

SECTION 1 – REQUIREMENTS

1 GENERAL

1.1 This section contains the requirements for Aeroplane Flight Training Devices.

2 PRESENTATION

2.1 The requirements of JAR-STD 2A are presented in two columns on loose pages, each page being identified by the date of issue or the change number under which it is amended or reissued.

2.2 Subheadings are in italic typeface.

2.3 Explanatory notes not forming part of the requirements appear in smaller typeface.

2.4 New, amended and corrected text will be enclosed within heavy brackets until a subsequent 'change' is issued.

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SUBPART A – APPLICABILITY

JAR-STD 2A.001 Applicability

JAR-STD 2A applies to those persons, organizations or enterprises (FTD operators) seeking qualification of Flight Training Devices (FTD). FTD users also shall gain approval to use the FTD as part of their approved training programmes despite the fact that the FTD has been previously qualified. Although this document provides guidance for FTD users, precise details of such approvals are contained in JAR-OPS, JAR-FCL and other applicable documents.

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SUBPART B – GENERAL

JAR-STD 2A.005 (continued)

JAR-STD 2A.005 Terminology

(See AMC STD 2A.005)

Because of the technical complexity of STD Qualification, it is essential that standard terminology is used throughout. The following principal terms and abbreviations shall be used in order to comply with JAR-STD. Further terms and abbreviations are contained in AMC STD 2A.005.

(a) *Synthetic Training Device (STD)*. A training device which is either a Flight Simulator (FS), a Flight Training Device (FTD), a Flight & Navigation Procedures Trainer (FNPT), or an Other Training Device (OTD).

(b) *Flight Simulator*. A full size replica of a specific type or make, model and series aeroplane flight deck, including the assemblage of all equipment and computer programmes necessary to represent the aeroplane in ground and flight operations, a visual system providing an out of the flight deck view, and a force cueing motion system. It is in compliance with the minimum standards for Flight Simulator Qualification.

(c) *Flight Training Device (FTD)*. A full size replica of an aeroplane's instruments, equipment, panels and controls in an open flight deck area or an enclosed aeroplane flight deck, including the assemblage of equipment and computer software programmes necessary to represent the aeroplane in ground and flight conditions to the extent of the systems installed in the device. It does not require a force cueing motion or visual system. It is in compliance with the minimum standards for a specific FTD Level of Qualification.

(d) *Flight and Navigation Procedures Trainer – Type II (FNPT II)*. A ground based training device which represents the flight deck environment of a multi-engine aeroplane type or class to the extent that the systems appear to function as in an aeroplane. It incorporates a visual system providing an out of the flight deck view.

(e) *Flight and Navigation Procedures Trainer – Type I (FNPT I)*. A ground based training device which represents the flight deck environment of a class of aeroplanes.

(f) *Other Training Device (OTD)*. A training aid other than Flight Simulator, Flight Training Device or Flight and Navigation Procedures Trainer which provides for training where a complete flight deck environment is not necessary.

(g) *Synthetic Training Device Approval (STD Approval)*. The extent to which an STD of a specified Qualification Level may be used by persons, organisations or enterprises as approved by the Authority. It takes account of aeroplane to STD differences and the operating and training ability of the organisation.

(h) *Synthetic Training Device Operator (STD Operator)*. That person, organisation or enterprise directly responsible to the Authority for requesting and maintaining the qualification of a particular STD.

(i) *Synthetic Training Device User (STD User)*. The person, organisation or enterprise requesting training, checking and testing credits through the use of an FTD.

(j) *Synthetic Training Device Qualification (STD Qualification)*. The level of technical ability of an STD as defined in the compliance document.

(k) *Qualification Test Guide (QTG)*. A document designed to demonstrate that the performance and handling qualities of an STD agree within prescribed limits with those of the aeroplane and that all applicable regulatory requirements have been met. The QTG includes both the aeroplane and STD Data used to support the validation.

JAR-STD 2A.010 Implementation

JAR-STD 2A will be implemented no later than 1 July 2000 whereupon national arrangements, procedures and Qualification Certificates shall fully comply with JAR-STD 2A criteria.

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SUBPART C – AEROPLANE FLIGHT TRAINING DEVICES

JAR-STD 2A.025(a) (continued)

JAR-STD 2A.015 Application for FTD qualification

(See AMC STD 2A.015)

(See IEM STD 2A.015)

(a) The operator of an FTD requiring evaluation of this FTD shall apply to the Authority giving 3 months notice.

(b) An STD (FTD) Qualification Certificate will be issued following satisfactory completion of an evaluation by the Authority.

JAR-STD 2A.020 Validity of FTD qualification

(a) An FTD qualification is valid for 12 months unless otherwise specified by the Authority.

(b) An FTD qualification test for revalidation may take place at any time within the 60 days prior the expiry of the validity of the qualification document. The new period of validity shall continue from the expiry date of the previous qualification document.

(c) The Authority may refuse, revoke, suspend or vary an FTD qualification, if the provisions of JAR-STD 2A are not satisfied.

JAR-STD 2A.025 Rules governing FTD Operators

(See AMC STD 2A.025)

The operator of an FTD shall demonstrate his capability to maintain the performance, functions and other characteristics specified for the FTD qualification Level:

(a) Quality system

(1) A Quality System shall be established and a Quality Manager designated to monitor compliance with, and the adequacy of, procedures required to ensure the maintenance of the Qualification Level of STDs. Compliance monitoring shall include a feed-back system to the Accountable Manager to ensure corrective action as necessary.

(2) The Quality System shall include a Quality Assurance Programme that contains procedures designed to verify that the specified performance, functions and characteristics are being conducted in accordance with all applicable requirements, standards and procedures.

(3) The Quality System and the Quality Manager shall be acceptable to the Authority.

(4) The Quality System shall be described in relevant documentation.

(b) *Updating.* Maintain a link with manufacturers to incorporate important modifications, especially:

(1) *Aeroplane modifications.* Aeroplane modifications whether or not enforced by an airworthiness directive, and which are essential for training and checking shall be introduced into all affected Flight Training Devices.

(2) Modification of FTDs, including motion and visual systems (if applicable):

(i) Where applicable and essential for training and checking, STD operators shall update their Flight Training Devices (for example in the light of data revisions). Modifications of the FTD hardware and software which affect flight, ground handling and performance or any major modifications of the motion or visual system (if applicable) shall be evaluated to determine the impact on the original qualification criteria. If necessary, STD operators shall prepare amendments for any affected Validation Tests. The STD operator shall test the FTD to the new criteria.

(ii) The Authority shall be advised in advance of any major changes to determine whether or not a special evaluation of the STD may be necessary prior to returning it to training following the modification.

JAR-STD 2A.025 (continued)

(c) *Installations.* Ensure that the STD is located in a suitable environment which supports safe and reliable operation.

(1) The STD operator shall ensure that the STD and its installation comply with the local, country or state regulations for Health and Safety. However as a minimum the following shall be addressed:

(i) STD occupants and maintenance personnel shall receive adequate briefing on STD safety.

(ii) Adequate fire/smoke detection, warning and suppression arrangements to ensure the safe passage of personnel from the STD.

(iii) Adequate protection against electrical, mechanical, hydraulic and pneumatic hazards - including those arising from the control loading & motion systems (if applicable).

(iv) Other items:

(A) Emergency lighting.

(B) Escape exits & facilities.

(C) Danger area markings.

(D) Guard rails and gates.

(E) Control Loading Emergency stop controls (if applicable) accessible from either pilot and instructor seats.

(F) A manual or automatic electrical power isolation switch.

(2) The STD safety features such as emergency stops and emergency lighting shall be checked regularly by the STD operator but in any case at least annually. These tests shall be recorded.

JAR-STD 2A.030 Requirements for STDs qualified on or after 1 July 2000

(See Appendix 1 to JAR-STD 2A.030)

(See AMC STD 2A.030)

(See IEM STD 2A.030)

(a) Any STD submitted for initial evaluation on or after 1 July 2000, will be evaluated against JAR-STD criteria for Qualification Levels 1 or 2.

(b) An STD shall be assessed in those areas which are essential to completing the flight crew member training and checking process, (where applicable) including:

(1) longitudinal, lateral and directional handling qualities, and

(2) performance on the surface and in the air, and

(3) specific operations where applicable, and

(4) flight deck configuration, and

(5) functioning during normal, abnormal, emergency and, where applicable, non normal operation, and

(6) instructor station function and FTD control, and

(7) certain additional requirements depending on the qualification level and the installed equipment.

(c) The STD shall be subjected to:

(1) Validation tests, and

(2) Functions & Subjective tests as found in the Qualification Test Guide (QTG).

(d) Data which is used to ensure the fidelity of an STD shall be of a standard that satisfies the Authority, before the STD can gain a Qualification Level.

(e) The STD operator shall submit a QTG in a form and manner which is acceptable to the Authority.

(f) The QTG will only be approved after completion of an initial or upgrade evaluation, and when all the discrepancies in the QTG have been addressed to the satisfaction of the Authority. After inclusion of the results of the tests witnessed by the Authority, the approved QTG becomes the Master QTG (MQTG), which

JAR-STD 2A.030(f) (continued)

is the basis for the STD qualification and subsequent recurrent STD evaluations.

(g) The STD operator shall:

(1) Run the complete MQTG progressively between each annual evaluation by the Authority. Results shall be dated and retained in order to satisfy both the STD operator as well as the Authority that STD standards are being maintained and,

(2) Establish a Configuration Control System to ensure the continued integrity of the hardware and software qualified.

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Appendix 1 to JAR-STD 2A.030
Technical requirements

(a) This Appendix describes the minimum technical requirements for qualifying STD Levels 1 and 2.

(b) Each of those levels carries an appropriate technical description and maximum training, checking and testing credits.

(c) The training, checking and testing credits do not imply an automatic level of Approval for any STD user.

(d) Table 1 indicates in broad terms the maximum credits possible for each technical Qualification Level. Specific requirements for the use of the aeroplane or STD is determined by the Authority. Specialised training courses (e.g. ETOPS, TCAS, AWOPS, Windshear etc.) require an adequate standard of simulation which will be evaluated by the Authority.

NOTE: Certain STD and visual system requirements included in this Appendix shall be supported with a Statement of Compliance (SOC) and, in some designated cases, an Objective Test. Compliance statements shall describe how the requirement was met, such as gear modelling approach, coefficient of friction sources, etc.

Where additional equipment including Motion and Visual System has been added to an STD even though not required for qualification, it will be assessed to ensure that it does not adversely affect the qualification of a training device. Any subsequent removal or unserviceability could affect the qualification of the device.

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Appendix 1 to JAR-STD 2A.030 (continued)

Table 1 – Minimum STD requirements for qualifying JAA FTD level 1 and 2

<i>Qualification Level</i>	<i>General Technical Requirements</i>	<i>Maximum Credits</i>
1	<p>Type specific with at least 1 system fully represented</p> <p>Closed or open flight deck</p> <p>(Note: Choice of systems simulated is the responsibility of the organisation seeking approval or re-approval for the course)</p>	<p>Suitable for:</p> <ul style="list-style-type: none"> - Selective system management credits (except for pilot manual control handling skills) as follows: <ul style="list-style-type: none"> • part of an approved conversion/transition course, • recurrent training/checking.
2	<ul style="list-style-type: none"> - Type specific - All applicable systems fully represented - Closed flight deck - Type specific or Generic Flight Dynamics (but shall be representative of aircraft performance) - On board Instructor station - Significant sounds - Control of atmospheric conditions - Navigation Data Base (sufficient to support aeroplane systems) - Adequate test capability - Primary flight controls which control the flight path and be broadly representative of aeroplane control characteristics. 	<p>Suitable for:</p> <ul style="list-style-type: none"> - Systems Management Initial and Recurrent training, checking and testing, (except pilot manual control handling skills i.e. those flight manoeuvres executed via the pilots primary flying controls). - CRM Training, as part of approved course. - LOFT (Route and area familiarisation only where at least Level A simulator visual system fitted). (See also Appendix 1 to JAR-STD 2A.030 and standards.)

JAR-STD 2A.035 (continued)

JAR-STD 2A.035 Requirements for FTDs approved or qualified before 1 July 2000
(See AMC STD 2A.035)

(a) Flight Training Devices approved or qualified in accordance with national regulations of JAA Members States before 1 July 2000 either will be recategorised or will continue to maintain their approval under the Grandfather Rights provision, in accordance with JAR-STD 2A.035(c) and JAR-STD 2A.035(d).

(b) Recategorised STDs will be qualified in accordance with JAR-STD 2A.030.

(c) Flight Training Devices that are not recategorised but that have a primary reference document used for their testing may be qualified by the Authority to an equivalent JAR-STD Qualification Level, either 1G or 2G. These Qualification Levels refer to similar credits achieved by JAR-STD 2A Level 1 and 2.

(1) To gain and maintain an equivalent Qualification Level, these Flight Training Devices shall be assessed in those areas which are essential to completing the flight crew member training and checking process, including:

(i) Longitudinal, lateral and directional handling qualities (where applicable);

(ii) performance on the ground and in the air;

(iii) specific operations where applicable;

(iv) flight deck configuration;

(v) functioning during normal, abnormal, emergency and, where applicable non normal operation;

(vi) instructor station function and STD control, and

(vii) certain additional requirements depending on the Qualification Level and the installed equipment.

(2) The STD shall be subjected to:

(i) Validation Tests, and

(ii) Functions and Subjective Tests.

(d) STDS that are not recategorised and that do not have a primary reference document used for their testing shall be qualified by special arrangement.

(1) Such STDs will be issued with Special Categories.

(2) These STDs shall be subjected to the same Functions and Subjective Tests referred to in JAR-STD 2A.035(c) (2) (ii).

(3) In addition any previously recognised Validation Test shall be used.

JAR-STD 2A.040 Changes to qualified STDs

(a) *Requirement to notify major changes to an STD.* The operator of a qualified STD shall inform the Authority of proposed major changes such as:

(1) Aeroplane modifications which could affect STD qualification;

(2) STD hardware and/or software modifications which could affect the handling qualities, performances or system representations;

(3) relocation of the STD, and

(4) any deactivation of the STD.

NOTE: The Authority may complete a special evaluation following major changes or when an STD appears not to be performing at its initial Qualification Level.

(b) *Upgrade of an STD.* An STD may be upgraded to a higher Qualification Level. Special evaluation is required before the issue of a higher level of qualification.

(1) If an Upgrade is proposed the STD operator shall seek the advice of the Authority and give full details of the modifications. If the Upgrade evaluation does not fall upon the anniversary of the original qualification date, a special evaluation is required to permit the STD to continue to qualify even at the previous level.

(2) In the case of an STD Upgrade, an STD operator shall run all Validation Tests for the requested Qualification Level. Validation Test results offered in a test guide for previous initial or Upgrade evaluation shall not be used to validate STD

JAR-STD 2A.040(b)(2) (continued)

performance in a test guide offered for a current Upgrade.

(c) *Relocation of an STD*

(1) In instances where an STD is moved to a new location, the Authority shall be advised before the planned activity along with a schedule of events related thereto.

(2) Prior to returning the STD to service at the new location the STD operator shall perform at least one third of the Validation Tests (if any) and, Functions and Subjective Tests to ensure that the STD performance meets its original qualification standard. A copy of the test documentation shall be retained with the STD records for review by the Authority.

(3) At the discretion of the Authority, the STD shall be subject to an evaluation in accordance with its original JAA qualification criteria.

(d) *Deactivation of a currently qualified STD*

(1) In the event an STD operator plans to remove an STD from active status for prolonged periods, the Authority shall be notified and suitable controls established for the period the STD is inactive.

(2) The STD operator shall arrange an understanding with the Authority to ensure that the STD can be restored to active status at its original Qualification Level.

JAR-STD 2A.045 Interim FTD qualification

(See AMC STD 2A.045)

(See IEM STD 2A.045)

In case of new aeroplane programmes special arrangements shall be made to enable an interim Qualification Level to be achieved.

Requirements, details relating to the issue, and the period of validity of an interim Qualification Level will be decided by the Authority.

JAR-STD 2A.050 Transferability of FTD qualification

(a) When there is a change of STD operator, the new STD operator shall advise the Authority in advance in order to agree upon a plan of transfer of the STD.

(b) At the discretion of the Authority, the STD shall be subject to an evaluation in accordance with its original JAA qualification criteria.

(c) Provided that the STD performs to its original standard, its original Qualification Level shall be restored.

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