBT, they may give a lower grade to PRO instead. Why? Because in the traditional system, the instructor should probably give a lower grade to PRO. This is usually not correct in EBT (that is why the facilitated debriefing is so important: to understand why the pilot forgot the anti-ice system). Note: If the pilot did not know the procedure, giving a lower grade to PRO is correct.
 - As explained in NPA 2018-07(B) and Opinion No 08/2019, the competencies are linked. For instance, a pilot should first have FPA and/or FPM to build the competency of WLM. Then the pilot can have ‘thinking time’ and construct ‘problem-solving and decision-making’ (PSD). Therefore, the instructor should always have in mind the argument of referring back to KNO or PRO as they usually are at the basis of the competency pyramid. The instructor should know where to stop the root cause analysis; otherwise, all problems would be attributed to KNO.’

AMC1 ORO.FC.231(d)(2) Evidence-based training***Explanatory note to AMC1 ORO.FC.231(d)(2) and ORO.FC.231(d)(2)***

Please see the explanatory note to ORO.FC.231.

The concept behind this provision and the associated AMC and GM has been transposed from the ‘Alternative training and qualification programme’ (ATQP). However, to adapt the concept to EBT, the requirement suffered a complete shift.



Background

In ATQP, it is required to have a criterion-referenced system to be able to measure the effectiveness of the training programme (see explanation of ATQP below). This criterion-referenced system is set by the operator.

A criterion-referenced system is set up by the regulator in the LPC. Appendix 9 defines a set of manoeuvres (mandatory manoeuvres) and a set of targets (see Appendix 9 ‘Conduct of the proficiency check — Flight tolerances’) which form a criterion-referenced system.

ATQP also benefits from this criterion-referenced system of Appendix 9 because every year the ATQP pilots are required to complete an LPC (also see point (a)(6) of AMC1 ORO.FC.A.245 below).

The method for the assessment in ATQP follows:

1. A task and subtask analysis of each event;
2. Each event has one or more specific training targets/objectives, which require the performance of a specific manoeuvre;
3. For each event, the proficiency that is required to be achieved should be established;
4. The conditions pertaining to each event should also be established;
5. Each event should include a range of circumstances under which the crews’ performance is to be measured and evaluated;
6. The behaviour marker must be specified; and
7. The operator should measure and monitor the progression, and target must be achieved.

‘AMC1 ORO.FC.A.245 Alternative training and qualification programme

COMPONENTS AND IMPLEMENTATION

- (a) Alternative training and qualification programme (ATQP) components

The ATQP should comprise the following:

(...)

- (6) A method for the assessment of flight crew during conversion and recurrent training and checking. The assessment process should include event-based assessment as part of the LOE. The assessment method should comply with ORO.FC.230.
- (i) The qualification and checking programmes should include at least the following elements:
 - (A) a specified structure;
 - (B) elements to be tested/examined;
 - (C) targets and/or standards to be attained;
 - (D) the specified technical and procedural knowledge and skills, and behavioural markers to be exhibited.
 - (ii) An LOE event should comprise tasks and sub-tasks performed by the crew under a specified set of conditions. Each event has one or more specific training



targets/objectives, which require the performance of a specific manoeuvre, the application of procedures, or the opportunity to practise cognitive, communication or other complex skills. For each event the proficiency that is required to be achieved should be established. Each event should include a range of circumstances under which the crews' performance is to be measured and evaluated. The conditions pertaining to each event should also be established and they may include the prevailing meteorological conditions (ceiling, visibility, wind, turbulence, etc.), the operational environment (navigation aid inoperable, etc.), and the operational contingencies (non-normal operation, etc.).

- (iii) The markers specified under the operator's ATQP should form one of the core elements in determining the required qualification standard. A typical set of markers is shown in the table below:

EVENT	MARKER
Awareness of aeroplane systems:	1. Monitors and reports changes in automation status
	2. Applies closed loop principle in all relevant situations
	3. Uses all channels for updates
	4. Is aware of remaining technical resources

- (iv) The topics/targets integrated into the curriculum should be measurable and progression on any training/course is only allowed if the targets are fulfilled.'

— EBT

For the measurement of pilot performance, ICAO Doc 9995 does not provide a full measurement system. ICAO Doc 9995 provides a set of OBs; however, it does not provide a grading system. This was resolved by the EBT subgroup RMT.0599 that provided a grading system (VENN). This allowed a full measurement system for EBT. This system is more of a norm-referenced system than a criterion-referenced system.

— Why EBT needs a norm-referenced system instead of a criterion-referenced system

For many decades, the industry has used the completion of manoeuvres like rejected take-off, engine failure between V1 and V2, go-around from minima with the critical engine inoperative and a clearly defined flight tolerance (e.g. – 5 knots/+10 knots) as a performance measurement to demonstrate the performance of the pilot. In this context, a pilot being able to demonstrate the ability to fly these often-repetitive manoeuvres within prescribed quantitative performance measurements and indicating an acceptable level of deviation from ideal criteria is deemed to be 'competent'.

EBT is based on the premise that this concept is no longer appropriate as a simple indicator, due to the complexities of modern operations and automation systems, coupled with the significant attribution of serious incidents and accidents to human factors. The paradigm shift developed by EBT is that assessments, which are necessary during all forms of training and instruction, as well as evaluation and checking, should be determined according to the performance in the defined areas of competency, and not simply by the achievement of a predetermined outcome in a specific manoeuvre.



The EBT concept continues to require the completion of certain tasks, but competent flight crew members should be able to complete the tasks reasonably expected of them under achievable conditions. Tasks remain important, but only in so much as they establish a predefined norm according to the curriculum, which in the case of recurrent EBT should be achieved. The key distinction is that EBT envisages a system of competence measurement, which looks at the total performance across a wide range of activities that include some traditional tasks.

Another reason why EBT needs a norm-referenced system is the way EBT evaluates pilots. In the context of the traditional training and checking, pilots are checked; EBT instead assesses pilots. EBT moves away from assessment against the execution of predefined manoeuvres and tasks based on the quality of execution (ATQP and traditional training and checking), to a use of the events as a vehicle for developing and assessing crew performance across a range of competencies.

EBT also refocuses the instructor population onto analysis of the root causes to correct inappropriate actions, rather than simply asking a flight crew member to repeat a manoeuvre with no real understanding as to why it was not successfully flown in the first instance.

For those reasons, the EBT subgroup RMT.0599 provided a competency-based grading system closer to a norm-referenced grading system, rather than a criterion-referenced system. In other words, although the EBT grading system provides a standardised methodology to pilot assessment, it is by definition a norm-referenced grading system (events do not have a set of conditions and the OBs linked to the events do not have a defined and unambiguous criterion).

While the criterion-referenced system unambiguously ascertains to what degree the objectives of the manoeuvres have been met, using such a system would mean that instructors would need to focus on the quality of execution of the manoeuvres rather than use the events as a vehicle to develop performance across a range of competencies.

Note: A norm-referenced grading system is a type of assessment which yields an estimate of the position of the tested individual in a defined population.

Note2: A criterion-referenced system is a type of assessment where the behavioural objectives and the systematic generation of test items are designed to unambiguously ascertain to what degree the objectives have been met.

— LICENCE REVALIDATION

EASA provides a set of rules to revalidate pilot licence under the EBT programme.

A norm-referenced system is subject to a defined population; it is thus subject to the population of pilots of a particular operator. EASA, some authorities, and the pilots' associations were concerned whether this would create a problem of level playing field for the licence revalidation.

Please note that today licence revalidation provides a:

- criterion-referenced system for the technical skills; and
- norm-referenced system for the non-technical skills (e.g. CRM assessment).



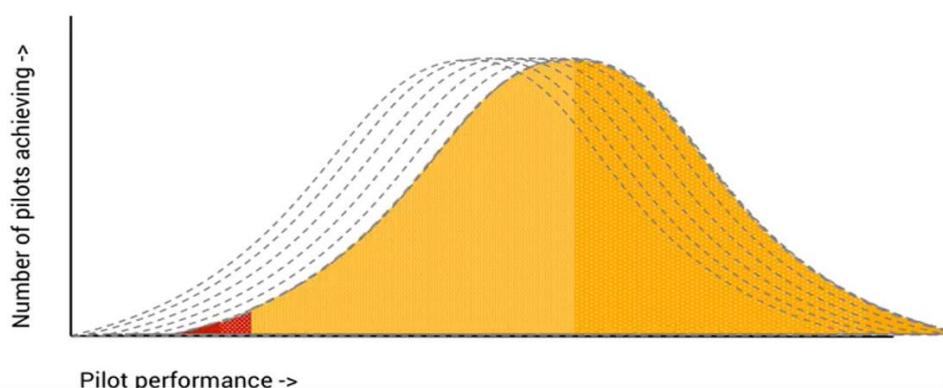
To resolve the issue, EASA launched a focused consultation²² in the 4th quarter of 2017 and the 1st quarter of 2018. The consultation concluded that a verification of the norm-referenced system was needed to re-assure the level playing field. (Further explanation is provided in the explanatory notes to ORO.FC.231(d) point (2), AMC1 ORO.FC.231(d)(2) and GM2 ORO.FC.231(d)(2)).

In summary:

- The EBT grading system is a norm-referenced grading system. Therefore, it varies from operator to operator and it depends on several factors, e.g. company standards, the design of the programme, culture of the organisations, culture of the instructors, etc.
- Within an operator, a norm-referenced grading system varies in the course of time. This happens because the EBT programme varies, the culture of the organisation varies, the culture of the instructors varies, the population of pilots changes, etc. Therefore, a norm-referenced grading system may provide different grading results for the same pilot performance in the course of time (for example, as pilot population performance improves, better performance is needed to obtain the same grading result).
- The situation above occurs while the concordance between instructors may be high. Because all instructors vary their grading in the same direction, the population of pilots moves to the right or to the left in the graph below, and thus the grading results of the performance of a particular competency are shifting to the right or to the left of the graph.

Conclusion: Measuring competencies (especially the non-technical ones) using a norm-referenced grading may be more appropriate; however, we also need to verify the grading system against a criterion-referenced system in order to ensure legal assurance and level playing field in the revalidation of pilot licences.

Norm-referenced grading



SUMMARY

The current system provides for the LPC of the Aircrew Regulation a criterion-referenced grading, which measures performance against a fixed set of predetermined criteria or learning standards established through the mandatory manoeuvres and criteria set in Appendix 9.

²² EASA performed a focused consultation in the 4th quarter of 2017 and the 1st quarter of 2018 with several stakeholders outside the EBT subgroup RMT.0599. This consultation included the main group of RMT.0599 and other actors of the aviation industry such as the national aerospace centre of Holland (NLR), nominated persons for crew training, inspectors and consultants.

It is necessary for the European aviation system to apply a criterion-referenced grading system for the rating issue and revalidation.

In addition, it is necessary for the feedback on the effectiveness of the training programme.

Therefore, the following tables provide an example for the grading system (VENN 1 to 5):

- The line between 1 and 2 should have the lowest variation possible between operators by a verification against a criterion-referenced system, while above grade 2, a norm-referenced system may be followed. This means that it may vary in the course of time and therefore the same performance may not obtain the same grading results.

year 1	1	2	3	4	5	Norm-referenced system
	Not proficient	proficient				Criterion-referenced system

year 2	1	2	3	4	5	Norm-referenced system
	Not proficient	proficient				Criterion-referenced system

Observe how the grading system in year 2 provides a grading of 5 to a lower pilot performance than year 1 and year 3.

year 3	1	2	3	4	5	Norm-referenced system
	Not proficient	proficient				Criterion-referenced system

AMC1 ORO.FC.231(d)(2) point (b)

The EASA EBT checklist for mixed EBT implementation already provides the criteria to complete Appendix 9 (e.g. element 3.6 may credit item 3.4) and this point follows the same approach.

3.4.0 to 3.4.14 (M)	Normal and abnormal operations of systems. Minimum of 3 for the crew.
3.6.1 to 3.6.9 (M)	Abnormal and emergency procedures. Minimum of 3 for the crew.

GM1 ORO.FC.231(d)(2) Evidence-based training

Explanatory note to GM1 ORO.FC.231(d)(2)

The ‘desired outcome’ in some of the elements in the table in GM1 ORO.FC.231(d)(2) have been transposed from the Appendix 9 guidance from Austro control https://www.austrocontrol.at/jart/prj3/ac/data/dokumente/HB_LSA_PEL_002_2018-03-29_1203646.pdf.

AMC1 ORO.FC.231(e) Evidence-based training

Explanatory note to AMC1 ORO.FC.231(e)

AMC1 ORO.FC.231(e) point (a)

The provision has been transposed from ICAO Doc 9995 (Part II paragraph 1.1.1).

‘Appendices 2 to 7 form the basis for the construction of EBT recurrent assessment and training programmes. In order to address all assessment and training topics at the defined frequency, a training



programme of 48 FSTD hours over a three-year period for each flight crew member has been assumed. This EBT recurrent assessment and training should be conducted in an FSTD qualified for the purpose.’

Part I paragraph 3.6.1

‘The EBT recurrent assessment and training of the competencies (contained in Appendix 1 to Part II) are considered over a three-year recurrent assessment and training period. For the purposes of the construction of model training programmes as listed in Appendices 2 to 7 to Part II, the programme has been developed to include a notional exemplar 48 hours for each crew member over a three-year period in a suitably qualified flight simulation training device (FSTD). The training programme is divided into modules. The three phases of a module (evaluation, manoeuvres training and scenario-based training) are described in Chapter 7 of Part I.’

AMC1 ORO.FC.231(e) point (c)

EASA is currently updating the requirements for FSTDs through RMT.0196 ‘Update of flight simulation training device requirements’. More information about this RMT is available under <https://www.easa.europa.eu/document-library/rulemaking-subjects/update-flight-simulation-training-devices-requirements>.

Currently, Appendix 9 to Part-FCL of the Aircrew Regulation requires the FSTDs used to revalidate a type rating in the context of CAT to meet the standards required for ‘training to proficiency’. There was a consensus in the RMG to provide a similar requirement for the EBT programmes. The actual drafting of the text for this provision was agreed with EASA FSTD experts and members of RMG RMT.0196. RMG RMT.0599 did not have experts in this subject and therefore the text was simply accepted with no further discussion.

The reasoning behind the text proposed is related to the EASA certificate awarded to each FSTD. Each certificate (see EASA Form 145 in Appendix IV to Annex VI (Part-ARA) to the Aircrew Regulation) contains a table in paragraph ‘L’ named ‘Guidance information for training, testing and checking considerations’. The line ‘Proficiency check YES/NO’ covers this item.

Below are some of the considerations of the RMG for the actual and future development of FSTDs to maximise effectiveness when used as part of an EBT programme:

- (a) Environmental effects:
 - (1) Weather
 - (2) Real-time full environment simulation without limitations and demand on the instructor to code effects, layers of clouds, etc. repetitively during a session
 - (3) Enhancement of the availability of cumulonimbus and storms with a strong correlation to motion cues
 - (4) Availability of multiple storms and cumulonimbus to create a more realistic and challenging weather profile
 - (5) Greater variation in precipitation effects
 - (6) Better-modelled ground effects; especially, variations in friction caused by water, snow and ice
 - (7) ATC



- (8) To maximise realism and the benefits of EBT, the air traffic control (ATC) environment needs simulation with context-specific ATC interactions. Creating a normal, dynamic and distracting ATC environment is challenging for an instructor to achieve and is a diversion from the instructor's primary task of observing flight crew members.
- (b) Aircraft effects
- (c) Greater accuracy in modelled engine malfunctions based on engine OEM data with motion and sound effects that are more realistic

Currently, EASA is working on a process to allow aviation blended learning environment (ABLE) to support FSTD training. This will optimise the use of available FSTD time.

When this process is in place as an approved AMC, the requirement for FSTD training may be replaced by requirements for training in any combination of devices supporting the specific tasks.

AMC1 ORO.FC.231(f) Evidence-based training

Explanatory note to AMC1 ORO.FC.231(f)

AMC1 ORO.FC.231(f) point (b) Step 1

'Look at (review) all aircraft system malfunctions provided by the OEM.' This wording has been used instead of a more prescriptive wording such as flight crew operating manual, because each manufacturer has a different title for the document which contains the malfunctions relative to the aircraft (e.g. Airbus label this FCOM, Boeing FCOM and AFM — other manufacturers use AFM). The quick reference handbook (QRH) is normally not an exhaustive list of malfunctions.

AMC1 ORO.FC.231(f) point (b) Steps 1 and 2

Steps 1 and 2 provide a similar concept to today's AMC1 ORO.FC.230(a)(4)(i)(A), where the list of major system malfunctions is selected (as per industry best practices) from the list of malfunctions of the real aircraft (not from the list of malfunctions provided by the FSTD). Then the operator selects the ones that are considered 'major' and covers them in a 3-year training period. The EBT malfunction clustering follows a similar approach where from the list of malfunctions of the real aircraft, the operator selects the ones that put a significant demand on a proficient crew.

GM1 ORO.FC.231(f) has been developed to illustrate the concept of significant demand on a proficient crew.

Once the malfunction is determined as putting a significant demand on a proficient crew, this means that it will have one or more of the five characteristics included in GM2 ORO.FC.231(f).

AMC1 ORO.FC.231(f) point (c)

This point has been introduced in the AMC as per ICAO Doc 9995 paragraph 3.8.2 which provides the following text:

'3.8.2 Practical training in the management of aircraft system malfunctions. Aircraft system malfunctions to be considered for the evaluation and scenario-based training phases are those that place a significant demand on a proficient crew. All malfunctions not covered by this characteristic continue to require review and appropriate procedural knowledge training with different means than considered in the recurrent EBT training conducted in an FSTD.'



and from Table I-3-1. ‘Malfunction characteristics and crew performance’

‘Note — This refers to the case of recurrent training and assessment conducted in an FSTD qualified by the CAA at the appropriate level for recurrent training and assessment. Other malfunctions not covered by the characteristics detailed in 3.8.2 and 3.8.3 continue to require review and appropriate procedural knowledge training conducted in a less qualified but suitable environment (classroom, flight procedures training device, etc.), as an additional component of EBT. This is intended simply as a means of offloading the need to perform such training in a highly qualified FSTD, which has much greater potential benefit in other areas’.

AMC1 ORO.FC.231(f) point (c) — wording ‘malfunctions included in the equivalency of malfunctions’

This wording is related to the definition of ‘malfunction clustering’ introduced in Annex I to the Air OPS Regulation.

AMC1 ORO.FC.231(f) point (c) — wording ‘equivalency of malfunctions (malfunction clustering)’

Equivalency of malfunctions contains all the malfunctions that put a significant demand on a proficient crew, regardless if they are included or not in the FSTD programme.

Point (c) has been transposed from ICAO Doc 9995, Paragraph 3.8.2, and table I-3-1 Note:

‘All malfunctions not covered by this characteristic continue to require review and appropriate procedural knowledge training with different means than considered in the recurrent EBT training conducted in an FSTD’

The intention is to require the pilot to be trained in each of the malfunctions that put a significant demand on a proficient crew. The RMG avoided on purpose examples such as multiple-choice test or online PowerPoint presentations. Instead, it proposed advance computer-based training and ABLE to foster new training means.

AMC1 ORO.FC.231(f) point (c) — wording ‘EBT FSTD programme’

This refers to the 3-year EBT FSTD programme.

AMC1 ORO.FC.231(f)(3) Evidence-based training

Explanatory note to AMC1 ORO.FC.231(f)(3)

EASA considered this provision an important safety objective; for this reason, originally this provision was at IR level. However, in order to provide flexibility to operators when malfunction clustering has a limited number of emergencies pertaining to degradation of aircraft control and loss of instrumentation (which varies from aircraft type to aircraft type), EASA moved this provision to AMC level. The limitation explained before creates a burden and limits the construction of line-orientated scenarios (EVAL and SBT). This feedback derives from operators that have already implemented mixed EBT (e.g. Thomas Cook Scandinavia, Alitalia, Iberia, etc.). Having this provision at AMC level allows for the use of AltMoC in accordance with ORO.GEN.120.



GM1 ORO.FC.231(f) Evidence-based training**Explanatory note to GM1 ORO.FC.231(f)**

Once the malfunction is determined as placing a significant demand on a proficient crew, this means that the malfunction has one or more of the malfunction characteristics determined in GM2 ORO.FC.231(f).

The concept of the 'significant demand on a proficiency crew' has been introduced by ICAO Doc 9995 since 2013 but ICAO has never explicitly explained the concept.

GM1 ORO.FC.231(f) addresses this issue by providing human performance-based criteria to determine when the management of the aircraft system malfunction is placing significant demand on a proficient crew.

The definition of the criteria permits the identification of the pilot competencies that are specifically challenged during the management of the procedure and the characteristic of the aircraft system malfunction procedure.

The identification of the pilot competencies ('challenged competencies') facilitates the design of the training syllabus related to the equivalency of malfunctions and supports a consistent assessment of the crew member proficiency by the instructor/evaluator.

GM4 ORO.FC.231(f) Evidence-based training**Explanatory note to GM4 ORO.FC.231(f)**

The Delphi method is a structured communication technique or method, originally developed as a systematic, interactive forecasting method that relies on a panel of experts. The experts answer questionnaires in two or more rounds. After each round, a facilitator or change agent provides a de-identified summary of the experts' forecasts from the previous round as well as the reasons they provided for their judgements. Thus, experts are encouraged to revise their earlier answers in light of the replies of other members of their panel. It is believed that during this process, the range of the answers will decrease and the group will converge towards the 'correct' answer. Finally, the process is stopped after a predefined stop criterion (e.g. number of rounds, achievement of consensus, stability of results) and the mean or median scores of the final rounds determine the results.

As a reference, the figure of 50 % of the instructor community was provided for the following reasons:

- The malfunction clustering should be adapted to the level of training and culture of the company. Therefore, the number of instructors should be sufficient.
- The EBT should involve the instructors and examiners as much as possible and this community should participate as much as possible in the development of the programme. A high level of participation may indicate that instructors and examiners are committed to implementing EBT.
- Minimisation of errors: a large community of SMEs (50 % of instructors and examiners) are more likely to provide unbiased results; personal views and biased opinions may be discarded by the average results.

Safety promotion material — Equivalency of malfunctions (DELPHI)

EASA has planned SPT.012 to support the implementation of EBT. The following material has been developed:



'SPT.012 — safety promotion task 012 — safety material for EBT — EQUIVALENCY OF MALFUNCTIONS

EQUIVALENCY OF MALFUNCTIONS PROCESS — DELPHI — CRITERIA ON ELABORATION OF MALFUNCTION CLUSTERING

The analysis of the grouping of abnormal and emergency procedures should only be carried out by a TRI EBT/SFI EBT or TRE EBT/SFE EBT in possession of the type rating of the aeroplane to be analysed.

Abnormal and emergency procedures should be considered in isolation from any environmental or operational context. However, the operator should establish a minimum standardisation guide for those instructors/examiners who are going to carry out the study, in which some guidance is provided to analyse the procedures depending on the flight phase or conditions present, because significant differences will appear at the time of evaluation. For instance, an abnormal procedure AIR PACK 1+2 FAULT does not have the same consequences below FL100 as at the maximum aircraft flight level.

Standardisation guidance

- The subject matter experts (SMEs) that develop the malfunction clustering should consider that the abnormal/emergency condition will remain when steps to fix the malfunction are included in the malfunction procedure (e.g. the failed engine will not restart, or the fuel pump remains failed after the reset, or the electric generator is not fixed after the reset, etc.). To this end, the operator should reproduce the malfunction in the FSTD programme in the same way (no restart of the engine, or successful reset of the fuel pump or electric generator) in order to meet the characteristics assumptions. The operator may include successful resets or restart in addition to the malfunctions considered for the characteristics. When a reset puts a significant demand on a proficient crew, then both options should be included in the malfunction clustering and therefore the same malfunction should be evaluated for both cases: for successful reset/restart and for unsuccessful reset/restart.
- Whenever the possibility of icing is specified in the abnormal/emergency procedure, then it is assumed that this meteorological condition is present (e.g. in case of 'pitot heating', it is assumed that the conditions of icing are present). This case should follow the same principle as in the previous paragraph, where the EBT FSTD programme should include the icing condition when triggering the pitot heating.
- Other possibilities require proper analysis.

Grading

- The grading varies from 1 to 5. 1 corresponds to the lowest level of malfunction characteristic. 5 corresponds to the highest.
- When using the abbreviated procedure and using a scale different from the recommended one (1 to 5), the same principles covered in this safety promotion material may be applied.
- The abnormal/emergency procedures to be graded are for the standard malfunctions for the type of aircraft (e.g. the malfunctions of the FCOM in A320) approved for the EBT programme.
- The other malfunctions of the different versions of the aircraft models in the operator's fleet (e.g. A321 / 319 / 320B4S, etc.) will be subject to a later revision and will be included in the 3-year period within the EBT topic 'Operation- or Type-specific.'



Minimum criteria

A minimum of guidance is established when assigning a value to each of the characteristics of abnormal/emergency procedures for the standardisation purpose of the analysis.

IMMEDIACY

'Immediacy': System malfunctions that require immediate and urgent crew intervention or decision to manage the malfunction of a system or an operational event based on the worst scenario (e.g. malfunctions with memory items). When using a scale of 1 to 5, the following references may apply:

- If the caution or warning displays only crew awareness: minimum rating 1.
- If it contains an amber 'land as soon as possible' (ASAP) warning: minimum rating 2.
- If it contains a red 'land as soon as possible' (ASAP) notice: minimum rating 3.
- If it is a procedure of memory steps: minimum rating 5.

COMPLEXITY

'Complexity': System malfunctions that require recovery procedures with multiple options to analyse and/or multiple decision paths to apply. System malfunctions with complexity have normally all of the following:

- they require an increase of the flight crew cognitive resources for the management of the procedures,
- they increase the flight crew workload, and
- they affect the normal aircraft handling characteristics.

When using a scale of 1 to 5, the following references may apply:

- If the caution or warning displays only crew awareness: minimum rating 1.
- If the caution or warning includes steps: minimum rating 2.
- If the caution or warning contains or must be followed by a computer reset: minimum rating 2 (depending on the complexity of the reset).

DEGRADATION OF CONTROL

'Degradation of aircraft control': System malfunctions that result in significant degradation of flight control in combination with abnormal handling characteristics. System malfunctions with degradation of control result in the modification of the normal aircraft handling characteristics or pitch attitude during approach and landing.

Any condition that implies an extra difficulty to fly the plane will be taken into account for the characteristic of degradation of control (which may not be limited to the flight control system). For instance, loss of flight protection laws, loss of power plant, etc. When using a scale of 1 to 5, the following guidance applies:

- Single engine flying (engine failure in multi-engine aircraft): minimum rating is 3 (except for some aircraft types with automatic yaw compensation in engine failures).
- Alternative law flight (direct law with landing gear down): minimum rating is 3 or 4 depending of the aircraft type flying characteristics.



LOSS OF INSTRUMENTATION

‘Loss of instrumentation’: System malfunctions that require monitoring and management of the flight path using degraded or alternative displays. Normally, these system malfunctions result in a temporary or permanent loss of any parameter related to the flight path and the indications of the flight path are displayed on a primary flight display and navigation display. Therefore, the management of the flight path is assumed to be performed through the use of degraded or alternative displays, either temporarily or permanently.

The characteristic to be assessed is not solely due to loss of cockpit displays. Abnormal/emergency procedures that imply flying with loss of relevant information should also be assessed. This principle increases the number of malfunctions available for this characteristic. This allows a better design of EBT FSTD sessions. When using a scale of 1 to 5, the following references may apply:

- Loss of display units: minimum rating 2.
- Significant loss of primary information related to systems (speeds, flap or slat position, fuel figures, etc.): minimum rating 2.
- Loss of information related to abnormal and emergency procedures (FWC 1 + 2 FAULT, SDAC 1 + 2 FAULT, etc.): minimum rating 3.
- Loss of information due to single failure (1 ADR Fault, 1 IR Fault, discrepancy messages, etc.): minimum rating 2.
- Loss of information due to double failures (1+2 ADR Fault, 1+2 IR Fault, disagree messages, etc.): minimum rating 3 or 4 depending of the aircraft type flight crew demand.
- Total loss of information (ADR 1+2+3 Fault, IR 1+2+3 fault, unreliable speed indication, etc.): minimum rating 5.

MANAGEMENT OF CONSEQUENCES

‘Management of consequences’: System malfunctions that affect significantly the flight crew standard task sharing and/or the workload management and/or the decision-making process during an extensive period. When using a scale of 1 to 5, the following references may apply:

- Consequences in the category of approach and landing or the required CAT II/III equipment: minimum rating 2.
- Consequences in the minimum navigation requirements: minimum rating 2.
- APP PROCEDURE in the STS: minimum rating 3.
- Single engine landing: minimum rating 3.

The operator, once the malfunction clustering analysis has been completed, may reflect in its training manual the maximum and minimum difficulty values of each one of the characteristics of the equivalency of malfunctions (malfunction clustering). Depending on the difficulty value, the malfunction will be included in the different phases of an evaluation session (LOE) and in a training session (LOFT) (e.g. maximum LOE value 20, while SBT accepts the maximum of 25 points).



AMC2 ORO.FC.231(g) Evidence-based training***Explanatory note to AMC2 ORO.FC.231(g)***

The rationale behind this AMC is that the operator has conducted a review of the approaches. It has taken into account which of them place a significant demand on a proficient crew and the characteristics of each of them. Therefore, more is done in terms of approaches within an operational context than is done today. EBT offers a frequency of B for specific approvals. Currently, ATQP also offers a frequency B for specific approvals.

AMC1 ORO.FC.231(h) Evidence-based training***Explanatory note to AMC1 ORO.FC.231(h)***

The AMC has been developed following the principles contained in AMC1 ORO.FC.230 point (b)(3) on line check. For some of the points, there is almost a direct transposition with only minor amendments. For others, the amendments are extensive.

AMC1 ORO.FC.231(h) point (a)

The requirement is extracted from AMC1 ORO.FC.230 (b)(3)(i) with the proper modifications:

‘The commander, or any pilot who may be required to relieve the commander, should also demonstrate his/her ability to ‘manage’ the operation and take appropriate command decisions.’

AMC1 ORO.FC.231(h) point (d)

This provision has been transposed from the current AMC1 ORO.FC.230 point (b)(3)(v) ‘Line checks should be conducted by a commander nominated by the operator. The operator should inform the competent authority about the persons nominated. (...)’

AMC1 ORO.FC.231(h) point (f) wording ‘validity period’

The wording for ‘validity period’ is similar to that used in ORO.FC.245(d).

The revalidation window has been maintained in 3 months although EASA and the RMG had extensive discussions about the appropriateness of 6 months in line evaluations of competence with validity periods of 2 or 3 years that would also would be in line with other periods of validity that exist in Part-FCL (e.g. revalidation of a rating). However, as the forthcoming EASA Opinion on all-weather operations (RMT.0379) and the update of ORO.FC (RMT.0599) is going to propose a general concept regarding the revalidation window, EASA for the time being decided to maintain an coherent approach in Part-ORO, where most of the revalidation windows are 3 months.

AMC1 ORO.FC.231(h)(3) Evidence-based training***Explanatory note to AMC1 ORO.FC.231(h)(3)***

The 2-3-year extension of the line evaluation of competence provides a vehicle for operators that have ATQP to continue with the credits they have under an ATQP. The safety case is that an ATQP operator needs 2 years of ATQP before being approved for an extension of the validity of the line check. This requirement is mirrored here, as the operator will need more than 3 years of mixed EBT implementation to extend the validity of the line evaluation of competence.



To encourage an operator to use line operations safety data programmes because they provide further safety enhancements, the 3-year extension is offered if the safety data programme is integrated within the EBT programme.

The requirement on the safety data programme has been transposed from FAA AC120-90 dated 27th April 2006 paragraph 5.

AMC1 ORO.FC.231(h)(3) point (a)

One of the purposes of a line check is to verify the ability of a pilot to undertake normal line operations in the real aircraft. The validity of the line evaluation of competence is extended with the condition that the pilot's ability to undertake normal line operations is maintained. For that purpose, EASA and the RMG decided that an EBT instructor with current line operations experience is required once a year in the EBT programme to compensate for the fact that the line evaluation of competence (line check) will have an extended validity. That means that the operator should have a sufficient number of EBT instructors who have themselves enrolled in the EBT programme and a line evaluation of competence as specified in the OM to provide the EBT modules. The extension of the line evaluation of competence is based on the substitution of one line check every 2 years by the evaluation phase in the EBT modules. As the evaluation phase is a line-orientated fly scenario that attempts to mirror the operational risks and should be contextualised to the airline operations, then the evaluation phase could be considered as a good vehicle to substitute one of the line checks every 2 years.

The term 'operations' in this context refers to normal, abnormal and emergency operations of aircraft.

Therefore, the intention of the provision is to have an EBT instructor who is enrolled in the operator's EBT programme and has a valid line evaluation of competence; however, as the line evaluation of competence requires the instructor to be enrolled, the final text does not contain the word 'enrolled'.

AMC3 ORO.FC.231(h)(3) point (b)

For the purpose of a feedback process for the monitoring of line operations, EASA studied the ATQP line-oriented quality evaluation, ICAO Doc 9803 Line Operations Safety Audit (LOSA) and the FAA LOSA.

'GM1 ORO.FC.A.245 Alternative training and qualification programme
TERMINOLOGY

- (a) (...)
- (b) 'Line-oriented quality evaluation (LOQE)' is one of the tools used to help evaluate the overall performance of an operation. LOQEs consist of line flights that are observed by appropriately qualified operator personnel to provide feedback to validate the ATQP. The LOQE should be designed to look at those elements of the operation that are unable to be monitored by FDM or Advanced FDM programmes.'

According to the RMG, the most important functions of such a feedback process are the ones mentioned under points (b)(1) to (7).

Point (b)(5) 'identifies design problems in the human-machine interface' has been introduced following the information provided in ICAO Doc 9803 where equipment design may be a cause of normalisation of deviance and therefore should be monitored.

ICAO Doc 9803 Line Operations Safety Audit (LOSA)



‘1.2.6 Second, and most important, incident reporting is vulnerable to what has been called “normalization of deviance”. Over time, operational personnel develop informal and spontaneous group practices and shortcuts to circumvent deficiencies in equipment design, clumsy procedures or policies that are incompatible with the realities of daily operations, all of which complicate operational tasks.(...)’

GM1 ORO.FC.231(h) Evidence-based training

Explanatory note to GM1 ORO.FC.231(h)

This text has been inspired from the current content of AMC1 ORO.FC.230 and GM1 ORO.FC.230. However, the RMG proposed some small amendments. Some of them are explained below:

The RMG noted GM1 ORO.FC.230 point (c).

‘(c) Proficiency training and checking

When an FSTD is used, the opportunity should be taken, where possible, to use LOFT.’

EASA decided to not transpose this provision into GM1 ORO.FC.231.

GM1 ORO.FC.231(h) point (a)

‘Line operations’ is used instead of ‘normal line operations’ because ‘normal line operations’ will imply that if the crew face a failure in the aircraft, they may not be able to complete the line check.

The phrase ‘including preflight and post-flight activities as specified in the operations manual’ has been introduced (this wording is not present in AMC or GM to ORO.FC.230) to clarify the scope of the line evaluation of competence. The EBT subgroup RMT.0599 believes that the current regulation in regard to ‘line checks’ (ORO.FC.230) should also clarify this item.

AMC1 ORO.FC.231(i) Evidence-based training

Explanatory note to AMC1 ORO.FC.231(i)

Points (a) and (b) have been transposed from AMC1 ORO.FC.230. However, point (a) has been substantially modified.

Point (c) has been based on the principles established in ORO.FC.A.245 and AMC1 ORO.FC.A.245 ‘Alternative training and qualification programme’.

AMC1 ORO.FC.231(i) wording ‘ground training’

The wording used in AMC1 ORO.FC.230 is ‘ground and refresher training’; however, this wording has been modified in order to align with the title of the AMC and therefore avoid duplication and misunderstanding.

AMC1 ORO.FC.231(i) point (a)

The idea behind the performance-based continuous ground training is to extend the principles of EBT into the area of ground training. Ground training in this context has two objectives:

- (1) Ensure adequate knowledge regarding aircraft systems and operational procedures and requirements.



(2) Ensure adequate awareness regarding accidents and incidents following a risk model (e.g. TEM). Knowledge is essential regarding systems, procedures and requirements in order to understand, interpret and properly apply the operator's procedures related to aircraft systems.

However, theoretical knowledge of incidents and accidents does not prevent reoccurrence in the future. It is foremost the analysis of the incidents and accidents using an agreed risk model, in order to identify the underlying root causes, which the pilot needs to be aware of, in order to effectively apply countermeasures in the future.

A ground training element should be conducted every 12 calendar months, which should be embedded in a 3-year programme, hereby adapting the EBT period.

AMC1 ORO.FC.231(i) point (a)(1)(i)(B)

The provision has been transposed from AMC1 ORO.FC.230 point (a)(1)(i)(B), according to which the ground training should include:

'(B) operational procedures and requirements, including ground de-icing/anti-icing and pilot incapacitation;'

However, the reference to 'de-icing/anti-icing and pilot incapacitation' has been deleted because it is already provided in the table of assessment and training topics as a training topic.

AMC1 ORO.FC.231(i) point (b)(3)(vi)

The provision has been transposed from AMC1 ORO.FC.230 point (a)(2)(iii)(F). However, the provisions for helicopters have been deleted as currently EBT, in accordance with ICAO Doc 9995, is only provided for some types of aeroplanes.

EASA is currently working on the development of an EBT data report for helicopters in order to first allow mixed EBT implementation and in the future an EBT programme for helicopters.

AMC1 ORO.FC.231(i) point (b)(7)

As explained above, AMC1 ORO.FC.231(i) points (a) and (b) have been transposed from AMC1 ORO.FC.230; however, the training elements and the checking elements are scattered across point (a) and point (b) of AMC1 ORO.FC.230. As in ORO.FC.231 both elements are combined in a single point, point (b)(7) has been introduced; however, the wording has been modified as in EBT the word 'checking' is not used.

AMC1 ORO.FC.231(i) point (c)

The requirement has been transposed from the existing ATQP provision (see ORO.FC.A.245 of the Air OPS Regulation). The reason behind using the ATQP provisions is that emergency and safety equipment is outside the scope of EBT competencies; therefore, the ATQP provision is fit for purpose for the extension of validity. The maximum validity of 24 months has been also transposed from ATQP.

AMC1 ORO.FC.231(i) point (c)(1)

This point has been transposed from ORO.FC.245.A point (b) and adapted for the purposes of the AMC regarding ground training. This requirement provides the safety objective if an extension is requested, which is to achieve and maintain the level of proficiency set out in point (b).

In ATQP, ORO.FC.A.245 point (b) is then reflected in AMC1 ORO.FC.A.245 point (a)(1)(i) 'documentation'.



However, the proposal for ground training under the EBT programme does not impose these requirements. This does not mean that the competent authority is not entitled to ask for it; however, as the scope of the ground training is limited and the safety objectives of the EBT are demonstrated elsewhere, the proposed regulation tries to avoid unnecessary burden.

AMC1 ORO.FC.231(i) point (c)(2)(iii)

The provision has been transposed from AMC1 ORO.FC.A.245.point (a)(1) 'documentation'; however, the following adjustments have been made:

Point (a)(1)(i) of AMC1 ORO.FC.A.245 has not been included;

Point (a)(1)(ii) of AMC1 ORO.FC.A.245 has been transposed with no change;

Point (a)(1)(iii) of AMC1 ORO.FC.A.245 has been transposed with slight modifications;

Point (a)(1)(iv) of AMC1 ORO.FC.A.245 — only the concept has been transposed and provision has been made to express the safety objective.

Extract of AMC1 ORO.FC.A.245

- '(1) Documentation that details the scope and requirements of the programme, including the following:
- (i) The programme should demonstrate that the operator is able to improve the training and qualification standards of flight crew to a level that exceeds the standards prescribed in ORO.FC and Subpart E of Annex V (SPA.LVO).
 - (ii) The operator's training needs and established operational and training objectives.
 - (iii) A description of the process for designing and gaining approval for the operator's flight crew qualification programmes. This should include quantified operational and training objectives identified by the operator's internal monitoring programmes. External sources may also be used.
 - (iv) A description of how the programme will:
 - (A) enhance safety;
 - (B) improve training and qualification standards of flight crew;
 - (C) establish attainable training objectives;
 - (D) integrate CRM in all aspects of training;
 - (E) develop a support and feedback process to form a self-correcting training system;
 - (F) institute a system of progressive evaluations of all training to enable consistent and uniform monitoring of the training undertaken by flight crew;
 - (G) enable the operator to be able to respond to new aeroplane technologies and changes in the operational environment;
 - (H) foster the use of innovative training methods and technology for flight crew instruction and the evaluation of training systems; and
 - (I) make efficient use of training resources, specifically to match the use of training media to the training needs.'



SPT.012 — safety promotion task 012 — safety material for EBT — SELECTION OF THE METHOD AND TOOL — LEARNING OBJECTIVES AND TARGET GROUP RECEIVING THE TRAINING

The selection of appropriate methods and tools for proper ground training delivery must be driven by answering two questions. WHO needs to be trained? WHAT needs to be trained (learning objectives)? Training topics that need further explanation or are optimally learned through discussions within a group, should be delivered by providing classroom training or web-based interactive sessions. When selecting the method and tool, operators should be driven by the desire to achieve the optimum outcome, which is the maximum possible knowledge increase. An example of a matrix for each question is provided below:

LEARNING OBJECTIVES – What needs to be trained?

1. [Blooms taxonomy] Knowledge – comprehension – application – analysis – synthesis – evaluation
2. [pragmatic] Knowledge/first overview – deeper understanding – competencies/able to perform
3. [pragmatic] Awareness/information – understanding/ knowledge – change of behaviour/performance.

TARGET GROUP – Who needs to be trained?

1. Learning preferences
2. Learning routines
3. Learning & media competencies
4. Level of expertise/experience
5. Job role and responsibility
6. Demographic/cultural characteristics
7. Access to media/resources

AMC1 ORO.FC.232 Evidence-based training

Explanatory note to AMC1 ORO.FC.232

AMC1 ORO.FC.232 point (b) ‘Frequency’

The explanation provided for frequency has not been transposed from ICAO Doc 9995, because the document provides two different definitions in paragraphs 1.2.3 and 1.4.2 of Part II.

This ED Decision provides a new definition for frequency using the new term ‘cycle’. This term is defined in Annex I (Definitions) to the Air OPS Regulation. The proposal reflects the intent of the provision of ICAO in regard to frequency. This principle is based on the yearly requirement for training topics with frequency B.

GM1 ORO.FC.232 Evidence-based training

Explanatory note to GM1 ORO.FC.232 EBT

The table is a transposition of Table II-1-1 of ICAO Doc 9995. However, the table in the GM does not contain the column that matches each flight phase with the corresponding phase in the training criticality survey. For the sake of transparency, the information is provided below:



<i>Threats/Errors</i>	<i>All flight phases</i>	<i>Potential threats/errors in any or all phases of flight</i>
Pre-flight and taxi	Phase 1	Pre-flight and taxi: flight preparation to completion of line-up
Take-off	Phase 2	From the application of take-off thrust until the completion of flap and slat retraction
Climb	Phase 3	From the completion of flap and slat retraction until top of climb
Cruise	Phase 4	From top of climb until top of descent
Descent	Phase 5	From top of descent until the earlier of first slat/flap extension or crossing the initial approach fix
Approach	Phase 6	From the earlier of first slat/flap extension or crossing the initial approach fix until 15 m (50 ft) AAL, including go-around
Landing	Phase 7	From 15 m (50 ft) AAL until reaching taxi speed
Taxi and post-flight	Phase 8	From reaching taxi speed until engine shutdown

AMC2 to AMC6 ORO.FC.232 EBT programme assessment and training topics

Explanatory note to AMC2 to AMC6 ORO.FC.232

Summary of amendments to Appendices 2 to 6 to Doc 9995:

- The competency KNO and its competency map have been introduced (34 marks of KNO in the competency map for GEN4).
- The wording ‘Guidance material’ has been introduced in the ‘example scenario element column’ to indicate that this column is guidance material.
- The ‘rejected take-off’ manoeuvre in generations 4 and 3 Jet has been moved from frequency A in Doc 9995 to frequency B. The ATQP operators in the RMG demonstrated that their pilots are equally proficient in demonstrating this manoeuvre. The amendment was agreed in June 2019. For the rest of the generation EASA maintained the frequency in Doc 9995; however, this manoeuvre is allowed in LVO conditions, to allow a possible combination with the low-visibility rejected take-off in AMC1 SPA.LVO.120. Note: the requirement in AMC1 SPA.LVO.120 will be amended through RMT.0379 and therefore this decision may be further evaluated.
- The engine failure on take-off followed the same approach described above for ‘rejected take-off’; however, EASA did not find such general consensus for the ‘failure of critical engine between V1&V2’ for generation 3; therefore, for generation 3, only one of the two engine failures has been moved from frequency A in Doc 9995 to frequency B. For generation 4, both engine failures have been moved from frequency A to frequency B.
- A new manoeuvre ‘failure of the critical engine above V2 (any segment of the TO)’ has been introduced at a frequency B. This manoeuvre complements the existing manoeuvre of ‘failure of one engine on take-off — failure of one engine from V1 and before reaching V2’; only one of them is required. The reason is to allow the pilot to cope with this failure outside the segment of V1 and V2. Data provided by the operators in the RMG shows that engine failures are more probable in another segment than V1 and V2. Therefore, it allows the operators to complement their programme with a manoeuvre that should cover better their operational risks. The amendment was agreed in June 2019.



- The three go-arounds in the manoeuvres training phase have been merged because it was confusing for the operators to know what the frequency was for each go-around manoeuvre. Frequencies have been also merged. That means that the operator may choose only one of the three go-arounds at a frequency A.
- The either seat qualification in accordance with ORO.FC.235 has been introduced with a frequency B in line with ATQP ORO.FC.A.245.
- Training topic ‘adverse weather’ — example scenario element ‘adverse-weather scenario’ e.g. thunderstorm activity, precipitation, icing: the flight phase activation has been amended from take-off (TO) to all phases of flight (ALL).
- Training topic ‘automation management’ — for three example scenario elements, the flight phase activation has been changed from ALL to CLB, CRZ, DES, APP, as those example scenario elements cannot be triggered on ground (e.g. recoveries from TAWS, ACAS warnings, recovery and subsequent engagement of automation).
 - The wording of example scenario element ‘Gear malfunction during an approach planned with autoland (including autobrake)’ has been slightly modified in accordance with from Doc 9995 and EASA Opinion No 08/2019. The competency FPA is not marked to reflect that normally a successful outcome in this situation may require the pilot to fly manually. The experts in EASA discussed the addition of FPA in the competency map only for generation 4 as normally this generation accepts full automation or nearly full automation in an autoland. The same discussion took place for generation 3 Jet. Additionally and for consistency reasons between the different generations, EASA decided to make a note in this example scenario to advise the operators about the possibility of having or not having this competency in the map.
- In the training topic ‘manual aircraft control’ EASA made changes to the phases of some example scenario elements following the amendments of ‘automation management’ (e.g. ACAS RA to descend or ATC [...]).
- Training topic ‘competencies — non-technical (CRM)’ — example scenario element ‘ACAS warning immediately following a go-around, with a descent manoeuvre required’ — the activation phase has been changed from CRZ to APP.
- Training topic ‘manual aircraft control’ — a new example scenario element and its competency map have been introduced (Approach planned with autoland, followed by a failure below 1 000 feet [...]).
- Training topic ‘monitoring, cross checking, error management, and mismanagement aircraft state’ — the term ‘in-seat instruction’ has been deleted. Feedback from operators implementing mixed EBT has highlighted that ISI is not the only means of training this operational risk; therefore, an increased flexibility in regard to the means to deliver this training topic has been introduced. Furthermore, the ‘Data Report for Evidence-Based Training’²³ does not make any reference to in-seat instruction.
- Training topic ‘upset prevention training’ — extensive amendments have been introduced. Doc 9995 was published before Doc 10011 ‘UPRT manual’, and therefore Doc 9995 does not provide the latest training exercises for UPRT. The new provision proposed in AMC8 ORO.FC.231 point

²³ IATA Data Report for Evidence-Based Training August 2014 1st Edition.



- (a) requires compliance with AMC1&2 ORO.FC.220&230. The new text allows training this topic in all phases of the modules providing thus more flexibility.
- Training topic ‘aircraft system malfunctions, including operations under MEL’ — a new example scenario element and its competency map have been introduced (fuel leak (management of consequences)).
 - Training topic ‘terrain’ — the example scenario element of demonstration of TAWS has been amended to allow operators to train this exercise with ISI in order to avoid negative training for pilots.
 - Stress has been added to the original training topic ‘workload, distraction, pressure’ as according to the experts consulted, it is covered in this training topic. In addition, there is alignment with the provision of CRM.
 - A new training topic (operations of special airport approval) has been introduced with a frequency of ‘C’ in order to ensure time for airports with special approval (e.g. Funchal, Innsbruck, etc.)
 - Training topic ‘upset recovery training’ has been extensively amended. ICAO Doc 9995 was published before the ICAO Doc 10011 ‘UPRT manual’, and therefore Doc 9995 does not provide the latest training exercises for UPRT. The new text requires compliance with AMC1&2 ORO.FC.220&230. The new text allows training this topic in the MT and SBT of the modules providing thus more flexibility. EASA excluded this training topic (recovery) from the evaluation phase. The reason agreed by the experts consulted by EASA was that in the evaluation phase, every skilled pilot will avoid in the upset prevention stage the need to go into a recovery from upset; therefore, in order to avoid negative training, the recovery part should be avoided in the evaluation phase.
 - Furthermore, the experts consulted by EASA found that some of the recovery example scenario elements described in Doc 9995 to be example scenario elements related to prevention; therefore, EASA has transferred them to the training topic of upset prevention — frequency B. One such case is the example scenario element ‘Demonstration of the defined normal flight envelope and any associated changes in flight instruments, flight director systems, and protection systems. This should take the form of an instructor-led exercise to show the crew the points beyond which an upset condition could exist’ that is located in Doc 9995 in the training topic ‘upset recovery’; however, in AMC1 ORO.FC.220&230 Table 1 and Doc 10011 ‘UPRT manual’, this example scenario element is located in the prevention part; therefore, the conclusion of EASA and its experts was to move it to upset prevention.
 - Table 2 of AMC1 ORO.FC.220&230 – Recovery elements and components have been transposed into the training topic of recovery in ORO.FC.232. The competency map was agreed following the Delphi methodology.
 - Some more example scenario elements have been introduced by the experts of the RMG with a special emphasis on scenarios of LTW and WLM.

AMC1 ORO.FC.232(b)(1) EBT programme assessment and training topics

Explanatory note to AMC1 ORO.FC.232(b)(1)

EASA has developed this AMC on the basis of the IATA Data Report for EBT. The intent of this AMC is to provide clarity and the necessary methodology to develop a data report.



AMC1 ORO.FC.232(b)(3) EBT programme assessment and training topics***Explanatory note to AMC1 ORO.FC.232(b)(3)***

EASA has developed this AMC based on the following principles:

- (1) Automation and human interaction with this automation
- (2) Accident rate: data report for EBT as a reference for each generation
- (3) Technology-driven, the fatal rate is qualifying

This provision has been transposed from ICAO Doc 9995 Appendix 1 with two differences:

- (1) There is a definition of each generation.
- (2) Embraer 120 has been moved from GEN3 Turboprop to GEN2 Turboprop, because:
 - the equipment in Embraer 120 is really similar to that of ATR 42-500 (or ATR 200/300). ATR 42-500 and below are classified GEN2 Turboprop. Even though the RMG acknowledged that E120 has GPWS, they considered that this reason alone was not enough to classify Embraer 120 as GEN3 Turboprop;
 - the new definitions of aircraft generation include a year for each generation. Therefore, Embraer 120 should be included in GEN2 Turboprop as it was certified in October 1985.
 - EASA reviewed the number of Embraer 120 flying in Europe. Their number is low and therefore the possible impact of this change is low.

AMC1 ORO.FC.240 Operation on more than one type or variant***Explanatory note to AMC1 ORO.FC.240***

EASA concluded that:

- ORO.FC.240 is applicable to EBT and does not require modification. However, some minor modifications were needed in AMC1 ORO.FC.240.

‘ORO.FC.140 Operation on more than one type or variant

- (a) Flight crew members operating more than one type or variant of aircraft shall: comply with the requirements prescribed in this Subpart for each type or variant, unless credits related to the training, checking, and recent experience requirements are defined in the mandatory part of the operational suitability data established in accordance with Regulation (EU) No 748/2012 for the relevant types or variants.
 - (b) Appropriate procedures and/or operational restrictions shall be specified in the operations manual for any operation on more than one type or variant.’
- Part-FCL of the Aircrew Regulation and AMC1 FCL.740 point (a) should specify that in case of operations on more than one type or variant, two modules shall be performed on each type or variant for revalidation.

In addition, the RMG discussed whether the simulator sessions of the module should be performed in the same aircraft type or it is possible to perform the simulator sessions in different aircraft types. The conclusion was that simulator sessions should be performed in the same aircraft type.



Finally, EASA concluded that in case of different generations of aircraft, the operator has to fulfil both generations' EBT programme requirements as per AMC 2, 3, 4, 5 and 6 ORO.FC.231(a).

AMC1 ORO.FC.240 point (a)(4)(vii)

EASA, following the principles contained in ORO.FC.240, agreed to not allow extension of the validity of the line evaluation of competence further than that allowed in ORO.FC.240.

ORO.FC.240 and AMC1 ORO.FC.240 allow consecutive line checks; therefore, a check is required every year; however, this is made alternatively in each type, so a check is performed for each single type every 2 years. This can be seen as an extension of the validity period of the line evaluation of competence. Therefore, the provision proposed for the line evaluation of competence limits the extension of 3 years only to single fleet operations and therefore ensures for operations of more than one type or variant one line evaluation of competence every 2 years, which ensures at least one line evaluation of competence every 3 years.

AMC1 ORO.FC.240 point (a)(4)(vii)(B)

EASA, following the principles contained in ORO.FC.240, agreed to not allow extension of the validity of the line evaluation of competence further than that allowed in ORO.FC.240.

ORO.FC.240 and AMC1 ORO.FC.240 allow consecutive line checks; therefore, a check is required every year; however, this is made alternatively in each type, so a check is performed for each single type every 2 years. This can be seen as an extension of the validity period of the line evaluation of competence. Therefore, point (f) limits the extension of 3 years only to single fleet operations and therefore ensures for operations of more than one type or variant one line evaluation of competence every 2 years, which ensures at least one line evaluation of competence every 3 years.

Annex I (Part-FCL) to Regulation (EU) No 1178/2011

SEE IMPLEMENTING RULES IN [COMMISSION IMPLEMENTING REGULATION \(EU\) 2020/2193 of 16 December 2020](#).

Explanatory note to the revalidation concept within an EBT programme

Background of licence revalidation

- The current revalidation process has four components:
 - (a) the applicant;
 - (b) the examiner;
 - (c) the technical assessment carried out in the simulator or the aircraft; and
 - (d) the administrative procedure that includes the completion of Appendix 9, and the rest of administrative procedures in Part-FCL FCL.1030 points (b), (c) and (d) that include the licence endorsements.

This process is carried out by the same person (examiner) who performs the technical assessment and the administrative procedure at the same 'location' (simulator or aircraft) and at the same time (the date and time of the proficiency check).

Note: Although most of the LPCs are carried out by a single examiner, the possibility of having several examiners for the same check already exists.



- The EBT philosophy should provide a different approach, where training is maximised and therefore checks disappear (assessment is introduced) and the pilot is trained in NON-jeopardy environment. Furthermore, the continuous training evidence of the pilot (data) should provide a better assessment of the competence of the pilot. Therefore:
 - (a) the EBT technical assessment has several events (simulator sessions) instead of one;
 - (b) there are several assessors of pilot performance (EBT instructors) instead of just one (examiner); however, the EBT manager, who is an examiner designated to provide a final assessment of the data collected, and the administrative procedure should be maintained. As there are several people involved in the technical assessment, the administrative procedure involves the EBT manager who bears the responsibility of the licence revalidation and a designated person who will endorse the licence.

Concept of licence revalidation in the context of an operator's EBT programme

The revalidation process proposed has the following components:

- (a) the applicant;
- (b) the people involved in the revalidation of the pilot licence:
 - (1) the EBT manager who is an examiner responsible for the operator's EBT programme — ensuring that the manoeuvres assessed are of a good training value and that the applicant completed those manoeuvres. The EBT manager will be mostly responsible for the completion of Appendix 10. This person has the overall picture of the pilot training data for the period of validity (as shown by the evidence provided by the EBT programme);
 - (2) the designated person who has the signature delegation from the EBT manager to endorse the licence and complete Appendix 10; and
 - (3) the EBT instructors who conducted each of the technical assessments that provide data to the EBT grading system and the training system performance;
- (c) the several technical assessments carried out in the simulators which provide the necessary evidence to ensure the pilot has an acceptable level of performance; and
- (d) the administrative procedure which includes the completion of Appendix 10 and the rest of administrative procedures provided in FCL.1030.

AMC and GM to Annex I (Part-FCL) to Regulation (EU) No 1178/2011

SEE AMC and GM IN THE Annex to the ED Decision.

GM1 FCL.1030(b)(3)(ii) Conduct of skill tests, proficiency checks and assessments of competence

Explanatory note to GM1 FCL.1030(b)(3)(ii)

This GM has been developed to clarify the responsibility of the TRE as regards 'the required manoeuvres and exercises'. See point (b)(3)(ii) of FCL.1030 of the Aircrew Regulation below:

'FCL.1030

(...)



- (ii) confirmation that all the required manoeuvres and exercises have been completed, as well as information on the verbal theoretical knowledge examination, when applicable. If an item has been failed, the examiner shall record the reasons for this assessment;'

AMC1 to Appendix 10 — Revalidation and renewal of type ratings, and revalidation and renewal of IRs when combined with the revalidation or renewal of type ratings – EBT practical assessment

Explanatory note to AMC1 to Appendix 10

The EBT system integrates into a single concept the provisions for revalidation of licence in Part-FCL and those for recurrent training and checking in Part-ORO. Most of the requirements for the oversight are in Part-ARO and then refer back to Part-FCL. See below.

AMC1 ARO.OPS.226(d) Approval and oversight of evidence-based training programmes
OVERSIGHT PLAN — PERIODIC ASSESSMENT TO VERIFY COMPLIANCE OF THE EBT PROGRAMME

- (c) Audits and inspections, on a scale and frequency appropriate to the operation, should cover at least:

(...)

- (9) administration of programme enrolment and compliance with the requirements of Annex I (Part-FCL) for licence revalidation and renewal;

Instructors are already allowed to sign licences under FCL.945 in certain conditions:

'FCL.945 Obligations for instructors

Upon completion of the training flight for the revalidation of an SEP or TMG class rating in accordance with FCL.740.A (b)(1) and only in the event of fulfilment of all the other revalidation criteria required by FCL.740.A (b)(1) the instructor shall endorse the applicant's licence with the new expiry date of the rating or certificate, if specifically authorised for that purpose by the competent authority responsible for the applicant's licence.'

AMC1 to Appendix 10 point (b) 'The instructor(s) that conducted the training to the applicant has (have) been standardised.'

This provision refers to AMC1 ORO.FC.146(c) and AMC2 ORO.FC.146(c).

The oversight of this provision falls under the jurisdiction of the competent authority issuing the EBT approval; however, the licensing authority may at its own discretion inspect the training records of the instructors that pertain to revalidation of licences.

AMC1 ORO.FC.146(c) Personnel providing training, checking and assessment
EBT INSTRUCTOR — INITIAL STANDARDISATION PROGRAMME

- (a) Before delivering the operator's EBT programme, the instructor should complete an EBT instructor initial standardisation programme composed of:

- (1) EBT instructor training; and
(2) EBT assessment of competence.

(...)

AMC2 ORO.FC.146(c) Personnel providing training, checking and assessment
EBT INSTRUCTOR — RECURRENT STANDARDISATION PROGRAMME



The EBT instructor should:

- (a) conduct six EVAL or SBT phases of an EBT module (or a combination of both) every 36 months. One of the EVAL or SBT should take place in the period of 12 months immediately preceding the expiry date. The 36-month period should be counted from the end of the month the module was taken. If this has not been fulfilled, the EBT instructor should complete an EBT assessment of competence. When the module is undertaken within the last 12 months of the validity period, the new period should be counted from the original expiry date;
- (b) receive annual recurrent standardisation. The recurrent standardisation should include:
 - (1) refresher EBT training; and
 - (2) concordance training; and
- (c) complete an assessment of competence every 3 years. When the assessment of competence is conducted within the 12 months preceding the expiry date, the next assessment of competence should be completed within 36 calendar months of the original expiry date of the previous assessment of competence.

AMC1 to Appendix 10 point (c)

EASA has performed several rounds of consultation regarding the implementation of the delegation of signatures. One element brought up to the attention of EASA was the need to ensure a lean process to perform the signature of licences. Although EASA has initiated the project to implement the electronic signature of licences, this project may take years to conclude. In the meantime, the simulator training centre may be a good location where after the completion of the training module the pilot and a personnel of the training department (instructor) may complete the signature of the licence.

AMC1 to Appendix 10 point (c)(2)

For the sake of clarity and due to some comments in the CRD regarding the process of signature delegation, EASA has decided to provide clarity and level playing field by requiring the instructor to be the person to whom the examiner (EBT manager) may delegate his or her signature.

AMC1 to Appendix 10 point (c)(3)

This provision has been added for clarity. This provision is a logical argument when reading Appendix 10 point 1(a) in combination with point 4(c)(2) and the following requirements in ORO.FC.231:

- 1- Point (a)(3)(B) — The EBT module is completed when: '(B) an acceptable level of performance in all observed competencies has been demonstrated'.
- 2- Point (a)(5): 'The procedures shall ensure that a pilot does not continue line operations if the performance observed was below the minimum acceptable level.'
- 3- Point (d)(1)(ii) Grading system: '(...) a point on the scale which determines the minimum acceptable level to be achieved for the conduct of line operations.'



GM1 to Appendix 10 Proficiency check for type ratings, and proficiency check for IRs when combined with type rating — EBT practical assessment

Explanatory note to GM1 to Appendix 10

GM1 to Appendix 10 point (b)

The GM clarifies what the examiner can do during the transition to full EBT in the case the pilot has not completed two EBT modules under full EBT. As during mixed EBT the pilot is completing an EBT module, this can be used as a means to revalidate the licence under full EBT. The GM has been introduced as a consequence of the public consultation of the NPA.

GM2 to Appendix 10 Proficiency check for type ratings, and proficiency check for IRs when combined with type rating — EBT practical assessment

Explanatory note to GM2 to Appendix 10

The GM transposed a definition from Part-ORO into Part-FCL and explains how EBT provides a demonstration of skills equivalent to the traditional proficiency check.

The definition of proficiency check is already provided in FCL.010; therefore, it is not included in this GM.

“‘Proficiency check’ means the demonstration of skill to revalidate or renew ratings, and including such oral examination as may be required.”

In legacy training, such demonstration is performed in a single event (following Appendix 9). Although an EBT practical assessment is equivalent to a proficiency check and demonstrates the necessary skills to revalidate or renew ratings, EBT goes one step further and this demonstration is performed at least twice a year in each of the EBT modules, to complete the revalidation process. The demonstration of equivalency between Appendix 9 and the EBT module is performed at least once every 3 years as required under the several provisions (IR + AMC + GM) on ‘verification of the accuracy of the grading system’.

To conclude this explanatory note, the definition of ‘competency’ (where the term ‘skills’ is included) in Annex I to the Air OPS Regulation is provided below.

‘competency’ means a dimension of human performance that is used to reliably predict successful performance on the job. A competency is manifested and observed through behaviours that mobilise the relevant knowledge, skills and attitudes to carry out activities or tasks under specified conditions;

Rationale behind the equivalence between OPC, LPC and the EBT programme

The EBT programme is aligned with the existing approach to OPC contained in ORO.FC.130, ORO.FC.230 and AMC1 ORO.FC.230 point (b):

OPS	FCL	Authorities comments	EASA ORO.FC.230 (a)	AMC2 Doc 9995	Remarks
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	1.4 (M)	Use of checklist prior to starting engines, starting procedures, radio and navigation (...).	Covered by LOE and SBT under compliance frequency A	Covered by LOE and SBT under compliance frequency A	Part-FCL Appendix 9 item 1.4 may be assessed as crew actions during a single preflight cockpit preparation. The expected added value of EBT is that it assesses and develops the competency application of procedures in many events instead of only in an isolated task application.
	1.6 (M)	Before take-off checks	Covered by LOE and SBT under compliance frequency A	Covered by LOE and SBT under compliance frequency A	Part-FCL Appendix 9 item 1.6 may be assessed as crew actions during a single event during the before take-off procedures. The expected added value of EBT is that it assesses and develops the competency application of procedures in many events instead of only in an isolated task application.
B	2.5.2 (M)	Take-off with engine failure between V_1 and V_2 (take-off safety speed)	Covered by the manoeuvres training phase Failure of the critical engine between V_1 & V_2 frequency B	Covered by the manoeuvres training phase Failure of the critical engine between V_1 & V_2 two different frequencies are requested frequency A for initial control of the aircraft	The failure should be inserted between V_1 and V_2 to create the need for asymmetric handling. It is possible to include additional failures in order to comply with 3.6.1, which should be added after item 2.5.2. During the manoeuvres phase, this item should commence from the initiation of the failure until:



				frequency B until clean configuration.	(a) establishment of the final configuration; or (b) completion of the abnormal checklist.
A	2.6 (M)	Rejected take-off at a reasonable speed before reaching V1.	Covered by the manoeuvres training phase rejected take off frequency A	Covered by the manoeuvres training phase rejected take off frequency A	The rejected take-off is considered a crew item and may be combined with the rejected take-off for operators (LVOs) In the manoeuvres phase, this item should commence from the initiation of the failure until: (a) full stop and completion of the abnormal checklist initial actions; or (b) full stop and completion of abnormal checklist where items 3.6.1, 3.6.7 or 3.6.8 are combined.
	3.4.0 to 3.4.14 (M)	Normal and abnormal operations of systems. Minimum of 3 for the crew	LOE and SBT aircraft malfunctions example scenario: 'at least one malfunction for each characteristic should be included in every 12-month period'	idem	An exercise may validate several Part-FCL items In order to facilitate the provision of simple and realistic scenarios in accordance with Doc 9995 Chapters 3.8 and 7.4, the evaluation phase is not intended to be a comprehensive assessment of all Part-FCL Appendix 9. Pre-existing technical deviations and associated operational instructions should not be taken into account as 3.4.0 to 3.4.14 items.



	3.6.1 to 3.6.9 (M)	Abnormal and emergency procedures. Minimum of 3 for the crew	Proposal to add fire and smoke management The evacuation is not prescribed in in Part-FCL		
	3.8.1* (M)	Adherence to departure and arrival routes and ATC instructions	No reference in table of assessment and training topics		The crew would be assessed when required to follow a clearance, or comply with a SID or STAR.
C	3.8.3.4 * (M)	Manually, with one engine simulated inoperative; engine failure has to be simulated during final approach before passing 1 000 ft above aerodrome level until touch down or through the complete missed approach procedure.	Manoeuvres training phase engine out approach & go around frequency A		



D	3.8.4 * (M)	2D operations down to MDH/A.	Manoeuvres training phase TYPE A 2D approach	No reference in Doc 9995 but equivalency of approaches applies (refer to 3.8.4)	This item should be completed under conditions described in the relevant operations manual. RNAV/GNSS approaches validate OPS – (D) item and Part-FCL 3.9.4 item. During the manoeuvres phase, this item should commence when intercepting the final approach and end when reaching the prescribed DA/H.
E	4.4* (M)	Manual go-around with the critical engine simulated inoperative after an instrument approach on reaching DH MDH or MAPt.	Manoeuvres training phase engine out approach & go around frequency B	Manoeuvres training phase engine out approach & go around frequency A	During the manoeuvres phase, this item may commence approaching DA and end once the aircraft is established in a clean or defined normal manoeuvring configuration.
F	5.5 (M)	Landing with the critical engine simulated inoperative.	Manoeuvres training phase Engine out landing frequency B	Manoeuvres training phase Engine out landing frequency A	In the manoeuvres phase, this item may start passing the final approach fix (FAF) and end when the aircraft reaches normal taxi speed.



Annex VI (Part-ARA) to Regulation (EU) No 1178/2011

SEE IMPLEMENTING RULES IN [COMMISSION IMPLEMENTING REGULATION \(EU\) 2020/2193 of 16 December 2020](#).

AMC1 ARA.GEN.315(a) Procedure for issue, revalidation, renewal or change of licences, ratings or certificates — persons***Explanatory note to AMC1 ARA.GEN.315(a) point (d)***

The new point (d) clarifies that in order for the competent authority to verify the compliance of the applicant with the requirements for revalidation or renewal under the EBT programme, in addition to the requirements in points (a), (b) and (c) of the AMC, it should also refer to AMC1 to Appendix 10.

AMC2 ARA.FCL.205 Monitoring of examiners***Explanatory note to AMC2 ARA.FCL.205***

The purpose of this AMC is to clarify how a competent authority may conduct oversight of examiners where those examiners revalidate licences as part of an operator's EBT programme. This is because the delivery of an EBT module is performed by instructors on behalf of the EBT manager who maintains ultimate responsibility for the programme and who is an examiner.

Member States provide a briefing within the Examiners Differences Document https://www.easa.europa.eu/sites/default/files/dfu/Examiner%20Differences%20Document_version_2021Q1.pdf for use by examiners with a Part-FCL examiner certificate conducting a proficiency check of a licence holder whose licence was issued by a competent authority other than their own.

As an EBT practical assessment is equivalent to a proficiency check (see Appendix 10), then the procedures for the proficiency check for the purpose of the Examiner Differences Document should be followed.

GM1 to AMC2 ARA.FCL.205 Monitoring of examiners***Explanatory note to GM1 to AMC2 ARA.FCL.205***

The vehicle to allow the licensing competent authority to inspect the training also had to be provided to be in line with existing oversight responsibilities. The principle described in this GM 'When the authority conducts an inspection of the FCL requirements (e.g. training delivery), it is advisable that the inspector of the competent authority follows the requirements laid down in AMC1 ARO.OPS.226(a)' has been transposed and adapted from the existing AMC1 ARA.FCL.205, to ensure that any oversight is preferably performed by appropriately trained and qualified inspectors.



3. References

3.1. Related regulations

- Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 311, 25.11.2011, p. 1)
- Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1)
- Commission Implementing Regulation (EU) 2020/2036 of 9 December 2020 amending Regulation (EU) No 965/2012 as regards the requirements for flight crew competence and training methods and postponing dates of application of certain measures in the context of the COVID-19 pandemic (OJ L 416, 11.12.2020, p. 24)
- Commission Implementing Regulation (EU) 2020/2193 of 16 December 2020 amending Regulation (EU) No 1178/2011 as regards the requirements for flight crew competence and training methods, and as regards the reporting, analysis and follow-up of occurrences in civil aviation (OJ L 434, 23.12.2020, p. 13)

3.2. Related decisions

- Decision N° 2012/015/Directorate R of the Executive Director of the Agency of 24th October 2012 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council ‘Guidance Material to Annex I – Definitions’
- Decision 2014/025/R of the Executive Director of the Agency of 28 July 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-ARO of Commission Regulation (EU) No 965/2012 and repealing Decision 2014/014/R of the Executive Director of the Agency of 24 April 2014 ‘AMC and GM to Part-ARO — Issue 3’
- Decision 2014/017/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-ORO of Commission Regulation (EU) No 965/2012 and repealing Decision 2012/017/R of the Executive Director of the Agency of 24 October 2012 ‘AMC and GM to Part-ORO — Issue 2’
- Decision N° 2011/016/R of the Executive Director of the European Aviation Safety Agency of 15 December 2011 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council ‘Acceptable Means of Compliance and Guidance Material to Part-FCL’



- Decision N° 2012/006/Directorate R of the Executive Director of the Agency of 19th April 2012 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council ‘Acceptable Means of Compliance and Guidance Material to Part-ARA’

3.3. Other reference documents

- [Decision No 2015/027/R](#) of the Executive Director of the European Aviation Safety Agency of 16 December 2015 on guidance material to Part-ORO of Regulation (EU) No 965/2012 on the implementation of evidence-based training (EBT) within the European regulatory framework (Mixed EBT)
- ICAO Annex 1 to the Convention on International Civil Aviation ‘Personnel Licensing’, 11th Edition, July 2011
- ICAO Annex 6 to the Convention on International Civil Aviation ‘Operation of Aircraft’, 10th Edition, July 2016
- ICAO Doc 9868 ‘Procedures for air navigation services Training’ Second Edition, 2016
- ICAO Doc 9995 AN/497 ‘Manual of Evidence-based Training’ First edition - 2013
- ICAO Doc 10011 AN/506 ‘Manual on aeroplane upset prevention and recovery training’ First edition – 2014
- ICAO Doc 9841 AN/456 ‘Manual on the Approval of Training Organizations’ Second edition – 2012
- ICAO Doc 9379 AN/916 ‘Manual of Procedures for Establishment and Management of a State’s Personnel Licensing System’
- EASA [Opinion No 08/2019 \(A\) & \(B\)](#) Subpart FC ‘Flight Crew’ of Annex III (Part-ORO) to Regulation (EU) No 965/2012 - Update of ORO.FC: evidence-based training (EBT)|Alignment of implementing rules with Regulation (EU) No 376/2014
- EASA [Oversight guidance for the transition to Mixed EBT Implementation](#)
- EASA [NPA 2018-07](#) Update of ORO.FC — evidence-based training subtask



4. Related documents

[CRD 2018-07 \(A\) & \(B\) 'Update of ORO.FC — evidence-based training subtask'](#)

