Acceptable Means of Compliance and Guidance Material to Annex VII (Part-ORA) to Regulation (EU) No 1178/2011
Issue 1, Amendment 9

Annex IV to ED Decision 2026/006/R

'AMC and GM to Part-ORA — Issue 1, Amendment 9'

The amendments are presented as follows:

— deleted text is ~~struck through~~;

— new or amended text is highlighted;

— an ellipsis '[…]' indicates that the rest of the text is unchanged.

Note to readers
'Agency' and 'EASA' are used interchangeably, and this is most visible in consolidated texts. In all cases, both terms refer to the European Union Aviation Safety Agency.

The Annex to Decision 2012/007/R of the Executive Director of the Agency of 19 April 2012 (AMC & GM to Part-ORA — Initial issue) is amended as follows:

ANNEX VII (Part-ORA)

SUBPART ATO – APPROVED TRAINING ORGANISATIONS

SECTION I – GENERAL

AMC1 ORA.ATO.105 Application

APPLICATION FORM

APPLICATION FORM FOR AN ATO CERTIFICATE		
No~~.~~	Question	Supplementary information
1.	Name of training organisation under which the activity is to take place	address, fax number, ~~e-mail~~email, URL
2.	Training courses offered	theory and/or flight training
3.	Name of head of training	type and number of licence full/part-time
4.	Name of chief flight instructor	as (3)
5.	Name of chief theoretical knowledge instructor	as (3)
6.	Name of flight instructor(s), ~~where~~ if applicable	as (3)
7.	Aerodrome(s) / operating site(s) to be used	IFR approaches, if applicable night flying, if applicable air traffic control flight testing facilities, if applicable data reply facilities, if applicable
8.	Flight operations accommodation	location, number and size of rooms
9.	Theoretical instruction facilities	location, number and size of rooms
10.	Description of training devices (as applicable)	For legacy FSTDs: FFS, FNPT I, II and III, FTD 1, 2 and 3, ~~and 3, and~~ BITD For FSTDs with FCS or assigned FCS: *please specify the fidelity level for each feature in the table below*

		1.FDK | 2.CLH | 3.CLO | 4.SYS | 5.GND | 6.IGE | 7.OGE | 8.SND | 9.VIB | 10.MTN | 11.VIS | 12.NAV | 13.ATM | 14.OST
11.	Description of aircraft	Class/type(s) of aircraft registration of aircraft IFR equipped, if applicable Flight test instrumentation, if applicable
12.	Proposed administration and manuals: (submit with application if required-)	(a) course programmes (b) training records (c) operations manual (d) training manual
13.	Details of proposed compliance monitoring system	

Note 1: If answers to any of the above questions are incomplete, the applicant should provide full details of alternative arrangements separately.
Note 2: instrument flight rules (IFR), full flight simulator (FFS), flight and navigation procedures trainer (FNPT), flight training device (FTD), basic instrument training device (BITD).
Note 3: flight deck layout and structure (FDK), flight control forces and hardware (CLH), flight control systems operation (CLO), aircraft systems (SYS), performance and handling on ground (GND), performance and handling in-ground effect (IGE), performance and handling out-of-ground effect (OGE), sound cueing (SND), vibration cueing (VIB), motion cueing (MTN), visual cueing (VIS), navigation (NAV), atmosphere and weather (ATM), operating sites and terrain (OST).

[…]

AMC1 ORA.ATO.125 Training programme

GENERAL

(a) Flight training in an FSTD and theoretical knowledge instruction should be phased in such a manner as to ensure that students are able to apply ~~to flight exercises~~ the knowledge gained on the ground to flight exercises. Arrangements should be made so that problems encountered during instruction can be resolved during subsequent training.

(b) Training programmes may include the use of either legacy FSTDs, or FSTDs with FCS or assigned FCS, or a combination thereof. Note: in accordance with AMC5 ORA.ATO.125, type rating training course designed using the task-to-tool methodology should only include FSTDs that have an FCS or an assigned FCS in their qualification certificate.

AMC2 ORA.ATO.125 Training programme

TYPE RATING COURSES – AEROPLANES

(a) Introduction

(1) When developing the training programme for a type rating course, in addition to complying with the standards included in the operational suitability data (OSD), as established in accordance with Regulation (EU) No 748/2012[1] ~~Regulation (EC) 1702/2003~~[1] for the applicable type, the ATO should also follow any further recommendations contained therein. However, in the case of a training course designed in accordance with AMC5 ORA.ATO.125, the training organisation may deviate from the recommendations contained in the training footprint as regards the training devices that should be used in each training session.

[…]

FLIGHT TRAINING

(j) Flight simulation training devices (FSTDs)

A type rating course for a multi-pilot aeroplane should include FSTD training.

The amount of training required when using FSTDs will depend on the complexity of the aeroplane concerned, and to some extent on the previous experience of the pilot. Except for those courses giving credit for previous experience (c.2.), a minimum of 32 hours of FSTD training should be programmed for a crew of a multi-pilot aeroplane. ~~of which~~ With the exception of training course for multi-pilot aeroplanes designed in accordance with AMC5 ORA.ATO.125, at least 16 hours of those 32 hours of FSTD training should be in an FFS operating as a crew.

Such FFS time may be reduced if other qualified FSTDs used during the flight training programme accurately replicate the cockpit environment, operation and aeroplane response~~.~~ and are fitted with ~~Such FSTDs may typically include flight management computer (FMC) training devices using~~ hardware and computer programmes identical to those of the aeroplane.

[…]

AMC3 ORA.ATO.125 Training programme

TYPE RATING COURSES – HELICOPTERS

(a) Introduction

(1) ~~w~~When developing the training programme for a type rating course, in addition to complying with the standards included in the OSD as established in accordance with Regulation (EU) No 748/2012 ~~Regulation (EC) 1702/2003~~ for the applicable type, the ATO should also follow any further recommendations contained therein. However, in case of a training course designed in accordance with AMC5 ORA.ATO.125, the training organisation may deviate from the recommendations contained in the training footprint

[1] Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (recast) (OJ L 224, p. 1, ELI: http://data.europa.eu/eli/reg/2012/748/oj).

of the OSD as regards the training devices that should be used in each training session. In such case, whenever an FSTD with FCS or assigned FCS lower than the minimum FCS equivalent to an FFS level C, as per point FCL.036(a)(2) of Annex I (Part-FCL), is used, the training course should always include the minimum training time in the helicopter specified in the OSD when FSTDs other than FFS are used.

(2) ~~t~~The course should, as far as possible, provide for integrated ground, FSTD and flight training designated to enable the student to operate safely and qualify for the grant of a type rating. […]

(b) Variants

(1) Familiarisation ~~training~~: where a helicopter type rating also includes variants of the same aircraft type requiring familiarisation ~~training~~, the additional familiarisation ~~training~~ elements may be included in the theoretical knowledge training of the initial type rating course.

[…]

(c) Training in helicopter and FSTDs

The training programme should specify the amounts of flight training in the helicopter type and in FSTDs (FFSs, flight training devices (FTDs)~~, or other training devices (OTDs)~~). Where a suitable FFS is geographically remote from the normal training base, the competent authority may agree to some additional training being included in the programme at a remote facility.

[…]

AMC5 ORA.ATO.125 Training programme

DESIGN OF A TYPE RATING TRAINING COURSE USING THE TASK-TO-TOOL METHODOLOGY

(a) A type rating training course that is designed by using the task-to-tool methodology should:

(1) follow instructional systems design (ISD) principles;

(2) make use of the appropriate training matrix contained in AMC1 to Appendix 9 Section A point 1f to Annex I (Part-FCL) and of the applicable training considerations, as specified in point (b) of that AMC;

(3) be designed in a such way that every applicable training task is completed in FSTDs whose FCS or assigned FCS is equal to, or higher than, the corresponding training-to-proficiency (TP) FCS of the appropriate training matrix;

(4) include only FSTDs that have an FCS or an assigned FCS in their qualification certificate.

Other training devices (OTDs) may be used in accordance with the provisions of Appendix 9, Section A, point 1g, provided that negative training is avoided.

(b) The training course should include all the following elements:

(1) a high-level syllabus structure containing the description of the training modules, their content and their sequence within the training course;

(2) the set of training tasks and training subtasks which compose a training module, and their sequence within the module;

(3) for each training module, the minimum FCS determined by taking, for each training task and training level, the highest fidelity level for each feature.

(c) The training organisation should demonstrate to the competent authority that the FSTD FCSs intended to be used, meet or exceed, for each feature, the fidelity levels determined in accordance with point (b)(3).

GM2 ORA.ATO.125 Training programme

INSTRUCTIONAL SYSTEMS DESIGN

(a) General

Instructional systems design (ISD) is a methodology which provides a systematic and iterative process for course design. It is based on educational needs and applies to both task-based and competency-based training courses.

Guidelines on instructional systems design can be found in *ICAO Doc 9868 – PANS Training* which, despite being primarily provided for competency-based training and assessment (CBTA) courses, can be useful also in the case of task-based training courses.

(b) ADDIE model

The most common ISD models use five key processes, namely Analyse, Design, Develop, Implement and Evaluate, which form the ADDIE acronym.

The workflow processes cover the following:

(1) analyse the training needs, by following these steps:

(i) conduct an analysis that includes the identification of training tasks and, thereafter, the operational, technical, regulatory and organisational requirements impacting the training course that will eventually be delivered;

(ii) develop a training specification that details the requirements that need to be fulfilled when designing the training;

(2) design the training course including the training and assessment plans, by creating the syllabus for effective training in ways that facilitate students' learning and interaction with the training means, and by defining how the training outcomes will be assessed;

(3) develop the training course and assessment materials through the design of the learning experience by integrating the technology and training means with the training setting and process, from sample material to fully developed and tested training and assessment tools;

(4) implement the training course, transforming the training plan into action and rolling out the training course to the students, which should also include instructors' training, preparation of students for the course and the organisation of the training environment;

(5) evaluate the training course by questioning, through evaluations, whether the training objectives are achieved, whether the training design is effective, and whether the students meet the current and future needs.

(c) ADDIE workflow processes

(1) Analyse the training needs

Training organisations should perform a thorough analysis of the training needs of students to determine the training specifications, taking into consideration:

(i) the objective of the training course;

(ii) the performance level that students have at the beginning of the course and the performance level that they are required to have at the end of the training course;

(iii) the tasks associated with the objective of the training course;

(iv) the operational requirements, such as normal, abnormal and emergency operational procedures and the operational environment;

(v) the technical requirements, such as specific operational systems or equipment required to achieve the objective of the training course;

(vi) the applicable regulatory requirements;

(vii) any organisational requirements, such as the availability or accessibility of FSTDs and the use of different training bases.

(2) Design the training course and the training and assessment plans

Starting from the training specifications, the training course, including the training and assessment plans, should be designed.

(i) Training course design

The training course design should include the following elements:

(A) the training modules, which include the training tasks and subtasks to be trained together;

(B) for each training module, the expected performance level that students should have at the beginning and at the end of each training module, and definitions of the operational and environmental conditions under which each training element of a training module has to be executed;

(C) the sequence of the training modules, ensuring that the required performance level is gradually achieved by transitioning from simple to more complex tasks under progressively more demanding conditions;

(D) the performance standard associated with each module or set of modules, whose achievement should be demonstrated by successfully passing an assessment to reach a training milestone;

(ii) Training plan

The training plan should provide the details of the following elements:

(A) the composition and the structure of the training course;

(B) the training syllabus;

(C) the training milestones;

(D) the course schedule.

(iii) Assessment plan

Assessment plans should be designed to evaluate and grade the performance of a student at well-defined points of a training course, normally at the completion of a training module or set of modules, with the aim of ensuring that the required performance standard has been achieved.

(A) The assessment plans should include the following elements:

(a) the objective of each assessment;

(b) the performance standard, the performance criteria and the conditions under which each assessment has to be performed;

(c) the details of the tools used to collect evidence of the performance of a student;

(d) the pass mark for each assessment;

(e) the number of observations required to assess whether the performance standard has been achieved.

(B) Each assessment should rely on the following principles.

(a) Validity

All the performance criteria associated with every training task have been evaluated and there is evidence that the performance standard has been achieved.

(b) Reliability

All the assessors should reach the same or similar conclusions when evaluating and grading the performance of a student.

(c) Repeatability

An adequate number of observations should be made when assessing whether a performance standard has been achieved.

(3) Develop the training and assessment materials

Based on the training modules, and in line with the training and assessment plans, training and assessment materials should be developed. They may include exercise briefings, practical exercises, presentations, video clips, examination and assessment tools.

The effectiveness of the whole training course should be tested and checked for design errors.

(4) Implement the training course

The training course should be delivered according to the training plan. The performance of students during the training should be monitored to verify whether the performance standards are met. Feedback on the performance should be continuously provided and, wherever deficiencies are found, adequate remediation should be given in a timely manner.

The assessments should be carried out according to the assessment plan.

For a successful implementation of the training course, it is important that:

(i) the instructors and assessors are adequately trained and standardised;

(ii) the students are adequately prepared before each training session; for instance, they are provided with the training material before any training session so that they can familiarise themselves with respect to the objectives of the training session;

(iii) the training environment is adequately set up in order to achieve the objectives of the training course.

(5) Evaluate the training course

The effectiveness of the training course should be continuously evaluated to determine whether improvements are needed, on the basis of:

(i) internal feedback:

(A) from the results of the training course, taking into consideration the required performance level at the end of the course as determined during the training course design; and

(B) from students and from instructors and assessors;

(ii) external feedback:

(A) from results of audits and inspections from the competent authority; and

(B) if applicable, from contracted organisations.

It is advisable that training organisations establish a documented link between evaluation results and how these are integrated into the ADDIE workflow processes.

~~GM5 ORA.ATO.230(a) Training manual and operations manual~~

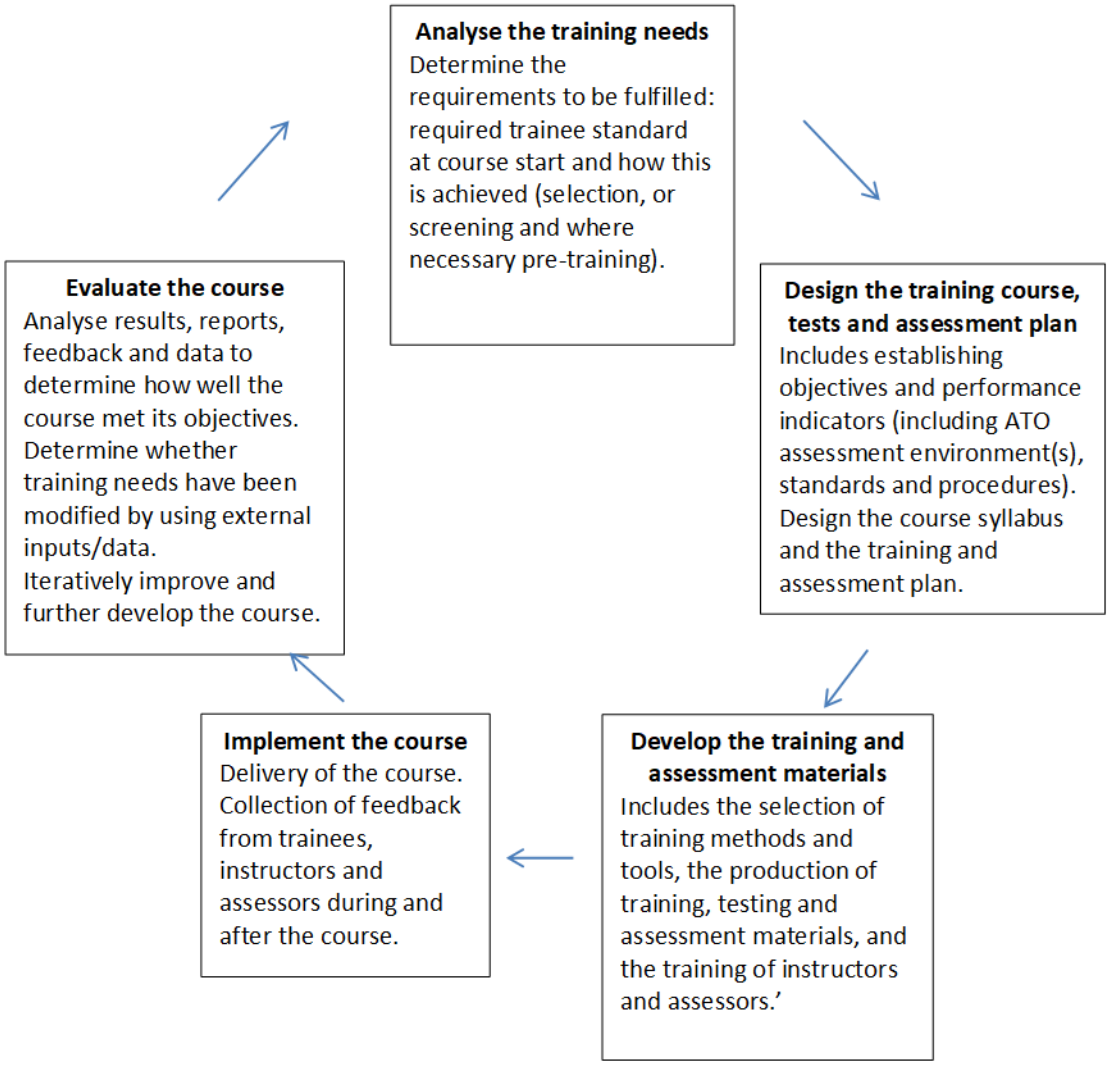
~~**INSTRUCTIONAL SYSTEMS DESIGN**~~

~~(a) The instructional systems design (ISD) provides a systematic and iterative process for course design based on educational best practices. There are several effective ISD models in use today, with the analyse, design, develop, implement and evaluate (ADDIE) framework being generic to all.~~

~~The purpose of using ISD to design training courses is to facilitate the students' efficient and effective acquisition of knowledge and skills based on current training needs.~~

~~(b) To provide evidence of the effective use of the ISD methodology in the design and continued development of their course(s), an ATO may use documentation and records that relate to the ISD phases.~~

~~(d) ADDIE model example. The 'analysis', 'design', 'development', 'implementation' and 'evaluation' phases of the ADDIE model are shown below with brief phase descriptions.~~



SUBPART FSTD – REQUIREMENTS FOR ORGANISATIONS OPERATING FLIGHT SIMULATION TRAINING DEVICES (FSTDs) AND THE QUALIFICATION OF FSTDs

SECTION I – REQUIREMENTS FOR ORGANISATIONS OPERATING FSTDs

~~AMC2 ORA.FSTD.100 General~~

~~**COMPLIANCE MONITORING PROGRAMME – ORGANISATIONs OPERATING FSTDs**~~

~~One acceptable means of measuring FSTD performance is contained in ARINC report 433-1 (December 14th, 2007 or as amended) *Standard Measurements for Flight Simulation Quality.*~~

AMC~~3~~2 ORA.FSTD.100 General

COMPLIANCE MONITORING PROGRAMME – ORGANISATIONS OPERATING BASIC INSTRUMENT TRAINING DEVICES (BITDs)

[…]

GM1 ORA.FSTD.100 General

COMPLIANCE MONITORING – ORGANISATIONs OPERATING FSTDs – GENERAL

(a) The concept of compliance monitoring (CM) is a fundamental requirement for organisations operating FSTDs. An effective CM function is vitally important in supporting operation of the devices, in a structured way, to ensure that they remain in compliance with the technical standards of ~~CS-FSTD(A) and CS-FSTD(H)~~ the applicable qualification basis and continue to be effective training tools. ~~An effective CM function is also essential to support any level of extended recurrent evaluation period as permitted by ORA.FSTD.225(b).~~

[…]

(u) ~~The~~ For routine fly-outs of the device~~,~~ ~~are a specialised part of the audit programme.~~ ~~I~~it is essential that the pilots tasked with carrying out these fly-outs are adequately experienced. They would be expected to be ~~type rating~~ instructor/examiner ~~(TRI/TRE)~~ qualified on the type, variant or a group of aircraft, as applicable, and should have experience of simulator evaluations carried out by the competent authority. The assignment of such pilots can present difficulties, particularly for ~~the~~ an independent organisation operating the FSTD~~s~~ not directly associated with an airline or an approved training organisation. It is vital for such ~~the~~ organisations to ensure that their users are aware of the importance of the fly-outs as part of the continued qualification of the device and the need to assist in the provision of suitably qualified pilots to carry them out. It is worth noting that simulator users are required to satisfy themselves that the training devices they use are assessed for continued suitability, as part of their own CMP. Involvement in fly-outs assists in meeting this need.

~~(z) ARINC 433 provides good guidance on FSTD compliance measurement. Metrics should monitor not only individual FSTD performance but, for larger organisations, how each FSTD is performing within the fleet. It is also recommended that metrics data be shared, regularly, with the FSTD manufacturers to allow monitoring for generic problems such as design issues, which may be best addressed with a fleet-wide solution.~~

GM3 ORA.FSTD.100 General

~~COMPLIANCE MONITORING~~ MANAGEMENT SYSTEM – GUIDANCE FOR ORGANISATIONS OPERATING FSTDs WHEN ~~TO~~ PREPARING~~E~~ FOR A COMPETENT AUTHORITY EVALUATION

(a) Introduction

The following material provides guidance on what is expected by the competent authorities to support the discussion during the preliminary briefing, which is ~~a~~ the first step of any initial or recurrent evaluation of an FSTD carried out by a competent authority.

This ~~document~~ material has been developed as well to standardise working methods throughout Member States and to develop effective CM spot checks to satisfy the applicable requirements and therefore to ensure the highest standards of training are attained.

At least seven days prior to the date of the planned evaluation, the organisation operating the FSTD should provide the competent authority with the dossiers for initial and recurrent evaluation as referred to in points (c) and (d).

[…]

(c) Contents of the dossier for an initial evaluation:

(1) FSTD capability signature (FCS) ~~type of FSTD and qualification level requested~~;

(2) evaluation agenda: including date of the evaluation, name of the people involved for the competent authority, contact details for the FSTD operator, schedules for the subjective flight profile, QTG rerun;

(3) FSTD identification and detailed technical specification including, type of FSTD, manufacturer, registration number, date of entry into service, host computer, visual system, motion system, type of IOS, simulated version(s), standards of all the aircraft computers, if applicable. ~~Manuals~~ Test documentation needed for an evaluation (e.g. flight manuals, system manuals, acceptance test manual, IOS user manual etc. – if applicable) could already be provided as part of the dossier in an electronic format;

(4) planned modifications;

(5) subjective open defect(s);

(6) airport visual databases including for each visual scene, name of the airport, IATA and ICAO codes, type of visual scene (specific or generic), additional capabilities (e.g. snow model, WGS 84 compliance, enhanced ground proximity warning system (EGPWS)); and

(7) QTG status: the list should include for each QTG test available the status of the tests following the FSTD operator and competent authority reviews.

(d) Contents of the dossier for a recurrent evaluation:

(1) type of FSTD and qualification level or FCS or assigned FCS, as applicable ~~requested~~;

(2) evaluation agenda, including date of the evaluation, name of the people involved for the competent authority, contact details for the operator, schedules for the subjective flight profile, QTG rerun and QTG review;

(3) FSTD identification, including type of FSTD, manufacturer, registration number, date of entry into service, host computer, visual system, motion system, type of IOS, simulated version(s), standards of all the aircraft computers, if applicable;

(4) status of items raised during the last evaluation and date of closure;

(5) ~~reliability data: training hours month by month during the past year, numbers of complaints mentioned in the technical log, training hours lost, availability rate~~ FSTD metrics to demonstrate the FSTD performance, use, and other characteristics as referred to in point ORA.FSTD.100(d);

(6) operational data: a list of FSTD users over the previous 12 months should be provided, with number of training hours;

(7) failure tabulation including categorisation of failures (by ATA chapter and Pareto diagram, ARINC classification);

(8) details of main failures leading to training interruption or multiple occurrences of some failures;

(9) hardware and/or software updates or changes since the last evaluation and planned hardware and/or software updates or changes;

(10) subjective open defect(s) and a list of all reported defects since the last evaluation or, in cases it is applicable, since the activities performed in accordance with point ORA.FSTD.225(b);

(11) airport visual databases including for each visual scene, name of the airport, ATA and ICAO codes, type of visual scene (specific or generic), additional capabilities (snow model, WGS 84 compliance, EGPWS);

(12) QTG status: the list should include for each QTG test available, the date of run during the past year, any comment, and the status of the tests; ~~and~~

(13) results of scheduled internal audits and additional quality inspections (if any) since last evaluation and a summary of actions taken;~~.~~

(14) current ESL revision number and revision date; and

(15) current software load reference.

AMC1 ORA.FSTD.100(a) General

MANAGEMENT SYSTEM – PERSONNEL IN SUPPORT OF AN INITIAL, RECURRENT OR SPECIAL EVALUATION

The following persons from the organisation operating the FSTD should be present to support the evaluation:

(a) a pilot with a valid class or type rating for the aircraft simulated, and with sufficient knowledge and flying experience on such aircraft, unless otherwise agreed with the competent authority; and

(b) FSTD support staff to assist in the running of tests and the operation of the instructor's station.

AMC1 ORA.FSTD.100(b) General

PROCEDURE FOR MANAGEMENT OF AN EQUIPMENT SPECIFICATION LIST (ESL)

The procedure for management of an equipment specification list (ESL) should be part of the management system of the organisation operating the FSTD and include at least the following:

(a) the position(s) of person(s) in the organisation operating the FSTD responsible for developing and maintaining the ESL;

(b) the method(s) for verification and validation of the entries in the ESL to comply with the requirements in point ORA.FSTD.120;

(c) the internal process for modifications in the ESL, including the configuration control management of the organisation;

(d) the notification process to the competent authorities in the event of a major modification which affects the ESL in accordance with point ORA.FSTD.110;

(e) how the organisation operating the FSTD ensures that the ESL is displayed and accessible for all FSTD users and authorities as referred to in point ORA.FSTD.115;

(f) documentation and record-keeping of the ESL in accordance with point ORA.FSTD.240.

AMC1 ORA.FSTD.100(c) General

CORRECTIVE-ACTION PLAN AND IMPLEMENTATION

(a) The corrective action plan should address the items raised by the competent authority following an evaluation, and should include:

(1) the correction of the items;

(2) the root cause analysis, in cases it is applicable;

(3) corrective and preventive action(s); and

(4) the time schedule to implement the actions.

(b) Depending on the items raised, the organisation may need to take immediate corrective action.

(c) The corrective action plan should be signed by the person nominated by the organisation operating the FSTD in accordance with point ORA.GEN.210(b) or his or her delegate.

GM1 ORA.FSTD.100(c) General

GENERAL

(a) Preventive action is the action to eliminate the cause of a potential non-compliance or other undesirable potential situation and prevent recurrence of an existing detected non-compliance or other undesirable condition or situation.

(b) Corrective action is the action to eliminate or mitigate the root cause(s) of a detected non-compliance.

(c) Correction is the action to eliminate a detected non-compliance.

ROOT CAUSE ANALYSIS

(d) The organisation operating the FSTD may perform a root cause analysis or use another appropriate tool to identify the root cause of the non-compliance. Proper determination of the root cause is crucial for defining effective corrective actions to prevent reoccurrence of the non-compliance on the FSTD.

(e) It is important that the analysis does not primarily focus on establishing who or what caused the non-compliance, but on why it was caused. Establishing the root cause(s) of a non-compliance often requires an overarching view of the circumstances that led to it, to identify all possible systematic and contributing factors (human factors, regulatory, organisational, technical factors, etc.) in addition to the direct factors.

(f) A narrow focus on single events or failures, or the use of a simple, linear model, such as a fault tree, to identify the chain of events that led to the non-compliance, may not properly reflect the complexity of the non-compliance, and therefore, there is a risk that important factors that must be considered to prevent reoccurrence will be ignored. Such an insufficient or partial root cause analysis often leads to applying 'quick fixes' that only address the symptoms of the non-compliance. A peer review of the results of the root cause analysis may increase its reliability and objectivity.

(g) The analysis should consider whether the non-compliance equally affects other FSTDs operated by the organisation.

AMC1 ORA.FSTD.100(d) General

FSTD PERFORMANCE METRICS

(a) The organisation operating the FSTD should systematically collect data to develop performance metrics and perform data analysis in order to do all the following:

(1) demonstrate the performance and use of each FSTD it operates, considering the number of the FSTDs and how an FSTD performs within the fleet, as applicable;

(2) assess how well an FSTD supports its intended use;

(3) identify recurring, systemic technical or operational issues, based on the results from the performance metrics for the preceding year(s); and

(4) take timely corrective or preventive actions as necessary.

(b) At least once per calendar year and in combination with the dossier as referred to in point (d) of GM3 ORA.FSTD.100, the organisation operating the FSTD should, for each FSTD it operates, provide the following performance metrics for the preceding year to the competent authority:

(1) 'Planned available time' defined as time, in hours, during which an FSTD is available to be used for training, testing and checking;

(2) 'Scheduled training time' defined as time, in hours, during which an FSTD is scheduled to deliver training, testing and checking;

(3) 'FSTD support time' defined as time, in hours, during which an FSTD is intentionally not available for training, testing and checking;

(4) 'FSTD downtime' defined as time, in hours, during which an FSTD is unavailable, regardless of the cause and contains:

(i) FSTD failure time, defined as time lost, in hours, during planned available time due to FSTD-specific failures;

(ii) external failure time, defined as time lost, in hours, during planned available time due to external factors;

(5) 'Lost training time' defined as the amount of scheduled training time, in hours, not delivered due to FSTD downtime;

(6) 'Number of FSTD discrepancies' determined as deviations from the expected behaviour or performance of the FSTD;

(7) 'Number of interruptions during scheduled training time' which is defined as unplanned events that temporarily suspend or disrupt an FSTD session, regardless of the completion of the session;

(8) 'FSTD availability' calculated as follows:
(Planned available time - FSTD downtime)/(Planned available time) * 100; and

(9) 'FSTD reliability' calculated as follows:
(Planned available time - FSTD failure Time)/(Planned available time) * 100

(c) The information related to the metrics should be available month by month and overall, for the preceding 12-month period.

(d) The organisation operating the FSTD should carry out an analysis of trends, based on the results from the performance metrics for at least the preceding 12-month period. Such information should be provided to the competent authority as part of the performance metrics to support the oversight process.

(e) The organisation operating the FSTD may develop and provide additional information or metrics to the competent authority, as appropriate, to demonstrate the performance and utilisation of the FSTD.

GM1 ORA.FSTD.100(d) General

FSTD PERFORMANCE METRICS

(a) Organisations should develop and maintain a consistent methodology to calculate and report performance metrics. These values are not only a means to demonstrate compliance with point ORA.FSTD.100(d) but also form part of the organisation's management system for ensuring continued FSTD performance. This data can also inform proactive maintenance decisions and support dialogue with FSTD users, FSTD providers and competent authorities.

(b) The performance metrics may be used by the organisation operating the FSTD to demonstrate to the competent authority:

(1) the performance of an FSTD to facilitate the competent authority's assessment on extension of the recurrent evaluation period of the FSTD;

(2) the effectiveness of its management system with regard to the FSTD operation and maintenance.

(c) For calculation of the metrics as referred to in point (b) of AMC1 ORA.FSTD.100(d), the following may serve as guidance:

(1) 'FSTD support time' may include the following times:

(i) out of service: closure of the training centre, scheduled out of service because of major update;

(ii) maintenance: preventative and corrective;

(iii) engineering: development, improvement of the FSTD;

(iv) regulatory: authority evaluation, QTG rerun, activities under point ORA.FSTD.225, fly-out;

(v) configuration: change of configuration, time between two FSTD sessions, etc.

(2) 'FSTD downtime' can be during scheduled training or even when the training is not impacted. This metric takes into account all events that could affect the availability of the FSTD.

(3) 'External failure time' is time lost during planned available time due to external factors such as facility related causes; operator/user causes; scheduling/logistical causes; environmental or external disruptions.

AMC1 ORA.FSTD.105(a)(1) Maintaining the FSTD qualification

MAINTAINING QUALIFICATION STANDARDS

(a) To ensure that the FSTD is maintained to the standard of the qualification basis, the organisation operating the FSTD should:

(1) establish a schedule of routine maintenance;

(2) provide training for maintenance personnel, relevant to their assigned tasks, for the ongoing maintenance of the FSTD, including areas critical to maintaining the qualification basis;

(3) ensure that a current technical log listing defects and their status is displayed and accessible to the competent authorities and that a list with open defects, related to the use of the FSTD in training, testing and checking and their status is available and accessible to the FSTD users;

(4) when a discrepancy or a defect to the FSTD is detected, investigate and implement action(s) to address and close the discrepancy or defect.

(b) The organisation should provide a form to the FSTD users to allow them to file any discrepancies identified during the use of the FSTD. The organisation should monitor for trends of discrepancies or defects to the FSTD(s) and take appropriate actions when necessary.

MAINTAINING QUALIFICATION STANDARDS — FUNCTIONAL PRE-FLIGHT CHECK

(c) To ensure the optimal condition of the FSTD and readiness for the day's training, the organisation operating the FSTD should:

(1) conduct a pre-flight check by appropriately qualified personnel that should do all the following:

(i) verify that all systems are inspected and fully operational and, in case of any discrepancies or defects, those are recorded, addressed or deferred, as appropriate;

(ii) verify that the correct configuration (hardware and software) is set for the intended training;

(iii) verify that the communication systems and safety equipment are in place and operational, and that emergency systems are available;

(2) maintain a detailed record of the pre-flight checks performed on the FSTD with information including date, time, individual conducting the check, specific configuration checked, and any discrepancies or defects found;

(3) provide training to the personnel responsible for conducting the pre-flight checks.

AMC1 ORA.FSTD.105(a)(2) Maintaining the FSTD qualification.

QUALIFICATION TEST GUIDE (QTG) PERIODIC TESTING – OBJECTIVE TESTS

(a) To conduct the objective tests of the FSTD as per the Master Qualification Test Guide (MQTG), the organisation operating the FSTD should:

(1) initiate the 12-month cycle from the end of the month in which the initial evaluation took place, unless another date is agreed with the competent authority;

(2) develop, document and implement a detailed testing plan in accordance with point (b) that aligns with the MQTG objective tests, and that specifies timelines and responsibilities; and

(3) implement tools and/or methods to assess the FSTDs performance and identify potential discrepancies during the objective testing.

(b) As a minimum, the QTG objective tests should be run progressively in at least four approximately equal blocks on an annual cycle. Each block of QTG tests should be chosen to provide coverage of the different types of objective tests, ensuring that each part represents an equivalent sampling of the entire MQTG document. Where objective tests require extensive set-up time for special equipment (e.g. force measurement equipment), the objective tests may be grouped.

(c) To ensure that results from the objective tests are appropriately analysed, evaluated and documented, the organisation operating the FSTD should:

(1) define and implement standard documentation practices for recording test results;

(2) establish a periodic review to assess the completeness and accuracy of the test records and result analysis.

AMC1 ORA.FSTD.105(a)(3) Maintaining the FSTD qualification

QUALIFICATION TEST GUIDE (QTG) PERIODIC TESTING – FUNCTIONS AND SUBJECTIVE TESTS

(a) To conduct the functions and subjective tests of the FSTD over the 24-month cycle, the organisation operating the FSTD should:

(1) initiate the 24-month cycle from the end of the month in which the initial qualification took place, unless another date is agreed with the competent authority;

(2) develop and document a detailed testing plan that:

(i) aligns with the MQTG functions and subjective tests and with FSTD equipment, specifications and capabilities, specified in the ESL; and

(ii) specifies timelines and responsibilities;

(3) determine which tests are applicable to each FSTD and perform these tests; (Note: further guidance on typical test profiles which are part of the functions and subjective tests is provided in GM1 ARA.FSTD.100(a);(b);(c));

(4) divide the functions and subjective tests described in the MQTG into a minimum of four approximately equal parts, ensuring that each part covers all the sections of the functions and subjective tests table in the applicable qualification basis;

(5) conduct the tests progressively, ensuring that all tests are completed over the course of 24 months (e.g. a quarter of tests every six months) and that the areas to be tested in each fly-out are selected so that no area is left untested over the 24-month period;

(6) conduct testing of an appropriate sample of malfunctions during the functions and subjective tests, to assess the impact of the malfunctions on affected features, systems, subsystems, components or parts; and

(7) implement tools and/or methods to assess the FSTD's performance and identify potential discrepancies during the functions and subjective testing.

(b) In each subsequent conduct of functions and subjective testing, the organisation should include additional malfunctions which have not been included in the previous samples.

(c) The organisation operating the FSTD should use aircraft flight manuals, pilot operating handbooks and checklists (normal, abnormal and emergency) that correspond to the FSTD to support the functions and subjective testing. These may be documents of the real aircraft. If the FSTD does not correspond to a real aircraft (e.g. the FSTD has generic fidelity level(s)), a manual/handbook should be created by the organisation operating the FSTD with details for operating procedures and description of the aircraft systems, including any limitations to support the training use.

AMC1 ORA.FSTD.105(a)(4) Maintaining the FSTD qualification

CONFIGURATION CONTROL — HARDWARE AND SOFTWARE

(a) To preserve the integrity of the FSTD's hardware and software used for training, the configuration control system should:

(1) implement a process that includes the assessment of potential impact of a modification to the FSTD; and

(2) provide traceability of the modifications performed on an FSTD to cover hardware and software, including firmware, ensuring that all modifications are documented and validated.

(b) The FSTD, as applicable, should be maintained in a configuration that accurately represents the aircraft being simulated. This may be a specific aircraft tail number or may be a representation of a common standard.

CONFIGURATION MANAGEMENT — DATABASE MANAGEMENT

(c) The organisation operating the FSTD should establish a process for maintaining, updating and validating all installed databases for each qualification certificate held, and should:

(1) identify and assess all databases relevant to FSTD capabilities, including visual model databases, navigational aids, declination, terrain, obstacles, terrain awareness warning systems, FMS/GNSS navigation database and other navigation-related aircraft databases;

(2) specify the required frequency of updates for each system and, in cases it is applicable, adhere to the frequency of updates for those databases which have specific update requirements stated by the database supplier;

(3) maintain configuration control records for each database update; and

(4) perform validation checks to confirm the functionality of the FSTD following database updates.

(d) When the organisation operating the FSTD declares a visual model used in training as representing a current real-world location and a permanent significant change is made to that location, the organisation should update the operating site and terrain model representing that location in a reasonable timeframe.

(e) The organisation operating the FSTD should keep the navigational data and the instrument charts used for training up to date in accordance with:

(1) when the FSTD 'Navigation (NAV)' feature has a fidelity level S, the aircraft update cycle (28-day cycle);

(2) when the FSTD 'Navigation (NAV)' feature has a fidelity level R, the same update cycle date as for the navigational data (maximum a three-month cycle);

(3) when the FSTD 'Navigation (NAV)' feature has a fidelity level G, the same update cycle date as for the navigational data.

(f) In case of a legacy FSTD, the organisation operating the FSTD should follow the applicable primary reference document (PRD) for the frequency of the updates of the database systems.

(g) Any aeronautical charts associated with navigation aids which are not required to be kept up to date should be annotated with the text 'For FSTD training use only'.

AMC1 ORA.FSTD.110 Management of ~~M~~modifications

GENERAL

(a) The written application for a modification, including the relevant documentation, such as extracts from the QTG or the amended ESL, as applicable, should be submitted in a format and manner specified by the competent authority. This application should be submitted no later than 30 days before the date of intended change, unless otherwise agreed with the competent authority.(~~a~~) ~~The FSTD, where applicable, should be maintained in a configuration that accurately represents the aircraft being simulated. This may be a specific aircraft tail number or may be a representation of a common standard.~~

(b) Users of the device should always establish a differences list for any device they intend to use, and to identify how any differences should be covered in training. In order to ensure that each device is maintained in the appropriate configuration, the organisation operating ~~an~~ the FSTD should have a system that ensures that all relevant airworthiness directives (ADs) are introduced ~~where~~ in cases they are applicable ~~on~~ to affected FSTDs.

(c) ~~ADs from both the State of Design of the aircraft and the State where the FSTD is located should be monitored. ADs from the State of Design of an aircraft are usually automatically applicable, unless specifically varied by the aircraft's State of Registry.~~

ADs from the following sources should be monitored:

(1) the State of Design of the aircraft;

(2) either of the following, as applicable:

(i) EASA, when the FSTD was qualified by EASA; or

(ii) the State whose competent authority qualified the FSTD; and

(3) the State where the FSTD is located.

ADs from the State of Design of an aircraft are usually automatically applicable, unless specifically varied by the aircraft's State of Registry.

(d) Where appropriate, ADs issued by States where users of the device have aircraft registered should also be monitored. In addition to ADs, the FSTD operator should also put in place processes that ensure that all aircraft modifications are reviewed for any effect on training, testing and checking. This can be achieved by reviewing the aircraft manufacturer's service bulletins and may require a specific link to the aircraft manufacturer to be developed. In practice this link is often established through aircraft operators ~~who~~ that use the device.

~~(e) Organisations operating FSTDs should notify the competent authority of major changes.~~

~~(f) This does not imply that the competent authority will always wish to directly evaluate the change. The competent authority should be mindful of the potential burden placed on the organisation by a special evaluation and should always consider that burden when deciding if such an evaluation is necessary.~~

(~~g~~e) The organisation operating the FSTDs should have an internal acceptance process for modifications, to be used when implementing all modifications, even if the competent authority has made a decision to carry out an evaluation.

(f) Before applying for a major modification to an FSTD with assigned FCS or implementing such modification based on the approved procedure in accordance with point ORA.FSTD.110(b)(2), the organisation should:

(1) assess the impact of that modification on the compliance of the FSTD with its original qualification basis; and

(2) decide to apply for:

(i) a major modification of the FSTD while maintaining the assigned FCS of the FSTD; or

(ii) an FSTD qualification to obtain an FCS, using the applicable qualification basis at the time of application for that major modification.

(g) Unless the organisation is entitled to act in accordance with point ORA.FSTD.110(b)(2), it should apply for a major modification as follows:

(1) in the case of a major modification as per point (f)(2)(i), using the original qualification basis of the FSTD with assigned FCS (Note: In that case, the organisation should be aware that the FSTD maintains the same assigned FCS in accordance with Appendix IX to Annex VI (Part-ARA), even though the FSTD may exceed the minimum requirements in the original qualification basis.); or

(2) in the case of a major modification as per point (f)(2)(ii), using the applicable qualification basis at the time of application for that major modification.

GM1 ORA.FSTD.110 Management of ~~M~~modifications

(a) EXAMPLES OF MAJOR MODIFICATIONS

The following are examples of modifications that should be considered as major. This list is not exhaustive and modifications need to be classified on a case-by-case basis:

~~(a) any change that affects the QTG;~~

~~(b) introduction of new standards of equipment such as flight management and guidance computer (FMGC) and updated aerodynamic data packages;~~

~~(c) re-hosting of the FSTD software;~~

~~(d) introduction of features that model new training scenarios; e.g. airborne collision avoidance system (ACAS), EGPWS;~~

~~(e) aircraft modifications that could affect the FSTD qualification; and~~

~~(f) FSTD hardware or software modifications that could affect the handling qualities, performance or system representation.~~

(1) any change affecting the FCS or assigned FCS;

(2) any modifications to the software or hardware that impact the flight or ground handling characteristics;

(3) any modification to the motion, visual, sound or control loading software or hardware that is intended to impact the FSTD performance and handling;

(4) any re-baselining of MQTG tests as a result of points (2) and (3) above;

(5) any modifications of the visual system which may affect the QTG results, such as the display hardware, mounting bracketry, replacement mylar or mirrors, projector model changes or image generator hardware/software changes;

(6) new design features on the aircraft (e.g. installation of a head-up display (HUD));

(7) new avionics features;

(8) additional options for a different engine (types/ratings);

(9) updated validation data roadmap (VDR);

(10) any change in the ESL which affects training, testing and checking;

(11) additional functionality on the aircraft or aircraft operations that require additional validation of the source data (e.g. auto-brakes with RTO; going from no auto-land capability to an auto-land capability);

(12) new equipment (e.g. use of EVS, NVG);

(13) an extension of the training envelope that requires new validation source data, or extension of its scope (e.g. UPRT, stall training, helicopter external sling load operations);

(14) integration of new host computer(s);

(15) IOS hardware/software updates;

(16) integration of new technology in the visual, motion, controls or vibration systems;

(17) relocation and any de-activation/re-activation of an FSTD.

(b) EXAMPLES OF NON-MAJOR MODIFICATIONS

The following are examples of modifications that should be considered as non-major. This list is not exhaustive and modifications need to be classified on a case-by-case basis:

(1) navigation databases (including FMS, ground station, RDB, GPS Almanac);

(2) terrain and obstacle databases;

(3) update, addition or removal of visual models;

(4) control loading tuning, when necessary to comply with the MQTG baseline;

(5) motion and vibration tuning, when necessary to comply with the MQTG baseline;

(6) cosmetic/text changes to the MQTG;

(7) lesson plans;

(8) debriefing stations.

AMC1 ORA.FSTD.110(a) Management of modifications

FSTD RELOCATION

When FSTD relocation is considered, the organisation should inform the competent authority before the planned activity and provide a testing plan to ensure that the FSTD still continues to perform in accordance with its qualification basis after being reinstalled. The testing plan should be commensurate with the complexity of the FSTD and the level of FSTD deconstruction and subsequent reconstruction. Unless otherwise agreed with the competent authority, the organisation should perform at least one third of the objective tests, functions and subjective tests to ensure that the FSTD performance meets its original qualification basis.

AMC1 ORA.FSTD.110(b)(2) Management of modifications

MANAGEMENT OF A MAJOR MODIFICATION WITHOUT PRIOR APPROVAL

(a) When the organisation operating the FSTD implements a major modification in accordance with point ORA.FSTD.110(b)(2), it should clearly define lines of responsibility for the implementation of the modification.

(b) The procedure referred to in point ORA.FSTD.110(b)(2) should be part of the organisation's management system and include at the least all the following:

(1) the modification without prior approval should be part of the configuration control management of the organisation;

(2) the depth of the acceptance tests should be adapted to the nature of the modification and the impact on the qualified FSTD;

(3) the assigned personnel for internal acceptance of the modification should be suitably trained and qualified;

(4) the competent authority should be informed of the modification with the declaration of compliance as referred to in AMC1 ORA.FSTD.110(c)(4);

(5) the modification should be accurately documented and archived in accordance with point ORA.FSTD.240 and should be available on request by the competent authority.

(c) The personnel assigned to perform internal acceptance tests as referred to in point (b)(3) should possess the following qualification:

(1) knowledge and relevant experience in the areas appropriate to their role and in the areas impacted by the modification;

(2) proven record of managing similar major modifications to the scope and complexity of the modification being undertaken;

(3) experience in verification of modifications, including, but not limited to, test reports, engineering analysis, QTG tests and calibration records;

(4) experience in validation of modifications, including, but not limited to, pilot evaluations, subject matter expert assessments and validation reports.

AMC1 ORA.FSTD.110(c)(4) Management of modifications

DECLARATION OF COMPLIANCE TO THE COMPETENT AUTHORITY

(a) The organisation operating the FSTD should submit to the competent authority a declaration of compliance in case of a major modification to an FSTD performed in accordance with point ORA.FSTD.110(b).

(b) The declaration of compliance should be sent no later than three days after the final acceptance of the modification has been performed.

(c) The declaration of compliance should follow the below template:

(Date) ……

FSTD ID number

Scope of the major modification: …….

Date of modification completion:

The modification is implemented based on:

☐ an approval by the competent authority (point ORA.FSTD.110(b)(1))

☐ a procedure approved by the competent authority (point ORA.FSTD.110(b)(2))

The FSTD has been assessed by the following evaluation team:

(Name)…… Pilot's licence No, qualification/experience: ……

(Name)…… FSTD technical specialist's qualification/experience ……

The organisation operating the FSTD declares that the major modification has been performed according to the applicable requirements. The tests performed demonstrate that, following the modification, the FSTD complies with its qualification basis and the applicable requirements, and that the modification has no negative impact on the use of the FSTD.

A change of the current FSTD qualification certificate is necessary: ☐ YES ☐ NO

The ESL has been updated based on the modification ☐ YES ☐ NO

The corresponding documentation to the modification is attached.

(Additional comments as required)
.....
.....
.....

Name and signature of the person of the organisation operating the FSTD nominated in accordance with point ORA.GEN.210(b) or delegate	
Email	
Telephone	

AMC1 ORA.FSTD.115 Installations

MINIMUM ELEMENTS FOR SAFE OPERATION

(a) Introduction

~~(1)~~ This AMC identifies those elements that are expected to be addressed, as a minimum, to ensure that the FSTD installation provides a safe environment for the users and operators of the FSTD under all circumstances. The organisation operating the FSTD should:

(1) provide all occupants in the FSTD with safety instructions specific to the device; and

(2) perform regular checks on the FSTD safety features.

(b) Expected elements

(1) Adequate fire/smoke detection, warning and suppression arrangements should be provided to ensure safety ~~passage of personnel from the FSTD~~ of the FSTD users.

(2) Adequate protection should be provided against electrical, mechanical, hydraulic and pneumatic hazards, including those arising from the control loading and motion systems, to ensure maximum safety of all persons in the vicinity of and inside the FSTD.

(3) Other areas that should be addressed include the following:

(i) a two-way communication system that remains operational in the event of a total power and network failure;

(ii) emergency lighting of FSTD and building;

(iii) escape exits and escape routes properly identified and that remain visible in low-visibility conditions (power failure, smoke, etc.);

(iv) occupant restraints (seats, seat belts, etc.);

(v) external warning of motion and access ramp or stairs activity;

(vi) danger area markings;

(vii) guard rails and gates;

(viii) ~~motion and control loading~~ emergency ~~stop~~ power-off controls ~~accessible from either pilot or instructor seats~~;

(ix) a manual or automatic electrical power isolation switch.;

(ix) motion and control loading cut-off accessible from both pilot seats and the instructor seat;

(xi) alternative emergency egress method.

GM1 ORA.FSTD.115 Installations

GENERAL

(a) The intent of point ORA.FSTD.115 is to establish that the organisation operating ~~an~~ the FSTD has all the necessary procedures in place to ensure that the FSTD installation remains in compliance with all requirements affecting the safety of the device and its users.

~~(b) Based on experience, the competent authority should pay particular attention to the quality of safety briefings on the FSTD provided to users and instructors, and to the execution of regular checks on the FSTD safety features.~~

(~~c~~) ~~It is recognised that certain checks, such as that of the emergency stop, can have adverse impact on the FSTD if carried out in full.~~

(~~d~~b) It is recognised that certain checks, such as that of the emergency stop, can have adverse impact on the FSTD if carried out in full. It is acceptable to develop a procedure that protects elements of the device by shutting them down in advance, in a more controlled manner, provided it can be shown that the procedure still demonstrates that the whole device can be shut down by the operation of a single emergency stop button, when required.

GM2 ORA.FSTD.115 Installations

RECOMMENDED SAFETY FEATURES

The following FSTD-specific and facility and environmental safety features may be considered to support safe installation and operation of the FSTD:

(a) The access ramp or stairs:

(1) are equipped with a back-up system to ensure operations during a building power failure;
(2) have a safety interlock that inhibit the motion system if the ramp is extended;

(3) are inhibited if the motion system is operating or is not in the rest position;

(b) The gate on the FSTD has an interlock to lock the gate when the ramp or stairs are raised.

(c) Alternative evacuation paths are available if the main exit door is unusable, or the access ramp or stairs are unusable.

(d) Escape route indicators are clearly marked on floors and walls, including from access ramps and emergency ladders.

(e) Audible alarms from the building's fire/smoke system are perceivable within the FSTD or indicated via alternative means such as a warning indicator. Fire safety systems may be installed to detect indicators of potential fire hazards.

(f) Emergency pathways are maintained free of obstacles and are clearly marked. The emergency exits lead to outward-opening doors and are equipped with push bars.

(g) An overview map of safety features is posted within the facility, including emergency exits. First aid kits are clearly identified and placed appropriately.

(h) The facilities are maintained for stable and controlled conditions, including appropriate temperatures, humidity levels and noise.

(i) The floors are intact and clean (no holes, leakages, irregularities, wrongly positioned cables or pipes or dirt that can endanger personnel).

(j) The restricted areas (e.g. computer rooms, hydraulic/pneumatic systems, spares, labs) are clearly identified to deter unauthorised access.

AMC1 ORA.FSTD.115(a)(4) Installations

AVAILABILITY AND ACCESSIBILITY OF FSTD DOCUMENTS

To comply with point ORA.FSTD.115(a)(4), the organisation operating the FSTD may display and make accessible the following documents, either in a hard copy or in electronic format in the proximity of the FSTD:

(a) the FSTD qualification certificate; and

(b) the ESL.

AMC1 ORA.FSTD.120 Equipment specification list

OVERVIEW OF AN EQUIPMENT SPECIFICATION LIST

(a) The ESL should include complete information regarding the FSTD in terms of simulated aircraft make, model, series, engines, avionics, flight controls systems, flight instruments, radio communications, navigation systems, electronic flight bag, and any other installed equipment.

(b) The ESL is a summary of the capabilities and technical details of the FSTD and provides information to FSTD users (training organisations, AOC holders, examiners, others) to determine the adequacy of the FSTD for the intended training, testing or checking. The ESL should be sufficiently detailed to allow:

(1) the FSTD users to determine the suitability of the FSTD for training, testing and checking, and to define where the real aircraft may differ from the aircraft simulated by the FSTD;

(2) the competent authority to review the ESL compliance with point ORA.FSTD.120 during the evaluations of the FSTD.

(c) The organisation operating the FSTD should verify and validate each entry (equipment, capabilities, specifications) of the ESL. Each entry is a declaration that the feature/equipment or capability has been fully tested and complies with its qualification basis:

(1) during the acceptance testing prior to the initial evaluation in accordance with the management system of the organisation; and

(2) on an ongoing basis in accordance with point ORA.FSTD.105.

(d) All applicable equipment and any features necessary to support each approach capability should be validated prior to inclusion in the ESL (e.g. visual scene content, FMS capabilities, installed aircraft equipment, terrain databases (validity and coverage), terrain feedback and navigation aids).

(e) Maintaining the ESL should include measures to update it to accurately represent the installed equipment, capabilities and specifications at all times. The ESL should be subject to management of modifications in accordance with point ORA.FSTD.110.

(f) The organisation operating the FSTD should sufficiently describe in the ESL the databases available for training, testing or checking (i.e. type of database, name and coverage area). Database revisions (such as visual database/models, regular AIRAC-28 cycle updates to FMS or GNSS receiver, obstacle, terrain database, etc.) do not need to be included in the ESL, unless they are significant to the operation or functionality of the FSTD or relevant to the users.

(g) For each entry made in the ESL, any associated limitation should be stated together with that entry.

AMC2 ORA.FSTD.120 Equipment specification list

ESL TEMPLATE

Equipment specification list (ESL)

Section 1: Organisation operating the FSTD	
Name of the organisation operating the FSTD	
Address:	
City/State:	
Country:	
Postcode/ZIP:	
FSTD location:	
Section 2: FSTD information	

	1.FDK	2.CLH	3.CLO	4.SYS	5.GND	6.IGE	7.OGE	8.SND	9.VIB	10.MTN	11.VIS	12.NAV	13.ATM	14.OST
FSTD capability signature (FCS)/assigned FCS														

FSTD type/level (only for a legacy FSTD)	
FSTD serial number:	
FSTD ID:	
Organisation's FSTD ID:	
Primary reference document (Additional refence documents, if applicable) :	
FSTD manufacturer:	
Year of manufacture:	
Validation data roadmap:	
Multi-crew cooperation (MCC), if applicable	

Section 2 **Feature 1: Flight deck layout and structure (FDK)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 2: Flight control forces and hardware (CLH)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 3: Flight control systems operation (CLO)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 4: Aircraft systems (SYS)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 5: Performance and handling on ground (GND)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 6: Performance and handling in-ground effect (IGE)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*

Section 2 **Feature 7: Performance and handling out-of-ground effect (OGE)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 8: Sound cueing (SND)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 9: Vibration cueing (VIB)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 10: Motion cueing (MTN)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 11: Visual cueing (VIS)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 12: Navigation (NAV)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 13: Atmosphere and weather (ATM)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 2 **Feature 14: Operating sites and terrain (OST)**	*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*
Section 3: Miscellaneous	

[The organisation operating the FSTD] declares that the information contained in this document corresponds to the configuration of the FSTD and that all the information in this ESL is accurate and comprehensive regarding the FSTD qualification basis, equipment, capabilities and specifications.
Name, date and signature of the person of the organisation operating the FSTDs nominated in accordance with point ORA.GEN.210(b) or his or her delegate:

Section 4: *[FSTD ID]: [ESL Revision date], [ESL revision number]:*			
Name and signature of the person of the organisation operating the FSTD nominated in accordance with point ORA.GEN.210(b) or delegate:		Date:	

AMC3 ORA.FSTD.120 Equipment specification list

INSTRUCTIONS FOR ESL COMPLETION

(a) The ESL should include the following information in each section as referred to in the table below.

Table: Instructions for completion of ESL per section

ESL section reference	Content of the section
Section 1 'Organisation operating the FSTD'	Name of the organisation operating the FSTD and its principal place of business address
	FSTD location address
Section 2 'FSTD information'	(i) Indication of the FCS or assigned FCS for an FSTD with FCS or with assigned FCS; or (ii) FSTD type/level for a legacy FSTD.
	FSTD serial number
	FSTD identification number (ID)
	Organisation's FSTD ID
	Primary reference document and additional refence documents, if applicable
	FSTD manufacturer
	Year of manufacture
	Validation data roadmap (VDR) (number, VDR version/revision, date)
	Indication whether the FSTD has a multi-crew cooperation (MCC) capability, when applicable

ESL section reference	Content of the section
Section 2 Feature 1: Flight deck layout and structure (FDK)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N)(or leave blank for a legacy FSTD]*', for the 'FDK' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD.
	Summary of the following: - FSTD; - simulated aircraft type, variant (make, model, series) or group of aircraft; - arrangement of equipment, covering the entire flight deck (e.g. enclosure, windows, lighting, seating); and - aircraft system interfaces (e.g. panels, switches, buttons)
	Description of the flight deck including, in cases it is applicable, elements which are touchscreen representations of flight deck equipment or interfaces
	For an FSTD with FCS, where the flight deck has differences in fidelity levels across flight deck representation or aircraft system interfaces (e.g. panels, switches, buttons), identification of: (i) any omitted system interfaces, or any non-interactive representations used in place of functional elements used; and (ii) any fidelity differences across cockpit panels and consoles.
	Maximum take-off weight (MTOW), maximum landing weight (MLW), in cases it is applicable
Section 2 Feature 2: Flight control forces and hardware (CLH)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'CLH' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD. Note: If the feature CLH reflects flight controls at different fidelity levels, the highest fidelity level is entered for the feature CLH and marked with an asterisk (*). A remark should be added that not all flight control forces and hardware are simulated and/or at the same fidelity level.
	In cases it is applicable, identification of each flight control not meeting the highest fidelity level of the feature CLH and description of the actual fidelity level of such flight control

ESL section reference	Content of the section
	Note: For FSTDs with assigned FCS, list with identification of flight control forces and hardware which are type-specific and generic
	List and description of the installed primary flight controls, e.g. whether their forces change with flight conditions such as configuration or airspeed, and, at a generic level, whether they are reversible or irreversible.
	List and description of the installed flight controls other than the primary ones, e.g. which of them use hardware or touchscreens
	Information about aircraft make/model/series, version/revision of the equipment, as applicable
Section 2 Feature 3: Flight control systems operation (CLO)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'CLO' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for legacy FSTD.
	Description of the flight control system operation, including a high-level overview (e.g. for type-specific: the simulated aircraft variant and flight control data revision; for generic: whether the system is conventional or fly-by-wire) and what is simulated (e.g. for type-specific: the flight control data revision; for generic fly-by-wire systems: details on simulated system operation modes and flight and manoeuvre envelope protection functions).
Section 2 Feature 4: Aircraft systems (SYS)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'SYS' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD. Note: In cases the feature SYS reflects aircraft systems that are at different fidelity levels or may be not installed at all, the highest fidelity level is entered for the feature SYS and marked with an asterisk (*). A remark should be added that not all aircraft systems are simulated and/or at the same fidelity level.
	A list of all installed aircraft systems The information can be structured according to the applicable Air Transport Association (ATA) chapters if deemed beneficial.
	Where applicable, identification of each aircraft system not meeting the highest fidelity level of the feature SYS and description of the actual fidelity level of such system

ESL section reference	Content of the section
	Note: For FSTDs with assigned FCS, list with identification of aircraft systems which are type-specific and generic
	Summary of avionics system versions and the fidelity level For the generic aircraft systems, adequate information should be provided on the simulated characteristics and capabilities (e.g. modes of an autopilot system). For the aircraft systems simulating a certain aircraft type, part or system version, the simulated system should be identified by using, for example, 'part number' or 'revision'. The provided information should enable users to verify whether the simulated system configuration corresponds to a particular aircraft standard or modification state (e.g. as required by an airworthiness directive or service bulletin), as identified by the relevant revision or part number.
	Identification of the OEM reference documentation (e.g. AFM, RFM, pilot's operating handbook, FCOM, etc.), including the applicable revision, for any modelled aircraft system based on such documentation. This is particularly necessary where the simulated aircraft is based upon a specific tail number or does not correspond to the latest revision of the OEM documentation
	Identification of approach capabilities (i) If an approach capability has lowered minima declared, due to the use of some special equipment, that equipment should also be specified in support of the declaration (e.g. CAT III RVR 75m - No DH because of HUD/HUGS/PVD/EVS, etc.) (ii) If any approach capability is limited to a particular airport/approach, that limitation should be included, e.g. RNP AR APCH 'Limited to VNKT RNP Z RWY 02 (AR)'. (iii) If an approach capability is declared without any known limitation, it is assumed that the capability can be demonstrated and used at all operating sites without limitation. This should be substantiated by appropriate sample testing described in the organisation's management system. (iv) Any additional PBN capabilities can be mentioned (e.g. 'Oceanic L1 RNP 4') if supporting features and equipment have been validated to support those capabilities.
Section 2 Feature 5: Performance	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'GND' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or

ESL section reference	Content of the section
and handling on ground (GND)	(ii) to be left blank for a legacy FSTD.
	Description of the simulated aircraft and model (type and variant, type or group of aircraft), including any applicable limitations (e.g. differences, having an impact on training, testing or checking, between the simulation and the simulated aircraft)
Section 2 Feature 6: Performance and handling in-ground effect (IGE)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'IGE' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD.
	Description of the simulated aircraft and model (type and variant, type or group of aircraft), including any applicable limitations (e.g. differences, having an impact on training, testing or checking, between the simulation and the simulated aircraft)
Section 2 Feature 7: Performance and handling out-of-ground effect (OGE)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'OGE' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD.
	Description of the simulated aircraft and model (type and variant, type or group of aircraft), including any applicable limitations (e.g. differences, having an impact on training, testing or checking, between the simulation and the simulated aircraft)
	Identification whether the FSTD is approved for approach to stall or full/post stall and any information or limitations relating to UPRT specifics
section 2 Feature 8: Sound cueing (SND)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'SND' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD.
	Source of the simulation model (simulated aircraft type, variant or group of aircraft), data/revision where applicable and a basic hardware description

ESL section reference	Content of the section
Section 2 Feature 9: Vibration cueing (VIB)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'VIB' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD.
	Source of the simulation model (simulated aircraft type, variant or group of aircraft), data/revision and degrees of freedom if a separate vibration platform/seat is installed
Section 2 Feature 10: Motion cueing (MTN)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'MTN' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD.
	Technology used, the revision of the model data, degrees of freedom, motion type and stroke length, as applicable
Section 2 Feature 11: Visual cueing (VIS)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'VIS' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD.
	Display type (e.g. collimated film, collimated mirror, 10 ft Dome, etc.), field of view, projector technology, and any other attributes of the visual system or specific capabilities Note: The contents of the visual databases/models should not be included under this feature (See feature OST below).
Section 2 Feature 12: Navigation (NAV)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'NAV' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD.
	Coverage of geographical areas where navigation aids are simulated; List of simulated navigation aids (e.g. GNSS, SBAS, VOR, DME); Update frequency along with any known limitations to the use of the FSTD (e.g. 'Navaid coverage only accurate within 25 nm of specified airport model')

ESL section reference	Content of the section
Section 2 Feature 13: Atmosphere and weather (ATM)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'ATM' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD.
	All environment-related capabilities of the device, useful to the users of the device, paying attention to any peculiarities of the FSTD
	Summary regarding the icing model, based on the statement of justification/statement of compliance, described in the MQTG
	Runway contaminants, if applicable
Section 2 Feature 14: Operating sites and terrain (OST)	In the cell that contains the instruction '*[Indicate the fidelity level (S, R, G or N) or leave blank for a legacy FSTD]*', for the 'OST' feature: (i) indication of the applicable fidelity level (S, R, G, N) for an FSTD with FCS or with assigned FCS; or (ii) to be left blank for a legacy FSTD.
	List of installed visual databases including specific capabilities Visual database revision numbers should not be included on the ESL. The ESL should not require a new revision when a visual database is replaced or removed. The addition of a new visual database or a visual model should only warrant an update to the ESL if a new or amended capability is being declared. This would generally be visual databases which would be used to support a specific training scenario.
Section 3 'Miscellaneous'	Any other information useful to the users of the device which is not tied to any of the above features. Such information may include but is not limited to: (i) the 'Malfunction document' revision should be specified to ensure that all users use the most up-to-date document. If a system is in place for update of the malfunction document and this necessitates regular updates of the ESL, such updates of the ESL can be omitted, but an alternative method of keeping all users informed should be employed. A similar approach could be taken to the instructor operating station (IOS) user manuals or other relevant documents; (ii) any additional capabilities (e.g. debriefing tools, lesson plan tools); (iii) SATCE and its available real-time exercise scenarios, if such capability is simulated on the FSTD. The capability and equipment,

ESL section reference	Content of the section
	supporting the SATCE may be listed in the ESL provided that it is indicated as additional equipment as referred to point ORA.FSTD.120(d) outside the scope of the FSTD qualification.

(b) For each capability entered in the ESL, the organisation operating the FSTD should specify, for each affected FSTD feature, the equipment and systems that support the validation of that capability. For readability of the ESL, these may be summarised as a single entry under the feature that is most appropriate for the capability.

A capability should only be entered in the ESL, when all elements required to support that capability have been validated by the organisation operating the FSTD. Entering a capability in the ESL is a declaration that its validation has been completed.

Example 1: Simulation of an RNP AR APCH is supported by the FSTD features 'Operating sites and Terrain' for the visual scene and terrain modelling, 'Aircraft systems' for the aircraft's approach and navigation capabilities, 'Navigation' for the simulation of navigation aids, and 'Visual cueing' for the image display qualities. To enter an RNP AR APCH in the ESL, all of these elements should be validated and referenced in the ESL entry.

Example 2: Simulation of runway contaminant (e.g. snow on the runway) is supported by the FSTD features 'Atmosphere and weather' for the environmental controls, 'Performance and handling on ground' for the stopping and directional performance and handling characteristics, 'Operating sites and Terrain' for the visual presentation of the runway contaminant, and 'Visual cueing' for the image display qualities. To enter runway contaminant in the ESL, all of these elements should be validated and referenced in the ESL entry.

(c) Information about aircraft make/model, version/revision of the equipment under each feature should be included, if relevant for the applicable feature.

(d) Where the ESL refers to a group of aircraft, it should specify the group with sufficient detail (e.g. jet aeroplanes with swept wings) to facilitate understanding of the expected performance and handling qualities. This is of particular importance for the FSTD features 'GND', 'IGE' and 'OGE'.

(e) If the feature is not installed, functional or available, the feature is considered to have fidelity level 'N' and it is not necessary for the ESL to provide information for that feature.

(f) The ESL should only include entries for capabilities which exist in the FSTD. It is not necessary to enter a capability, followed by the word – 'No' or 'N/A'.

(g) Equipment as referred to point ORA.FSTD.120(d) may be listed in the ESL provided that it is clearly indicated as additional equipment outside the scope of the FSTD qualification.

(h) The ESL should be signed by the person of the organisation operating the FSTD nominated in accordance with point ORA.GEN.210(b) or his or her delegate.

SECTION II – REQUIREMENTS FOR THE QUALIFICATION OF FSTDS

AMC1 ORA.FSTD.200 Application for FSTD qualification

LETTER OF APPLICATION FOR INITIAL QUALIFICATION OF AN FSTD~~; EXCEPT BASIC INSTRUMENT TRAINING DEVICE (BITD)~~

~~A sample of letter of application is provided overleaf.~~

Part A Initial application form

~~To be submitted not less than 3 months prior to requested qualification date~~

(Date)

~~(Office – Competent Authority)~~

~~(Address) .....~~

~~(City) .....~~

~~(Country) .....~~

~~Type of FSTD~~	~~Aircraft Type/class~~	~~Qualification Level Sought~~				
~~Full Flight Simulator FFS~~		~~A~~	~~B~~	~~C~~	~~D~~	~~Sp./Cat~~
~~Flight Training Device FTD~~		~~1~~	~~2~~	~~3~~		
~~Flight and Navigation Procedures Trainer FNPT~~		~~I~~	~~II~~	~~III~~	~~II MCC~~	~~III MCC~~

~~Interim Qualification Level requested: YES/NO~~

General	
Group of aircraft/type/type and variant	
☐ Aeroplane	☐ Interim
☐ Helicopter	☐ MCC
☐ Other (please specify)	☐ UPRT *(please indicate whether it is 'approach to stall' or 'full/post stall')*

	FSTD FEATURE	FIDELITY LEVEL	SIMULATED AIRCRAFT
1.	Flight deck layout and structure (FDK)		
2.	Flight control forces and hardware (CLH)		
3.	Flight control systems operation (CLO)		
4.	Aircraft systems (SYS)		
5.	Performance and handling on ground (GND)		

6.	Performance and handling in-ground effect (IGE)		
7.	Performance and handling out-of-ground effect (OGE)		
8.	Sound cueing (SND)		
9.	Vibration cueing (VIB)		
10	Motion cueing (MTN)		
11	Visual cueing (VIS)		
12	Navigation (NAV)		
13	Atmosphere and weather (ATM)		
14	Operating sites and terrain (OST)		

To whom it may concern,

~~Dear,~~

<*Name of Applicant*> requests the evaluation of its flight simulation training device <*operator's identification of the FSTD*> for qualification. The FSTD has been manufactured by <*FSTD manufacturer's name*> ~~FSTD with its~~ and is equipped with a<*visual system and manufacturer's name, if applicable*> visual system and <*motion system and manufacturer's name, if applicable*> motion system.

The organisation operating the FSTD declares that the FSTD complies with all the applicable requirements of CS-FSTD <*specify the applicable version of CS-FSTD at the time of application*> for the requested FCS.

The QTG was/will be run on <*date(s)*> at <*place*>.

~~Evaluation is requested for the following configurations and engine fits as applicable:~~
~~e.g. 767 PW/GE and 757RR~~
~~1.....~~
~~2.....~~
~~3.....~~

Evaluation is requested for the following: (list all configurations, avionics, engine fits as applicable)	
1	
2	
3	

Dates requested are: <*date(s)*> and the FSTD will be located at <*place*>.

~~The objective tests of the QTG will be submitted by <*date*> and in any event not less than 30 days before the requested evaluation date unless otherwise agreed with the competent authority.~~
Part B of the application, including the QTG, the validation data roadmap and the engineering report will be submitted within the period specified in point (g) of AMC2 ORA.FSTD.200.

~~Comments:~~
~~.....~~
~~.....~~

Additional information and comments

Signed
……

~~Print name: ……~~
~~Position/appointment held: ……~~
~~Email address: ……~~
~~Telephone number: ……~~

Name of the person of the organisation operating the FSTD nominated in accordance with point ORA.GEN.210(b) or delegate	
Email	
Telephone	

LETTER OF APPLICATION FOR INITIAL QUALIFICATION OF AN FSTD
Part B — Declaration that the organisation operating the FSTD has performed all required objective tests of the FSTD and meets the criteria in the applicable qualification basis
(To be completed with the attached QTG ~~results~~)

(Date) ……

We have completed all objective tests of the FSTD and declare that it meets all applicable requirements except as noted below.
~~The following QTG tests still have to be provided:~~

~~Tests~~	~~Comments~~

The following tests still need to be completed:	
Test ID	Comment

~~(Add boxes as required)~~

It is expected that ~~they~~ the tests referred to in the previous table will be completed and submitted ~~3~~ three weeks prior to the evaluation date.

For the following tests which deviate from the requirements, we provide the following rationale:	
Test ID	Comment

Signed

……..

~~Print name: ……..~~
~~Position/appointment held: ……..~~
~~E-mail address: ……..~~
~~Telephone number: ……..~~

Name of the person of the organisation operating the FSTD nominated in accordance with point ORA.GEN.210(b) or delegate	
Email	
Telephone	

LETTER OF APPLICATION FOR INITIAL QUALIFICATION OF AN FSTD

Part C — Declaration indicating that all objective tests, functions and subjective tests have been completed and the general requirements for the requested FCS have been met and the FSTD complies with the applicable requirements and with the simulated aircraft or group of aircraft as appropriate for each FSTD feature

~~To be completed not less than 7 days prior to initial evaluation~~

(Date) ……

The FSTD has been assessed by the following evaluation team:

~~(Name) …… Qualification ……~~
~~(Name) …… Qualification ……~~
~~(Name) …… Qualification ……~~
~~(Name) …… Pilot's Licence Nr ……~~
~~(Name) …… Flight Engineer's Licence Nr (if applicable) ……~~

Name	Pilot's Licence No and qualification/experience (class/type ratings, hours on class/type/variant, instructor qualification, etc.) FSTD technical specialist's qualification/experience

☒ ~~FFS/FTD: This team attests that the *<type of FSTD>* conforms to the aeroplane flight deck/helicopter cockpit configuration of *<name of aircraft operator (if applicable), type of aeroplane/helicopter>* aeroplane/helicopter within the requirements for *<type of FSTD and level>* and that the simulated systems and subsystems function equivalently to those in that aeroplane/helicopter. The pilot of this evaluation team has also assessed the performance and the flying qualities of the FSTD and finds that it represents the designated aeroplane/helicopter.~~

☒ ~~FNPT: This team attest(s) that the *<type of FSTD>* represents the flight deck or cockpit environment of a *<aeroplane/helicopter or class of aeroplane/type of helicopter>* within the requirements for *<type of FSTD and level>* and that the simulated systems appear to function as in the class of aeroplane/type of helicopter. The pilot of this evaluation team has also assessed the performance and the flying qualities of the FSTD and finds that it represents the designated class of aeroplane/type of helicopter.~~

The organisation operating the FSTD declares that:

(1) all objective tests, functions and subjective tests have been completed and the general requirements for the requested FCS have been met; and

(2) the FSTD complies with the applicable requirements and with the simulated aircraft or group of aircraft as appropriate for each FSTD feature.

This is evidenced by performing:

1. all objective tests in the QTG; and
2. all functions and subjective tests in the QTG.

If applicable, for the following objective, functions and subjective tests which deviate from the requirements, we provide the following rationale:	
Discrepancy	Description

~~(Additional comments as required)~~

~~.....~~
~~.....~~
~~.....~~

Additional information as required

Signed

.....

Name of the person of the organisation operating the FSTD	

nominated in accordance with point ORA.GEN.210(b) or delegate	
Email	
Telephone	

AMC2 ORA.FSTD.200 Application for FSTD qualification

DOCUMENTATION, TIMELINE IN THE APPLICATION PROCESS

(a) Once an FSTD is contracted to be built, the organisation that is to operate the FSTD should ensure that the regulatory standard upon which the FSTD will eventually be qualified against is acceptable to the competent authority. This should be the current applicable version of CS-FSTD at the time of application.

(b) The application form should be completed and printed in English and any other language(s) selected by the competent authority.

(c) The initial application form (Part A of the application), together with the documents as referred to in point ORA.FSTD.200(a), should be submitted to the competent authority ideally six months but not later than three months before the requested evaluation date.

(d) In advance of the requested evaluation date, the organisation operating the FSTD should submit the validation material which should be used for the QTG to the competent authority. This will ensure that the content of the QTG is acceptable to the competent authority and allow for a timely and efficient completion of the initial qualification. The acceptability of all tests depends upon their content, accuracy, completeness and recency of the results.

(e) The organisation operating the FSTD that seeks a qualification based on preliminary data should consult its competent authority as soon as it is known that special arrangements will be necessary, or as soon as it is clear that preliminary data will need to be used for FSTD qualification.

(f) When the FSTD includes equipment as referred to in point ORA.FSTD.120(d), the organisation operating the FSTD should provide the results of the assessment performed in accordance with point ORA.FSTD.120(d) along with the initial application form.

(g) The declaration (Part B of the application form), together with the documents referred to in point ORA.FSTD.200(b), should be submitted by a date agreed with the competent authority, but not less than 30 days before the requested evaluation date. Discrepancies should be addressed prior to the start of the on-site evaluation. Should this not be possible, the organisation should provide a rectification plan, including a timeline, to be agreed with the competent authority.

(h) If necessary, the organisation operating the FSTD may change the ESL and/or the requested FCS for the FSTD submitted with the initial application form (Part A of the application) not later than the submission of the declaration as defined in point ORA.FSTD.200(b) (Part B of the application form). After the submission of this declaration, the ESL and/or the requested FCS for the FSTD should no longer be changed.

(i) The declaration as referred in to point ORA.FSTD.200(c) (Part C of the application form) should be completed and submitted to the competent authority not less than seven days prior to the initial evaluation.

(j) Prior to completion of the initial evaluation process, the organisation operating the FSTD should ensure that:

(1) each objective test in the QTG is marked as verified, dated and signed;

(2) functions and subjective tests in the QTG are marked as completed, dated and signed; and

(3) the statements of justification are marked as verified, dated and signed.

(k) The organisation operating the FSTD may decide to accomplish the objective tests while the FSTD is at the manufacturer's facility. The organisation operating the FSTD should validate FSTD performance at the final location of the FSTD. Unless otherwise agreed with the competent authority, the organisation operating the FSTD should run all objective tests in the QTG at the final location of the FSTD to demonstrate compliance with the applicable qualification basis and submit those tests to the competent authority. The QTG should be clearly annotated to indicate when and where each test was accomplished.

~~GM1 ORA.FSTD.200 Application for FSTD qualification~~

~~**USE OF FOOTPRINT TESTS IN QUALIFICATION TEST SUBMISSION**~~

~~(a) Introduction~~

~~(1) Recent experience during initial qualification of some FFSs has required acceptance of increasing numbers of footprint tests. This is particularly true for FFSs of smaller or older aircraft types, where there may be a lack of aircraft flight test data. However, the large number of footprint tests offered in some QTGs has given rise to concern.~~

~~(2) This guidance is applicable to FFS aeroplane, FTD aeroplane, FFS helicopter and FTD helicopter qualifications.~~

~~(b) Terminology~~

~~(1) Footprint test - footprint test data are derived from a subjective assessment carried out on the actual FSTD requiring qualification. The assessment and validation of these data are carried out by a pilot appointed by the competent authority. The resulting data are the footprint validation data for the FSTD concerned.~~

~~(c) Recommendation~~

~~(1) It is permitted to use footprint data where flight test data is not available. Only when all other alternative possible sources of data have been thoroughly reviewed without success may a footprint test be acceptable, subject to a case-by-case review with the competent authorities concerned, and taking into consideration the level of qualification sought for the FSTD.~~

~~(2) Footprint test data should be:~~

~~(i) constructed with initial conditions and FFS set up in the appropriate configuration (e.g. correct engine rating) for the required validation data;~~

~~(ii) a manoeuvre representative of the particular aircraft being simulated;~~

~~(iii) manually flown out by a type rated pilot who has current experience on type* and is deemed acceptable by the competent authority**;~~

~~(iv) constructed from validation data obtained from the footprint test manoeuvre and transformed into an automatic test;~~

~~(v) an automatic test run as a fully integrated test with pilot control inputs; and~~

~~(vi) automatically run for the initial qualification and recurrent evaluations.~~

~~* In this context, 'current' refers to the pilot experience on the aircraft and not to the Part-FCL standards.~~

~~** The same pilot should sign off the complete test as being fully representative.~~

~~(3) A clear rationale should be included in the QTG for each footprint test. These rationales should be added to and clearly recorded within the validation data roadmap (VDR) in accordance with and as defined in Appendix 2 to AMC1-CS-FSTD(A).300.~~

~~(4) Where the number of footprint tests is deemed by the competent authority to be excessive, the maximum level of qualification may be affected. The competent authority should review each area of validation test data where the use of footprint tests as the basis for the validation data is proposed. Consideration should be given to the extent to which footprint tests are used in any given area.~~

~~For example, it would be unacceptable if all or the vast majority of takeoff tests were proposed as footprint tests, with little or no flight test data being presented. It should be recognised, therefore, that it may be necessary for new flight test data to be gathered if the use of footprint tests becomes excessive, not just overall, but also in specific areas.~~

~~(5) For recurrent evaluation purposes an essential match is to be expected. Validation tests using footprint data which do not provide an essential match should be justified to the satisfaction of the competent authority.~~

~~The competent authority should be consulted at the point of definition of the aircraft data for qualification prior to the procurement of the device if footprint tests need to be used.~~

AMC1 ORA.FSTD.210(b) Qualification basis

QUALIFICATION OF NEW TECHNOLOGY OR SYSTEMS

Where a modification of an FSTD involves a change of technology, or an addition of a new system or equipment that is not covered by the qualification basis used for the initial qualification, and provided that an evaluation is not possible using the original qualification basis, the validation and verification of such changes may be performed by using newer certification specifications that apply to this new technology, system or equipment.

AMC1 ORA.FSTD.225(b) Duration and continued validity

EXPERIENCE OF THE ASSIGNED PERSON OR GROUP OF PERSONS

(a) A person or a group of persons assigned in accordance with point ORA.FSTD.225(b) should:

(1) be qualified in flight simulation hardware, software, computer modelling or equivalent with sufficient technical knowledge and experience to understand and analyse objective

test results, and assess that the FSTD complies with the applicable certification specifications;

(2) be qualified to assess the performance, handling and features of the FSTD, hold or have held ~~an instructor certificate~~ the privilege to instruct in accordance with Annex 1 to the Chicago Convention and meet either of the following:

[…]

[…]

[…]

AMC2 ORA.FSTD.225(b) Duration and continued validity

EXTENDED RECURRENT EVALUATION PERIOD — ORGANISATION'S DOCUMENTATION

(a) For the purpose of extending the recurrent evaluation period of an FSTD, the organisation that operates the FSTD should provide the following to the competent authority:

[…]

(4) the FSTD performance evaluation metrics developed in accordance with ~~AMC2 ORA.FSTD.100~~ AMC1 ORA.FSTD.100(d) for the previous two ~~2~~ years;

[…]

[…]

(c) The assigned person or group of persons should prepare a report following the objective, functions and subjective testing with results, including any ~~items~~ discrepancies identified during the conduct of the tasks described in point ORA.FSTD.225(b). The report should be submitted to the competent authority within the period specified in point ORA.FSTD.225(b).

(d) Based on the results of the tasks described in point ORA.FSTD.225(b), the organisation operating the FSTD should address the identified discrepancies and implement corrective action(s) to close them. In case of recurring, systemic or critical discrepancies, the organisation should identify their root cause. The records of performed corrective actions should be kept in accordance with point ORA.FSTD.240(c) and provided to the competent authority upon request.

GM1 ORA.FSTD.225(b) Duration and continued validity

INDEPENDENCE OF THE ASSIGNED PERSON(S)

An effective compliance monitoring function is necessary to support the implementation of the extended evaluation period. It is essential that an appropriate level of independence be maintained, and the tasks referred to in point ORA.FSTD.225(b) should not be undertaken by a person that, within the previous 12-month recurrent period, was involved in the tasks referred to in point ORA.FSTD.105~~(b)~~ (a)(2) and (3) for the relevant FSTD being evaluated.

GM1 ORA.FSTD.225(b)(3) Duration and continued validity

REPORT FOR FSTD UNDER EXTENDED EVALUATION PERIOD (EEP)

The organisation operating the FSTD may use the following report to present the results of the tasks referred to in point ORA.FSTD.225(b) for an FSTD under extended evaluation period.

REPORT FOR FSTD UNDER EXTENDED EVALUATION PERIOD (EEP)

Logo of the organisation operating the FSTD

Date of the report
Report issue number
Organisation operating the FSTD
FSTD identification
Aircraft type/variant or group of aircraft (only for legacy FSTDs)
Engine fit simulated

Table of Contents

1. Flight Simulator Training Device

FSTD location	
FSTD manufacturer and FSTD identification serial number	
Visual system	
Motion system	
Engine instrumentation	
Flight instrumentation	
Validation data roadmap ID No	
Technical criteria primary reference document	

2. FSTD qualification

FSTD qualification type and level (only for legacy FSTDs)	
Additional capabilities	
MCC	yes/no
UPRT	No/full stall/approach to stall

	FSTD FEATURE	FIDELITY LEVEL	Simulated aircraft
1.	Flight deck layout and structure (FDK)		
2.	Flight control forces and hardware (CLH)		
3.	Flight control systems operation (CLO)		
4.	Aircraft systems (SYS)		
5.	Performance and handling on ground (GND)		
6.	Performance and handling in-ground effect (IGE)		
7.	Performance and handling out-of-ground effect (OGE)		
8.	Sound cueing (SND)		
9.	Vibration cueing (VIB)		
10	Motion cueing (MTN)		
11	Visual cueing (VIS)		
12	Navigation (NAV)		
13	Atmosphere and weather (ATM)		
14	Operating sites and terrain (OST)		

3. Details

Date	
ESL revision and date:	
Software load revision number	
Assigned person(s) for EEP	
Technical FSTD expert as per point (a)(1) of AMC1 ORA.FSTD.225(b) (name, qualification/experience)	
Flight crew training expert as per point (a)(2)(i) of AMC1 ORA.FSTD.225(b) (name, qualification/experience)	
Support pilot/instructor as per point (a)(2)(ii) of AMC1 ORA.FSTD.225(b) and GM2 ORA.FSTD.225(b) (if applicable) (name, qualification/experience)	

4. Supplementary information

Visual databases used	
Malfunctions used	
Abnormal and emergency procedures	

Description of continuous flight	
Other	

5. Results

During the conduct of the tasks as referred in point ORA.FSTD.225(b), various discrepancies may necessitate resolution which fall into two distinct categories: severity A and severity B.

Severity A

Discrepancies falling into this category are one of the following:

(a) a simulation feature, system, subsystem, component or part that fails to comply with the qualification basis, which may affect the FCS or assigned FCS, the ESL or the FSTD qualification, and training, testing and checking and/or potentially lead to a negative transfer of training;

(b) Non-compliance with the qualification basis, such as objective test results being out of tolerance.

Severity B

Discrepancies categorised as severity B are simulation features, systems, subsystems, components, or parts that do not meet the requirements for classification of discrepancies severity A (e.g. temporarily inoperative or operating below their nominal level. However, the overall serviceability of the FSTD is demonstrated by the organisation).

Observation

Discrepancies where compliance with the required standard is not clearly proven and therefore require a subsequent assessment by the FSTD organisation. Following the outcome of each assessment, an 'Observation' may be promoted to discrepancy 'Severity A or 'Severity B'.

5.1 Discrepancies severity A

1	
2	

5.2 Discrepancies severity B

1	
2	

5.3 Observation

1	
2	

6. Assigned person(s) for EEP

Name	Position	Signature

	Technical FSTD expert	
	Flight crew training expert	
	Supporting pilot/instructor	

~~AMC1 ORA.FSTD.230(b) Changes to the qualified FSTD~~

~~UPDATING AND UPGRADING EXISTING FSTDs~~

~~(a) An update is a result of a change to the existing device where it retains its existing qualification level. The change may be certified through a recurrent inspection or an extra inspection if deemed necessary by the competent authority according to the applicable requirements in effect at the time of initial qualification.~~

~~(b) If such a change to an existing device would imply that the performance of the device could no longer meet the requirements at the time of initial qualification, but that the result of the change would, in the opinion of the competent authority, clearly mean an improvement to the performance and training capabilities of the device altogether, then the competent authority might accept the proposed change as an update while allowing the device to retain its original qualification level.~~

~~(c) An upgrade is defined as the raising of the qualification level of a device, or an increase in training credits, which can only be achieved by undergoing an initial qualification according to the latest applicable requirements.~~

~~(d) As long as the qualification level of the device does not change, all changes made to the device should be considered to be updates pending approval by the competent authority.~~

~~(e) An upgrade, and consequent initial qualification according to the latest applicable requirements, is only applicable when the organisation requests another qualification level (recategorisation) for the FSTD.~~