

SECTION 1 – REQUIREMENTS**1 GENERAL**

1.1 This Section contains the requirements for Flight & Navigation Procedures Trainers.

2 PRESENTATION

2.1 The requirements of JAR-STD 3A 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 3A.001 Applicability

JAR-STD 3A applies to those persons, [organizations or enterprises (FNPT operators) seeking qualification of Flight & Navigation Procedures Trainers (FNPT). FNPT users also shall gain approval to use the FNPT as part of their approved training programmes despite the fact that the FNPT has been previously qualified. Although this document inter alia provides guidance for FNPT users, precise details of such approvals are contained in JAR-FCL and other applicable documents.]

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SUBPART B – GENERAL

JAR-STD 3A.005 (continued)

JAR-STD 3A.005 Terminology

(See AMC STD 3A.005)

Because of the technical complexity of Flight Simulator, Flight Training Device (FTD) and FNPT qualification, it is essential that standard terminology is used throughout. The following terms and abbreviations [shall] be used in order to [comply with JAR-STD. Further terms and abbreviations are contained in AMC STD 3A.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 (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 & 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 and checking credits through the use of an STD.

(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 3A.010 Implementation

JAR-STD 3A will be implemented on 1 July 1999 whereupon national arrangements, [procedures and Qualification Certificates shall] fully comply with JAR-STD 3A criteria.

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SUBPART C – FLIGHT & NAVIGATION PROCEDURES TRAINERS

JAR-STD 3A.025(a)(1) (continued)

JAR-STD 3A.015 Application for FNPT Qualification

(See AMC STD 3A.015)

(See IEM STD 3A.015)

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

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

(c) Exceptionally, for the initial evaluation of an FNPT I, the period of notice may be reduced to one month at the discretion of the Authority.

JAR-STD 3A.020 Validity of FNPT Qualification

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

[(b) An FNPT qualification test for] revalidation may take place at any time within the 60 days prior to 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 FNPT qualification, if the] provisions of JAR-STD 3A are not satisfied.

JAR-STD 3A.025 Rules governing FNPT Operators

(See AMC STD 3A.025)

[The operator of an FNPT shall demonstrate] his capability to maintain the performance, functions and other characteristics specified for the FNPT Qualification Type as follows :

[(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 and modifications.* 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 testing shall be introduced into all affected FNPTs.

(2) Modification of FNPTs, including the addition or removal of any motion and visual systems (if fitted):

[(i) Where applicable, STD operators shall update their FNPTs (for] example in the light of data revisions). Modifications of the FNPT hardware and software which affect flight, performance and systems operation or any major modifications or removal / addition of the motion or visual system (if fitted) 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 FNPT to] the new criteria.

[(ii) The Authority shall be] advised in advance of any major changes to determine if a special evaluation of the FNPT may be necessary prior to returning it to training following the modification.

JAR-STD 3A.025 (continued)

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

[(1) The STD operator shall ensure] that the FNPT 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) FNPT occupants and [maintenance personnel shall receive] adequate briefing on FNPT safety.

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

(iii) Adequate protection against electrical, mechanical, hydraulic and pneumatic hazards – including those arising from the motion or control [loading system (where 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 FNPT 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 checks [shall] be recorded.

(d) *Additional Equipment.* Where additional equipment including Motion or Visual system [has been added by the STD operator to an] FNPT even though not required for [qualification, it will be assessed to ensure that] it does not adversely affect the quality of training. Therefore any subsequent modification, removal or unserviceability could affect the [qualification of the device.]

JAR-STD 3A.030 Requirements for FNPTs Qualified on or after 1 July 1999

(See Appendix 1 to JAR-STD 3A.030)

(See AMC STD 3A.030)

(See IEM STD 3A.030)

(a) Any FNPT submitted for initial evaluation on or after 1 July 1999, will be evaluated against JAR-STD 3A criteria for [qualification as Type I or II.]

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

(1) longitudinal, lateral and directional handling qualities;

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

(3) specific operations where applicable;

(4) cockpit/flight deck configuration;

(5) functioning during normal, [abnormal and emergency operation;]

(6) instructor station function and FNPT control; and

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

[(c) The FNPT 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 FNPT [shall] be of a standard that satisfies the Authority, before the FNPT 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 3A.030(f) (continued)

[is the basis for the FNPT qualification and subsequent recurrent FNPT 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 FNPT standards are being maintained.

(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 3A.030

Technical requirements

(a) This appendix describes the minimum technical requirements for qualifying FNPT Types I and II.

(b) Each of these Types carries an appropriate technical description.

(c) Convertible FNPTs [shall] be qualified in each configuration.

(d) Specific requirements for the use of the FNPTs are determined by the Authority. Specialized training courses require an adequate standard of simulation which will be evaluated by the Authority. (See JAR-FCL 1).

(e) Maximum credits are granted according [to JAR-FCL 1 as referred to in the following tables.]

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Appendix 1 to JAR-STD 3A.030 (continued)

Table 1 – FNPT I

Device	Minimum Technical Requirements	Maximum Credits
FNPT Type I	<p>1 – A cockpit/flight deck sufficiently enclosed to exclude distraction, which will replicate that of the aeroplane or class of aeroplane simulated and in which the switches and all the controls will operate as, and represent those in, that aeroplane or class of aeroplane.</p> <p>2 – Instruments, equipment, panels, systems, primary and secondary flight controls sufficient for the training events to be accomplished [shall] be located in a spatially correct flight deck area.</p> <p>3 – Lighting environment for panels and instruments sufficient for the operation being conducted.</p> <p>4 – In addition to the flight crew members' stations, suitable viewing arrangements for the instructor [shall be provided. These shall] provide an adequate view of the crew members panels and station.</p> <p>5 – Effects of aerodynamic changes for various combinations of drag and thrust normally encountered in flight, including the effect of change in aeroplane attitude, sideslip, altitude, temperature, gross mass, centre of gravity location and configuration.</p> <p>6 – Navigation equipment corresponding to that of the replicated aeroplane or class of aeroplanes, with operation within the tolerances prescribed for the actual airborne equipment. This shall include communication equipment (interphone and air/ground communications systems).</p> <p>7 – Control forces and control travel shall broadly correspond to that of the replicated aeroplane or class of aeroplane.</p> <p>8 – Complete navigational data for at least 5 different European airports with corresponding precision and non-precision approach procedures including current updating within a period of 3 months. All navigational aids should be usable, if within range, without restriction and without Instructor intervention.</p> <p>9 – Engine sounds shall be available.</p> <p>10 – The following shall be available:</p> <ul style="list-style-type: none"> – variable effects of wind and turbulence. – hard copy of map and approach plot. – provision for position freeze and flight freeze. – Instructor controls necessary to perform the training task. <p>11 – A Qualification Test Guide which shall be submitted by the Operator in a form and manner that is acceptable to the competent Authority and which conforms to AMC STD 3A.030 (para 1.6).</p> <p>12 – Stall recognition device corresponding to that of the replicated aeroplane or class of aeroplane.</p> <p>See also Note 1 below Table 3.</p>	<p>Credits in accordance with JAR-FCL.</p> <p>(In order to be used for aeroplane type or class-specific training, testing and checking, the device must also be qualified as a Flight Training Device (FTD) or Flight Simulator.)</p>

Appendix 1 to JAR-STD 3A.030 (continued)

Table 2 – FNPT II

Device	Minimum Technical Requirements	Maximum Credits
FNPT Type II	<p>As for Type I with the following additions or amendments:</p> <p>1 – The flight deck, including the instructor's station, shall be enclosed.</p> <p>2 – Circuit breakers shall function accurately when involved in procedures or malfunctions requiring or involving flight crew response.</p> <p>3 – Crew members seats shall be provided with sufficient adjustment to allow the occupant to achieve the design eye reference position appropriate to the aeroplane or class of aeroplane and for the visual system to be installed to align with that eye position.</p> <p>4 – A generic ground handling model shall be provided to enable representative flare and touch down effects to be produced by the sound and visual systems.</p> <p>5 – Systems [shall] be operative to the extent that it shall be possible to perform all normal, abnormal and emergency operations as may be appropriate to the aeroplane or class of aeroplanes being simulated and as required for the training. Once activated, proper systems operation must result from system management by the crew member and not require any further input from the instructor's controls.</p> <p>6 – The instructor's station shall include the following controls:</p> <p>(a) representative crosswinds.</p> <p>(b) a facility to enable the dynamic plotting of the flight path on approaches, commencing at the final approach fix, including the vertical profile.</p> <p>7 – Control forces and control travels which respond in the same manner under the same flight conditions as in the aeroplane or class of aeroplane being simulated.</p> <p>8 – Aerodynamic modelling shall reflect:</p> <p>(a) the effects of airframe icing;</p> <p>(b) the rolling moment due to yawing.</p> <p>9 – Significant cockpit/flight deck sounds, responding to pilot actions, corresponding to the aeroplane or class of aeroplane being simulated.</p> <p>10 – A visual system (night/dusk or day) capable of providing a field-of-view of a minimum of 45 degrees horizontally and 30 degrees vertically, unless restricted by the type of aeroplane, simultaneously for each pilot, including adjustable cloud base and visibility. The visual system need not be collimated but shall be capable of meeting the standards laid down in Part 3 and 4 (Validation, Functions and Subjective Tests – See AMC STD 3A.030). The responses of the visual system and the flight deck instruments to control inputs shall be closely coupled to provide the integration of the necessary cues.</p> <p>See also Note 1 below Table 3.</p>	<p>Credits in accordance with JAR-FCL.</p> <p>(In order to be used for aeroplane type or class-specific training, testing and checking, the device must also be qualified as a Flight Training Device (FTD) or Flight Simulator.)</p>

Appendix 1 to JAR-STD 3A.030 (continued)

Table 3 – FNPT II MCC

Device	Minimum Technical Requirements	Maximum Credits
FNPT Type II MCC	<p>For use in Multi-Crew Co-operation (MCC) training – as for Type II with the following additions or amendments:</p> <ol style="list-style-type: none"> 1 – turbo-jet or turbo-prop engines. 2 – performance reserves, in case of an engine failure, to be in accordance with JAR-25. These may be simulated by a reduction in the aeroplane gross mass. 3 – retractable landing gear. 4 – pressurization system. 5 – deicing systems. 6 – fire detection / suppression system. 7 – dual controls. 8 – autopilot with automatic approach mode. 9 – 2 VHF transceivers including oxygen masks intercom system. 10 – 2 VHF NAV receivers (VOR, ILS, DME). 11 – 1 ADF receiver. 12 – 1 Marker receiver. 13 – 1 transponder. <p>The following indicators shall be located in the same positions on the instrument panels of both pilots:</p> <ol style="list-style-type: none"> 1 – airspeed. 2 – flight attitude with flight director. 3 – altimeter. 4 – flight director with ILS (HSI). 5 – vertical speed. 6 – ADF. 7 – VOR. 8 – Marker indication (as appropriate). 9 – stop watch (as appropriate). <p>See also Note 1 below.</p>	MCC credits in accordance with JAR-FCL.

Note 1:

Certain FNPT I & II and visual system requirements included in this appendix shall be supported with a Statement of Compliance (SOC) and, in designated cases, an Objective Test (See AMC STD 3A.030). The Statement of Compliance shall describe how the requirement is met.

JAR-STD 3A.035 (c) (continued)

JAR-STD 3A.035 Requirements for FNPTs approved or qualified before 1 July 1999
(See AMC STD 3A.035)

(a) FNPTs or devices approved or qualified in accordance with national regulations of JAA Members States before 1 July 1999 will continue [to maintain their approval or qualification (and) be known as FNPT(G)) under the Grandfather Rights provision, in accordance with JAR-STD 3A.035-(c) and JAR-STD 3A.035-(d) provided that the maximum credit shall not exceed 20 hours, and in no circumstances exceed their existing national credits for Instrument Ground Time, and the period of Grandfather Rights shall not exceed 6 years from 1 July 1999 (*which corresponds to the date of JAR-FCL 1 Implementation*).

(b) Recategorized FNPTs will be qualified in accordance with JAR-STD 3A.030.

(c) FNPTs/devices that are not recategorized but that have a primary reference document used for their testing may continue under previous authorisation, provided that they continue to comply with the primary reference document.

(1) To maintain their qualification/ [approval, these FNPTs / devices shall be] assessed in those areas which are essential to completing the flight crew member training, testing and checking process, including:

- (i) longitudinal, lateral and directional handling qualities;
- (ii) performance on the surface and in the air;
- (iii) specific operations where applicable;
- (iv) cockpit/flight deck configuration;
- (v) functioning during normal, [abnormal and emergency operation;]
- (vi) instructor station function and FNPT / devices control; and
- (vii) certain additional requirements depending on the qualification/approval and the installed equipment.

[(2) The devices shall be subjected to:]

- (i) Validation Tests (if applicable); and
- (ii) Functions and Subjective Tests.

(d) FNPTs/devices that do not have a primary reference document used for their testing may continue by special arrangement.

(1) Such FNPTs/devices will be issued with Special Categories.

[(2) These FNPTs/devices shall be] subjected to the same Functions and Subjective Tests referred to in JAR-STD 3A.035-(c) (2) (ii).

(3) In addition any previously [recognized Validation Test shall be used.]

JAR-STD 3A.040 Changes to Qualified FNPTs

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

- (1) Aeroplane modifications which [could affect FNPT qualification; and]
- (2) FNPT hardware and/or software modifications which could affect the handling qualities, performances or system representations; and
- (3) Relocation of the FNPT; and
- (4) Any deactivation of the FNPT.

NOTE: The Authority may complete a special evaluation following major changes or when an FNPT appears not to [be performing in accordance with its initial qualification.]

(b) *Upgrade of an FNPT.* An FNPT II may [be upgraded to include an FTD qualification.] Special evaluation is required before the issue of [a qualification for the FTD Group.]

(1) If an Upgrade is proposed the FNPT/FTD 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 FNPT to continue to qualify even as an FNPT.

JAR-STD 3A.040 (b) (continued)

[(2) In the case of an FNPT upgrade, an STD operator shall run all applicable] Validation Tests for the requested [qualification.]

(c) *Relocation of an FNPT*

(1) In instances where an FNPT is [moved to a new location, the Authority shall] be advised before the planned activity. A schedule of planned related events has to be provided.

(2) Prior to returning the FNPT 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 FNPT performance meets its original qualification standard. A copy of the test documentation shall be retained with the FNPT records for review by the Authority.

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

(d) *Deactivation of a currently qualified FNPT*

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

[(2) The STD operator shall arrange an] understanding with the Authority to ensure that the FNPT can be restored to active status in its original qualification group.

JAR-STD 3A.045 Interim FNPT Qualification

(See AMC STD 3A.045)

(See IEM STD 3A.045)

(a) In case of new aeroplane programmes special arrangements shall be made to enable an [interim qualification to be achieved.]

(b) Requirements, details relating to the issue, and the period of validity of an interim [qualification will be decided by the Authority.]

JAR-STD 3A.050 Transferability of FNPT Qualification

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

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

(c) Provided that the FNPT performs to its [original standard, its original qualification shall] be restored. However user approval may be required.

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