

SECTION 1 - REQUIREMENTS

1 GENERAL

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

2 PRESENTATION

2.1 The requirements of JAR-STD 3H are presented in two columns on loose pages, each page being identified by the date of issue or the amendment number under which it is amended or reissued.

2.2 Subheadings are in italic typeface.

3.2 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 "amendment" is issued.

INTENTIONALLY LEFT BLANK

INTENTIONALLY LEFT BLANK

SUBPART A - APPLICABILITY

JAR-STD 3H.001 Applicability

JAR-STD 3H applies to those persons or organizations (STD 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 provides guidance for FNPT users, precise details of such approvals are contained in JAR-OPS, JAR-FCL and other applicable documents.

INTENTIONALLY LEFT BLANK

INTENTIONALLY LEFT BLANK

INTENTIONALLY LEFT BLANK

SUBPART B - GENERAL

JAR-STD 3H.005 (continued)

JAR-STD 3H.005 Terminology
(See AMC STD 3H.005)

Because of the technical complexity of STD qualification, it is essential that standard terminology be used throughout. The following terms and abbreviations shall be used in order to comply with JAR-STD. Wherever the term helicopter appears within this document, it is meant to be a designated configuration of a helicopter. (See IEM STD 3H.030.) Further terms and abbreviations are contained in AMC STD 3H.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 a Basic Instrument Training Device (BITD).

(b) *Flight Simulator (FS)*. A full size replica of a specific type or make, model and series helicopter flight deck, including the assemblage of all equipment and computer programmes necessary to represent the helicopter 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 a helicopter's instruments, equipment, panels and controls in an open flight deck area or an enclosed helicopter flight deck, including the assemblage of equipment and computer software programmes necessary to represent the helicopter 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 (FNPT)*. A training device which represents the flight deck/cockpit environment including the assemblage of equipment and computer programmes necessary to represent a helicopter in flight conditions to the extent that the systems appear to function as in a helicopter. It is in compliance with the minimum standards for a specific FNPT Type of Qualification.

(e) *Basic Instrument Training Device (BITD)*. A ground based training device which represents the student pilot's station of a class of aeroplanes. It may use screen based instrument panels and springloaded flight controls, providing a training platform for at least the procedural aspects of instrument flight.

(f) *Synthetic Training Device User Approval (STD User 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 helicopter to STD differences and the operating and training ability of the organisation.

(g) *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.

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

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

(j) *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 agreed validation data and that all applicable regulatory requirements have been met. The QTG includes both the agreed validation data and STD data used to support the validation.

JAR-STD 3H.010 Implementation

JAR-STD 3H will be implemented on 1 January 2003 whereupon national arrangements, procedures and Qualifications Certificates shall comply with JAR-STD 3H criteria.

INTENTIONALLY LEFT BLANK

SUBPART C - FLIGHT & NAVIGATION PROCEDURES TRAINERS

JAR-STD 3H.015 Application for FNPT Qualification

(See AMC STD 3H.015)

(See IEM STD 3H.015)

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

(b) An FNPT Qualification Certificate shall be issued following satisfactory completion of an evaluation by the Authority.

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

JAR-STD 3H.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 Certificate. The new period of validity shall continue from the expiry date of the previous Qualification Certificate.

(c) The Authority may refuse, revoke, suspend or vary an FNPT qualification, if the requirements of JAR-STD 3H are not satisfied.

JAR-STD 3H.025 Rules governing STD operators

(See AMC STD 3H.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 level of qualification of FNPTs. Compliance monitoring shall include a feedback system to the Accountable Manager to ensure corrective action as necessary.

(2) The Quality System shall include a Quality Assurance Programme that contains

JAR-STD 3H.025(a) (continued)

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) Helicopter modifications, 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.

(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

JAR-STD 3H.025(c)(1) (continued)

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 3H.030 Requirements for FNPTs qualified on or after 1 January 2003

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

(See AMC-STD 3H.030)

(See IEM-STD 3H.030)

(a) Any FNPT submitted for initial evaluation on or after 1 January 2003, shall be evaluated against JAR-STD 3H criteria for qualification as Type I, II or III.

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

(1) longitudinal, lateral and directional handling qualities;

JAR-STD 3H.030(b) (continued)

(2) performance in the air;

(3) specific operations;

(4) cockpit/flight deck configuration;

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

(6) instructor station function and FNPT control, and

(7) 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 a 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 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.

Appendix 1 to JAR-STD 3H.030 Technical requirements

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

(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. Specialised training courses require an adequate standard of simulation, which will be evaluated by the Authority. (See JAR-FCL 2).

(e) Maximum credits are granted according to JAR-FCL 2 as referred to in the following tables.

(f) The term 'Level' is used internationally to define various technical standards for both Flight Simulators and Flight Training Devices in JAR-STD 1A/2A/1H and other regulatory standards documents. For historical reasons the term 'Type' has been used throughout this document rather than 'Level'. The two terms are considered to be equivalent and fully interchangeable.

Table 1 - FNPT I

Device	General Technical Requirements	Credits
FNPT Type I	<ol style="list-style-type: none"> 1. A cockpit or flight deck sufficiently enclosed to exclude distraction, which will replicate that of a helicopter and in which the switches and all the controls will operate as, and represent those in a helicopter. 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 position. 3. Lighting environment for panels and instruments shall be sufficient for the operation being conducted. 4. In addition to the pilots' stations, suitable viewing arrangements for the instructor shall be provided allowing an adequate view of the crew members' panels and station. 5. Effects of aerodynamic changes for various combinations of airspeed and power normally encountered in flight, including the effect of change in helicopter attitude, sideslip, altitude, temperature, and initial mass. 6. Navigation equipment corresponding to that of a helicopter, with operation within the tolerances typically applied to the airborne equipment. This shall include communication equipment (interphone and air/ground communications systems). 7. Control forces and control travel shall broadly correspond to those of a helicopter. 8. Complete navigational data for at least 5 different appropriate heliports with corresponding precision and non-precision approach procedures including current updating within a period of 3 months. All navigational aids, including enroute aids should be usable, if within range, without restriction and without instructor intervention. 9. Engine and rotor sounds shall be available. 10. The following shall be available: <ul style="list-style-type: none"> - variable effects of wind and turbulence; - hard copy of map and approach plot; - provision for position freeze, flight freeze and repositioning facility; - Instructor controls necessary to <ul style="list-style-type: none"> • perform the training task; • reset the FNPT to minimum IMC speed or above; • allow for selective failure of basic flight instruments and navigation equipment. 11. A Qualification Test Guide which shall be submitted by the STD operator in a form and manner that is acceptable to the competent Authority and which conforms to AMC STD 3H.030 (para 1.6). 	<p>Credits in accordance with the relevant JAR-FCL and JAR-OPS documents.</p> <p>In order to be used for helicopter type specific training, testing and checking the device shall also be qualified as a Flight Training Device or Flight Simulator.</p>

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

Table 2 - FNPT II

Device	General Technical Requirements	Credits
FNPT Type II	<p>As for Type I with the following additions or amendments:</p> <ol style="list-style-type: none"> 1. The flight deck, including the instructor's station, shall be enclosed. There shall be made a provision for an observer. 2. Circuit breakers shall function correctly when involved in procedures or malfunctions requiring or involving flight crew response. 3. Crewmembers seats shall be provided with sufficient adjustment to allow the occupant to achieve the design eye reference position appropriate to a helicopter and for the visual system to be installed to align with that eye position. 4. Generic ground handling and ground effects models shall be provided to enable lift-off, hover and touch down effects to be simulated and harmonised with the sound and visual systems. 5. Systems shall be operative to the extent that it shall be possible to perform normal, abnormal and emergency operations appropriate to a helicopter as required for the training. Once activated, proper systems operation shall result from system management by the crewmember and not require any further input from the instructor's controls. 6. The instructor's station shall include: <ul style="list-style-type: none"> • A facility to enable the dynamic plotting of the flight path on approaches, commencing at the final approach fix, including the vertical profile; • Facilities to support the required training; • Adjustable cloud base and visibility shall be provided. 7. Control forces and control travels which respond in the same manner under the same flight conditions as in a helicopter. 8. Aerodynamic modelling shall reflect: <ul style="list-style-type: none"> • Main and tail rotor characteristics; • The effects of icing on airframe and rotor; • Cross-coupling effects; • Changes of mass and center of gravity location and configuration; • Vortex ring. 9. Significant cockpit/flight deck and rotor sounds, responding to pilot actions, corresponding to the designated configuration of a helicopter. 10. A visual system (night/dusk and day) capable of providing a field-of-view of a minimum of 150 degrees horizontally from the middle eye point and 40 degrees vertically. The visual system shall be capable of meeting the standards laid down in Part 3 and 4 of AMC STD 3H.030 (Validation, Functions and Subjective Tests). The responses of the visual system and the cockpit/flight deck instruments to control inputs shall be closely coupled to provide the integration of the necessary cues. 11. A visual data base shall be provided sufficient to support the training requirements, including, where applicable : <ol style="list-style-type: none"> (i) Specific areas within the database need to have higher resolution to support landings, take-offs and ground cushion exercises and training away from a heliport. (ii) For cross-country flights sufficient scene details shall be provided to allow for ground to map navigation over a sector length equal to 30 minutes at an average cruise speed. (iii) For Offshore Airborne Radar Approaches, visual/radar representations of installations shall be harmonised. (iv) For training in the use of Night Vision Goggles (NVG) the visual display shall have the ability to represent various scenes with the required levels of ambient light/colour. 	<p>Credits in accordance with the relevant JAR-FCL and JAR-OPS documents.</p> <p>In order to be used for helicopter type specific training, testing and checking the device shall also be qualified as a Flight Training Device or Flight Simulator.</p>

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

Table 3 - FNPT III

Device	General Technical Requirements	Credits
FNPT Type III	<p>As for Type II with the following additions or amendments:</p> <ol style="list-style-type: none">1. Local generic atmospheric models of wind pattern, such as around mountains and structures, as required to support the intended manoeuvres and procedures.2. A visual system (night/dusk and day) capable of providing a field-of-view of a minimum of 150 degrees horizontally from the middle eye point and 60 degrees vertically.3. Detailed high resolution visual data bases as required to support at least the following manoeuvres and procedures:<ul style="list-style-type: none">• Elevated heliports (including heli-decks),• Confined areas.	<p>Credits in accordance with the relevant JAR-FCL and JAR-OPS documents.</p> <p>In order to be used for helicopter type specific training, testing and checking the device shall also be qualified as a Flight Training Device or Flight Simulator.</p>

INTENTIONALLY LEFT BLANK

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

Table 4 - FNPT II/III MCC

Device	General Technical Requirements	Credits
FNPT Type II/III MCC	<p>For use in Multi-Crew Co-operation (MCC) training - as for Type II or III with the following additions or amendments:</p> <ol style="list-style-type: none"> 1. Multi engine and multi pilot helicopter. 2. Performance reserves, in case of an engine failure, to be in accordance with CAT. A criteria. 3. Retractable landing gear (where available). 4. Anti-icing or deicing systems (as appropriate). 5. Fire detection / suppression system. 6. Dual controls. 7. Autopilot with upper modes. 8. 2 VHF transceivers. 9. 2 VHF NAV receivers (VOR, ILS, DME). 10. 1 ADF receiver. 11. 1 Marker receiver. 12. 1 transponder. 13. Global Positioning System (GPS), (where applicable). 14. Weather radar (where applicable). <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. 3. Altimeter and radio altimeter (if applicable). 4. HSI. 5. Vertical speed. 6. ADF. 7. VOR, ILS, DME. 8. Marker indication (as appropriate). 9. Stop watch (as appropriate). 	<p>MCC Credits in accordance with the relevant JAR-FCL and JAR-OPS documents.</p> <p>In order to be used for helicopter type specific training, testing and checking the device shall also be qualified as a Flight Training Device or Flight Simulator.</p>

INTENTIONALLY LEFT BLANK

JAR-STD 3H.035 Requirements for FNPTs approved or qualified before 1 January 2003

(a) FNPTs or devices approved or qualified in accordance with national regulations of JAA Members States before 1 January 2003 will continue to maintain their approval or qualification (and be known as FNPT (G)) under the Grandfather Rights provision, in accordance with JAR-STD 3H.035-(c) and JAR-STD 3H.035-(d) provided that the maximum credit in no circumstances shall exceed their existing national credits, and the period of Grandfather Rights shall not exceed 6 years from 1 January 2003.

(b) Recategorized FNPTs will be qualified in accordance with JAR-STD 3H.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 (where applicable):

- (i) Longitudinal, lateral and directional handling qualities;
- (ii) performance in the air;
- (iii) specific operations;
- (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 FNPTs/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.

JAR-STD 3H.035(d) (continued)

(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 3H.035-(c) (2) (ii).

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

JAR-STD 3H.040 Changes to Qualified FNPT

(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) Helicopter 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/III may be upgraded to include an FTD qualification. Special evaluation is required before the issue of a qualification for the FTD.

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

(2) In the case of an FNPT upgrade, the 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

JAR-STD 3H.040(c)(2) (continued)

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 3H.045 *Intentionally blank*

INTENTIONALLY LEFT BLANK

JAR-STD 3H.050 Transferability of FNPT 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 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.