ANO (OPS) A-7 (A)

PROCEDURE FOR
FIGHT SIMULATION TRAINING DEVICES (FSTDs)
CERTIFICATION

CIVIL AVIATION AUTHORITY
OF BANGLADESH

FIGHT SIMULATION TRAINING DEVICES

TABLE OF CONTENTS

Forward

The availability of advanced technology has permitted greater use of flight simulation Training Devices for training and checking of flight crew. The complexity, cost and operating environment of modern aircraft also have warranted broad use of advanced simulation. With the application of advanced technology, FSTDs allow in-depth training that can provide useful transfer of learning and behavior from the simulator to aircraft. It also offers safer flight training, fuel conservation, reduces use of aircraft for training, avoids adverse environmental effects and reduces training cost.

CAAB permits usage of FSTDs for various training purposes of flight crew such as initial licensing, refresher, recurrent, transition, up-grade, category or class rating, etc. which may give credit towards the flight training requirements for issue and renewal of flight crew licenses, endorsements and ratings and also for the training of instructors and examiners. It is, therefore, necessary that the simulators be evaluated and approved prior to its use. It is also essential that the approved FSTDs be maintained to the certification level for which they have been approved.

Air Vice Marshal M Mafidur Rahman
BBP, BSP, BUP, ndu, afwc, psc
Chairman
Civil Aviation Authority of Bangladesh

INTRODUCTION

1.1

The availability of advanced technology has permitted greater use of flight simulation Training Devices for training and checking of flight crew. The complexity, cost and operating environment of modern aircraft also have warranted broad use of advanced simulation. With the application of advanced technology, FSTDs allow in-depth training that can provide useful transfer of learning and behavior from the simulator to aircraft. It also offers safer flight training, fuel conservation, reduces use of aircraft for training, avoids adverse environmental effects and reduces training cost.

CAAB permits usage of FSTDs for various training purposes of flight crew such as initial licensing, refresher, recurrent, transition, up-grade, category or class rating, etc. which may give credit towards the flight training requirements for issue and renewal of flight crew licenses, endorsements and ratings and also for the training of instructors and examiners. It is, therefore, necessary that the simulators be evaluated and approved prior to its use. It is also essential that the approved FSTDs be maintained to the certification level for which they have been approved.

1.2 Applicability:

1.2.1 This ANO (OPS) A-7(A)shall apply for evaluation, certification, operation and continued qualification of FSTDs operated by an approved training organization (ATO) or air operator, applicable for aeroplane and helicopter, limited to ICAO FTD Type I to Type VII, applicable for PPL, CPL, IR, FIR and MPL(Core Flying Skills) and FSTD Type Level A, Level B, Level C and Level D.

1.2.2 Different categories used by other regulatory bodies like EASA and FAA mentioned in this ANO, may be used in combination to facilitate evaluation and certification process. It is essential that the operator and the approving authority clearly understand the complexity of FSTD qualification and its qualification process.

1.2.3 An ATO or air operator, who wishes to establish FSTD for training purposes and avail the benefit of credit hours:
i) The applicant shall submit the request letter for initial CAAB evaluation not less than 60 days prior to the requested qualification date.

ii) The relevant QTG also to be submitted along with the requested letter for qualification of a FSTD;
iii)The applicant shall submit a completed test report not less than 30 days prior to the requested qualification date, unless otherwise agreed by the CAAB.

iv) CAAB evaluation team shall complete initial evaluation and prepare the report and submit the report at least 15 days prior to the requested qualification date.

v) ATOs or air operators must rectify any shortfalls and submit the rectification report to CAAB at least 7 days prior to the requested qualification date.

vi) CAAB shall issue the certificate of qualification by the requested qualification date subject to satisfactory evaluation of the FSTD.

Note 1: Days may be revised at the discretion of CAAB subject to a formal request from the applicant. Note 2: sample application formats are included in the Attachments.

1.3 Creditable Hours:

1. Level B, Level C and D Simulator Hours can be full credited for type rating.
2. For issuance of Pilot Licence simulator hours can be credited as per ANO-1 para 2.3.3.1.1 , 2.4.3.1.1 and para 2.6.3.1.1
3. For Issuance of Instrument rating simulator Hours can be credited as per ANO-1 para2.7.3.2(b)
4. For specific type of Simulator type then can be as specified
    i. PPL 5 hour(maximum)
    ii. CPL 20 hours(maximum)
    iii. IR : 30 hours(maximum)

Note: Briefly describe as per table 6.3(b)

1.4 Fees:

1.4.1 Initial and renewal Evaluation: As per CAAB prescribe amount.
1.4.2 Any other Evaluation: As per CAAB prescribe amount.

1.5 Definition:

Advanced Flight Training Device - means a flight training device as defined that has a cockpit that accurately replicates a specific make, model, and type aircraft cockpit, and handling characteristics that accurately model the aircraft handling characteristics.

Course Curriculum - means a set of courses approved by the Director General, for use by a training center and its satellite training centers. The core curriculum consists of training which is required for
certification. It does not include training for tasks and circumstances unique to a particular user.

Course means -

(a) A program of instruction to obtain pilot certification, qualification, authorization, or currency.
(b) A program of instruction to meet a specified number of requirements of a program for pilot training, certification, qualification, authorization, or currency; or
(c) A curriculum or curriculum segment as defined in ANO-1

Courseware - means instructional material developed for each course or
curriculum, including lesson plans, flight event descriptions, Computer Software programs, audiovisual programs, workbooks, and handouts.

Examiner- means a person employed by a training center certificate holder who performs tests for certification, added ratings, authorizations, and proficiency checks that are authorized by the certificate holder's training specification, and who is authorized by the CAAB to administer such checks and tests.

Full Flight Simulator - means a full size replica of a specific type or make, model and series aeroplane flight deck, including the assemblage of equipment and computer program necessary to represent the aeroplane in ground and flight conditions, a visual system providing an out of flight deck view and a force cueing motion system. It is in compliance with the minimum standards for FFS level

of Qualification

Flight Training Device (FTD): means A full size replica of a specific aeroplane type's instruments, equipment panels and controls in an open flight deck area or 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.

FNPT(*Flight and navigation procedures trainer*): *means a training device which represents the flight deck/cockpit environment including the assemblage of equipment and computer programmes necessary to represent an aircraft or class of aeroplane in flight operations to the extent that the systems appear to function as in an aircraft. It is in compliance with the minimum standards for a specific FNPT level of qualification.*

FBS(Fixed Base Simulator): means a full size replica of a specific type or make, model and series aeroplane flight deck, including the assemblage of equipment and computer program necessary to represent the aeroplane in ground and flight conditions, a visual system providing an out of flight deck view but without motion.

Instructor(FI/TRI/SFI/CFTI)- means a person employed by a training center and designated to provide instruction in accordance with para2.3 of this Part.

Examiner(DPE/DCP/TRE/SFE/ Authorized Examiner) :means an incumbent who is an operator employee and has been approved by CAAB to conduct 'Recurrent' examinations/tests/checks only

Line-Operational Simulation - means simulation conducted using operational- oriented flight scenarios that accurately replicate interaction among flight-crew members and between flight-crew members and dispatch facilities, other crewmembers, air traffic control, and ground operations. Line operational simulations are conducted for training and evaluation purposes and include random, abnormal, and emergency occurrences. Line operational simulation specifically includes line- oriented flight training, special purpose operational training, and line operational evaluation.

Specialty Curriculum - means a set of courses that is designed to satisfy a requirement of the Civil Aviation Safety Regulations and that is approved by the CAAB for use by a particular training center
or satellite training center. The specialty curriculum includes training requirements unique to one or more training center clients.

Training Organization- means an organization governed by the applicable requirements of this Part that provides training, testing, and checking under contract or other arrangement to airmen subject to the requirements of ANO-ATO part-1

Training program - consists of courses, courseware, facilities, flight training equipment, and personnel necessary to accomplish a specific training objective. It may include a core curriculum and a specialty curriculum.
Training specifications - means a document issued to a training center certificate holder by the CAAB that prescribes that center's training, checking, and testing authorizations and limitations, and specifies training program requirements

1.6 Certificate and training specifications required.
(a) No person may operate a certificated training center without, or in violation of, a training center certificate and training specifications issued under this Part.

(b) An applicant will be issued a training center certificate and training specifications with appropriate limitations if the applicant shows that it has adequate facilities, equipment, personnel, and courseware required as per ANO-ATO to conduct training approved under ANO-ATO

1.7 Licences, Ratings and Training:

1.7.1. The pilot licencing, rating and qualification training necessary that might utilize some level of FSTD were identified as follows from a review of existing regulatory materials:

a. Licence:
   i. PPL (Private Pilot Licence)
   ii. CPL (Commercial Pilot Licence)
   iii. MPL(Multi Pilot Licence)
   iv. ATPL(Air Transport Pilot Licence)

b. Rating:
   i. CR (Class Rating)
   ii. TR(Type Rating)
   iii.IR (Instrument Rating)

c. **Training**

   i. PPC(Pilot Proficiency Check)
   ii. RE(Recency take-off and landing)
   iii. CQ(Continuing Qualification)
   iv. Special operation(LVP, EDTO, RVSM, RNP and CAT C Airport operation)
   v. IO(Initial Operator Training and Checking)

1.8 **Training Procedures Manual:**

TPM to prepared as per the guidelines of ANO ATO part-1

1.9 **Duration of a certificate/ validity**

(a) Maximum 2 (two) years

(b) Unless sooner surrendered, suspended, or revoked, a certificate issued under this Part for a training center located inside as well as outside the Republic of Bangladesh expires at the end of the twenty fourth month after the month in which it is issued or renewed.

(c) If the CAAB suspends, revokes, or terminates a training center certificate, the holder of that certificate shall return the certificate to the Chairman within 7(seven) working days after being notified that the certificate is suspended, revoked, or terminated.

1.10 **Deviations or waivers**
(a) The Chairman CAAB may issue deviations or waivers from any of the requirements of this Part as per CPD-39 of CAAB.

(b) A training center applicant requesting a deviation or waiver under this section must provide the Chairman CAAB with information acceptable to the Chairman CAAB that shows -

(1) Justification for the deviation or waiver; and

(2) That the deviation or waiver will not adversely affect the quality of instruction or evaluation.

1.11 **Application for issuance or amendment:**

(a) An application for a training center certificate and training specifications shall -

(1) Be made on a form and in a manner prescribed by the Chairman CAAB

(2) Be filed with the appropriate office of FSR division; and

(3) Be made at least 60 calendar days before the beginning of any proposed training or 30 calendar days before effecting an amendment to any approved training, unless a shorter filing period is approved by the Chairman.

(b) Each application for a training center certificate and training specification shall provide-

(1) A statement showing that the minimum qualification requirements for each management position are met

(2) Notification-

(i) A statement acknowledging that the applicant shall notify the Chairman CAAB within 30 working days before any change made in the assignment of persons in the required management positions;

(ii) When any of its approved management personnel need to be changed due to a reason that is beyond the certificate holder's control, the certificate holder may nominate a person for a temporary assignments at that vacant position. However, the person nominated shall meet the respective requirements for a management position of this Subpart, and within 7 days the certificate holder shall notify and request the CAAB for evaluation and approval of that candidate.

(3) The proposed training authorizations and training specifications requested by the applicant.

(4) The proposed evaluation authorization;

(5) A description of the flight training equipment that the applicant proposes to use;

(6) A description of the applicant's training facilities, equipment, Qualifications of personnel to be used, and proposed evaluation plans;

(7) A training program curriculum, including syllabi, outlines, courseware, procedures, and documentation to support the items required by ANO-1, ANO6-1 and ANO6-3;

(8) A description of a recordkeeping system that will identify and document the details of training, qualification, and certification of students, instructors, and evaluators;

(9) A description of quality control measures proposed ;and

(10) A method of demonstrating the applicant's qualification and ability to provide training for a certificate or rating in fewer than the minimum hours prescribed in ANO-ATO part-1 if the applicant proposes to do so.

(c) The facilities and equipment described in paragraph (b) (6) of this section shall-

(1) Be available for inspection and evaluation prior to approval; and
(2) Be in place and operational at the location of the proposed training center prior to issuance of a certificate under this Part.

(d) An applicant who meets the requirements of this Part and is s approved by the Chairman is entitled to-

(1) A training center certificate containing all business names included on the application under which the certificate holder may conduct operations and the address of each business office used by the certificate holder; and
(2) Training specifications, issued by the Chairman to the certificate holder, containing-
(i) The type of training authorized, including approved courses;
(ii) The category, class, and type of aircraft that may be used for training, testing, and checking;
(iii) For each flight simulator or flight training device, the make, model, and series of airplane or the set of airplanes being simulated and the qualification level assigned, or the make, model, and series of rotorcraft, or set of rotorcraft being simulated and the qualification level assigned;
(iv) For each flight simulator and flight training device subject to qualification evaluation by the Chairman, the identification number assigned by the CAAB;
(v) The name and address of all satellite training centers, and the approved courses offered at each satellite training center;
(vi) Authorized deviations or waivers from this Part; and
(vii) Any other items the Chairman may require or allow.

(e) The Chairman may deny, suspend, revoke, or terminate a certificate under this Part if the Chairman finds that the applicant or the certificate holder-
(1) Held a training center certificate that was revoked, suspended, or terminated within the previous 5 years; or
(2) Employs or proposes to employ a person who
(i) Was previously employed in a management or supervisory position by the holder of a training center certificate that was revoked, suspended, or terminated within the previous 5 years;
(ii) Exercised control over any certificate holder whose certificate has been revoked, suspended, or terminated within the last 5 years; and
(iii) Contributed materially to the revocation, suspension, or termination of that certificate and who will be employed in a management or supervisory position, or who will be in control of or have a substantial ownership interest in the training center.

(3) Has provided incomplete, inaccurate, fraudulent, or false information for a training center certificate;
(4) Should not be granted a certificate if the grant would not foster aviation safety.

(f) At any time, CAAB may amend a training center certificate-

(1) On the Chairman's own initiative, under ANO-ATO
(2) Upon timely application by the certificate holder.

(g) The certificate holder must file an application to amend a training center certificate at least 60 calendar days prior to the applicant's proposed effective amendment date unless a different filing period is approved by the Chairman.

(h) through
(q) [Reserved]

1.12 Management and personnel requirements

An applicant for a training center certificate must show that –

(a) For each proposed curriculum, the training center has, and shall maintain, a sufficient number of instructors who are qualified in accordance with para of this Part to perform the duties to which they are assigned;

(b) The training center has designated, and shall maintain, a sufficient number of approved evaluators to provide required checks and tests to graduation candidates within 7 calendar days of training completion for any curriculum leading to airman certificates or ratings, or both.

(c) The training center has, and shall maintain, a sufficient number of management personnel lifted and competent to perform required duties; and

(d) A management representative, and all personnel who are designated by the training center to conduct direct student training, are able to understand, read, write, and fluently speak the English language other than as applicable as per ANO-ATO.

1.13 Facilities

(a) An applicant for, or holder of, a training center certificate shall ensure that

(1) Each room, training booth, or other space used for instructional purposes is climatically controlled, ventilated, equipped with controllable lighting to enable satisfactory use of all proposed
ipment, and otherwise provides for the comfort an physiological needs of the students, and to conform ing, sanitation, and health codes; and

(2) The facilities used for instruction are not routinely subject to significant distractions caused by flight operations and maintenance operations at the airport.

(b) An applicant for, or holder of, a training center certificate shall establish and maintain a principal business office that is physically located at the address shown on its training center certificate.

(c) The records required to be maintained by this Part must be located in facilities adequate for that purpose.

(d) An applicant for, or holder of, a training center certificate conducting flight training to issue type rating for pilot must have Full Flight Simulator for which its airplane type rating and available at a location approved by the CAAB, adequate flight training equipment and courseware.

(e) An applicant for, or holder of, a training center certificate conducting flight attendance training to issue an flight attendance certificate must have aircraft mock up for which its airplane type rating and available at a location approved by the CAAB, adequate flight training equipment and courseware.

(f) An applicant for, or holder of, a training center certificate conducting flight operation officer training to issue an flight operation officer license must have flops simulation room and available at a location approved by the CAAB, adequate flight training equipment and courseware.

(g) A training center certificate may be issued to an applicant having a business office or training center located outside of Bangladesh.

1.14 Satellite training centers.

(a) The holder of a training center certificate may conduct training in accordance with an approved training program at a satellite training center if -

(1) The facilities, equipment, personnel, and course content of the satellite training center meet the applicable requirements of this Part para.

(2) The instructors and evaluators at the satellite training center are under the direct supervision of management personnel of the Principal training center.

(3) The CAAB is notified in writing that a particular satellite is to begin operations at least 60 days prior to proposed commencement of operations at the satellite training center; and

(4) The certificate holder's training specifications reflect the name and address of the satellite training center and the approved courses offered at the satellite training center.

(b) The certificate holder's training specifications shall prescribe the operations required and authorized at each satellite training center.

1.15 FSTD's located outside of Bangladesh Special rules:

(a) In the discretion of the CAAB, a training center located outside the Republic of Bangladesh may be certificated by the Director General pursuant to this Part, provided that the training center hold a valid certificate issued by local ICAO contracting State civil aviation authority, based on the regulations that equal to this Part.

(b) A training center located outside of Bangladesh may prepare and recommend Republic of Bangladesh applicants for airman license/certificate and may prepare and recommend applicants for authorizations, endorsements, and added ratings to CAAB-issued license/certificate.

(c) In addition to the authority provided under paragraph (b) of this section, a training center located outside the Republic of Bangladesh, when authorized by the CAAB, may provide any training, testing, or checking that is required to satisfy a requirement of CAAB

1.16 Requirement of Qualification Equivalency

Approved training shall provide a level of competency at least equal to that provided by the minimum experience requirements for personnel not receiving such approved training.

1.17 Display of certificate.

(a) Each holder of a training center certificate must prominently display that certificate in a place accessible to the public in the principal business Office of the training center.

(b) A training center certificate and training specifications must be made available for inspection upon request by-

(1) The CAAB;

(2) An authorized representative of the National Transportation Safety Committee; or

(3) A law enforcement officer.

1.18 Inspections
Each certificate holder must allow the CAAB to inspect training center facilities, equipment, and records at any reasonable time and in any reasonable place in order to determine compliance with or to determine initial or continuing eligibility under ANO-ATO and the training center's certificate and training specifications.

1.19 Training agreements.

A pilot school certificated under CAAB ANO-ATO may provide training, testing, and checking for a training center certificated under this Part if- (a) There is a training, testing, and checking agreement between the certificated training center and the pilot school.

(b) The training, testing, and checking provided by the certificated pilot school is approved and conducted in accordance with this Part.

(c) The pilot school certificated under ANO-ATO by Chairman CAAB approval for a training course outline that includes the portion of the training, testing, and checking to be conducted ANO-1, ANO-ATO and ANO6-1

(d) Upon completion of training, testing, and checking conducted under ANO-1, ANO-ATO or ANO6-1, a copy of each student's training record is forwarded to the training center and becomes part of the student's permanent training record.

1.20
Applicability
This part of this Chapter prescribes the curriculum and syllabus requirements for the issuance of a FSTD approval certificate and training specifications for training, testing, and checking conducted to meet the requirements of ANO-ATO part-1, ANO-1 and ANO 6-1 and ANO SPA of CAAB

1.21 Approval of flight aircrew training program.

(a) Except as provided in paragraph
(b) of this section, each applicant for, or holder of, a training center certificate rnust apply to the Director General for training program approval.
(c) A curriculum approved ANO-ATO, ANO-1, ANO-SPA of CAAB is approved under this part provided that there are no modifications to the equipment facilities or personnel as laid down in the approved curriculum.
(d) Application for training program approval shall be made in a form and in a manner acceptable to the CAAB.
(d) Each application for training program approval must indicate-

(1) Which courses are part of the core curriculum and which courses are part of the specialty curriculum.

(2) Which requirements of ANO-ATO, ANO-1, ANO-SPAof CAAB would be satisfied by the curriculum or curriculums; and
(3) Which requirements of ANO-ATO, ANO-1, ANO-SPA of CAAB would not be satisfied by the

curriculum or curriculums.

(4) Where the program is to provide the training requirements of ANO-ATO, ANO-1, ANO-SPA, training program paragraphs (1) to (3) of this section also apply.

(e) If, after a certificate holder begins operations under an approved training program, the CAAB finds that the certificate holder is not meeting the provisions of its approved training program, CAAB may require the certificate holder to make revisions to that training program.

(f) If the CAAB requires a certificate holder to make revisions to an approved training program and the certificate holder does not make those required revisions, within 30 calendar days, The Chairman may suspend, revoke, or terminate the training center certificate under the provisions of CPD-31

1.22 Training program curriculum requirements.

Each training program curriculum submitted to the CAAB for approval must meet the applicable requirements of this Part and must contain-

(a) A syllabus for each proposed curriculum;

(b) Minimum aircraft and flight training equipment requirements for each proposed curriculum;

(c) Minimum instructor and examiner qualifications for each proposed curriculum;

(d) A curriculum for initial training and continuing training of each instructor or examiner employed to instruct in a proposed curriculum and

(e) For each curriculum that provides for the issuance of a license or rating in fewer than the minimum hours prescribed ANO-1 and ANO 6-1

(1) A means of demonstrating the ability to accomplish such training in the reduced number of hours; and

(2) A means of tracking student performance.

PERSONNEL AND FLIGHT TRAINING EQUIPMENT REQUIREMENTS

2.1 Applicability

This Subpart prescribes the personnel and flight training equipment requirements for a certificate holder that is training to meet the requirements of ANO-1, ANO-ATO, ANO 6-1 and ANO-SPA.

2.2 Training center instructor eligibility requirements

(a) A certificate holder must have employed on a fulltime basis at least two instructor in a flight training course that is subject to approval by the CAAB, and meets requirement as follow:

(1) If instructing in an aircraft/FSTD , is qualified in accordance with annexure 16&17 of ANO-1 and CAP6-1

(2) Is able to read, write, and speak and understand in the English Language.

(3) Satisfies the requirements of paragraph (c) of this section; and

(4) Meets at least one of the following requirements-

(i) Except as allowed by paragraph (a) (5) (ii) of this section, meets the aeronautical experience requirements of ANO-ATO ,(b), (c), or (e) of ANO-1, as applicable, excluding the required hours of instruction in preparation for the commercial pilot practical test.

(ii) If instructing in flight simulator or flight training device that represents an

airplane requiring a type rating or if instructing in a curriculum leading to the issuance of an airline transport pilot license or an added rating to an airline transport pilot license, meets the aero nautical experience requirements of ANO-1, ANO-ATO, ANO 6-1 and CAP6-1 as applicable

(iii) Is employed as a flight simulator instructor or a flight training device instructor for a training center providing instruction and testing to meet the requirements of ANO-1, CAP 6-1.

(b) A training center must designate each instructor in writing to instruct in each approved course, prior to that person functioning as an instructor in that course.

(c) Prior to initial designation, each instructor shall:

(1) Complete at least 8 hours of ground training on the following subject matter:

(i) Instruction methods and techniques.
(ii) Training policies and procedures.
(iii) The fundamental principles of the learning process.
(iv) Instructor duties, privileges, responsibilities, and limitations.
(v) Proper operation of simulation Controls and systems.
(vi) Proper operation of environmental control and warning or caution panel s.
(vii) Limitations of simulation.
(viii) Minimum equipment requirements for each curriculum.
(ix) Revisions to the training courses.
(x) Cockpit resource management and crew coordination.

(2) Satisfactorily complete a written test-

(i) On the subjects specified in paragraph (c)(l) of this section; and
(ii) That is accepted by the CAAB as being of equivalent difficulty, complexity, and scope as the tests provided by the CAAB for the flight instructor airplane and instrument flight instructor knowledge tests.

2.3 Training center instructor and examiner privileges and limitations.

(a) A certificate holder may allow an instructor to provide:
(1) Instruction for each curriculum for which that instructor is qualified.
(2) Testing and checking for which that instructor is qualified
(3) Instruction, testing, and checking intended to satisfy the requirements of any part of ANO-1

(b) A training center whose instructor or examiner is designated in accordance with the requirements of this Subpart to conduct training, testing, or checking in qualified and approved flight training equipment, may allow its instructor or examiner to give endorsements required by ANO-1 of CAAB if that instructor or examiner is authorized by the CAAB to instruct or evaluate in a para 2.4 curriculum that requires such endorsements.

(c) A training center may not allow an instructor to-

(1) Excluding briefings and debriefings, conduct more than 8 hours of instruction in any 24-consecutive-hour period;
(2) Provide flight training equipment instruction unless that instructor meets the requirements of section 2.4 (a)(l) through (a)(4), and section 2.4 (b), as applicable; or
(3) Provide flight instruction in an aircraft unless that instructor-

(i) Meets the requirements of para 2.4a(i), 2.4a(ii) and 2.4a(v.)
(ii) Is qualified and authorized in accordance with ANO-1, CAP6-1
(iii) Holds licenses and ratings specified by ANO-1 appropriate to the category, class, and

type aircraft in which instructing;

(iv) If instructing or evaluating in an aircraft in flight while occupying a required crewmember seat, holds at least a valid second class medical certificate; and

(v) Meets the recency of experience requirements of ANO-1

2.4 Training center instructor training and testing requirements

(a) Except as provided in paragraph (c) of this section, prior to designation and every 12 calendar months beginning the first day of the month following an instructor's initial designation, a certificate holder must ensure that each of its instructors meets the following requirements:

(1) Each instructor must satisfactorily demonstrate to an authorized examiner knowledge of, and proficiency in, instructing in a representative segment of each curriculum for which that instructor is designated to instruct under this Part.

(2) Each instructor must satisfactorily complete an approved course of ground instruction in at least-

(i) The fundamental principles of the learning process;
(ii) Elements of effective teaching, instruction methods, and techniques;
(iii) Instructor duties, privileges, responsibilities, and limitations;
(iv) Training policies and procedures;
(v) Cockpit resource management and crew coordination; and
(vi) Evaluation.

(3) Each instructor who instructs in a qualified and approved flight simulator or flight training device must satisfactorily complete an approved course of training in the operation of the flight simulator, and an approved course of ground instruction, applicable to the training courses the instructor is designated to instruct.

(4) The flight simulator training course required by paragraph (a) (3) of this section which must include-

(i) Proper operation of flight simulator and flight training device Controls and systems;

(ii) Proper operation of environmental and fault panels;

(iii) Limitations of simulation; and

(iv) Minimum equipment requirements for each curriculum.

(5) Each flight instructor who provides training in an aircraft must satisfactorily complete an approved course of ground instruction and flight training in an aircraft, flight simulator, or flight training device.

(6) The approved course of ground instruction and flight training required by paragraph (a)(5) of this section which must include instruction in

(i) Performance and analysis of flight training procedures and maneuvers applicable to the training courses that the instructor is designated to instruct;

(ii) Technical subjects covering aircraft subsystems and operating rules applicable to the training courses that the instructor is designated to instruct;

(iii) Emergency operations;

(iv) Emergency situations likely to develop during training; and

(v) Appropriate safety measures.

(7) Each instructor who instructs in qualified and approved flight training equipment must pass a written test and annual proficiency check-

(i) In the flight training equipment in which the instructor will be instructing; and

(ii) On the subject matter and maneuvers of a representative segment of each curriculum for which the instructor will be instructing.

(b) In addition to the requirements of paragraphs (a) (1) through (a) (7) of this section, each certificate holder must ensure that each instructor who instructs in a flight simulator that the CAAB has approved for all training and all testing for the airline transport pilot certification test, aircraft type rating test, or both, has met at least one of the following three requirements: (1) Each instructor must have performed 2 hours in

flight, including three take offs and three landings as the sole manipulator of the Controls of an aircraft of the same category and class, and, if a type rating is required, of the same type replicated by the approved flight simulator in which that instructor is designated to instruct;

(2) Each instructor must have participated in an approved line observation program which will -

(i) Was accomplished in the same airplane type as the airplane represented by the flight simulator in which that instructor is designated to instruct; and
(ii) Included line-oriented flight training of at least 1 hour of flight during which the instructor was the sole manipulator of the Controls in a flight simulator that replicated the same type aircraft for which that instructor is designated to instruct

or

(3) Each instructor must have participated in an approved in-flight observation training course that-

(i) Consisted of at least 2 hours of flight time in an airplane of the same type as the airplane replicated by the flight simulator in which the instructor is designated to instruct; and

(ii) Included line-oriented flight training of at least 1 hour of flight during which the instructor was the sole manipulator of the Controls in a flight simulator that replicated the same type aircraft for which that instructor is designated to instruct.

(c) An instructor who satisfactorily completes a curriculum required by paragraph (a) or (b) of this section in the calendar month before or after the month in which it is due is considered to have taken it in the month in which it was due for the purpose of computing when the next training is due.

(d) The CAAB may give credit for the requirements of paragraph (a) or (b) of this section to an instructor who has satisfactorily completed an instructor training course for a ANO-1, CAP6-1 older if the CAAB finds such a course equivalent to the requirements of paragraph (a) or (b) of this section.

2.5 Training center examiner requirements.

(a) Except as provided by paragraph (d) of this section, a training center must ensure that each person authorized as an evaluator-

(1) Is approved by the CAAB

(2) Is in compliance with ANO-1, ANO-ATO, CAP6-1

(3) Prior to designation, and except as provided in paragraph (b) of this section, every 12-calendar-month period following initial designation, the certificate holder must ensure that the examiner satisfactorily completes a curriculum that includes the following:
(i) Examiner duties, functions, and responsibilities;
(ii) Methods, procedures, and techniques for conducting required tests and checks;
(iii) Evaluation of pilot performance; and
(iv) Management of unsatisfactory tests and subsequent corrective action; and

(4) If evaluating in qualified and approved flight training equipment must satisfactorily pass a written test and annual proficiency check in a flight simulator or aircraft in which the examiner will be evaluating.

(b) An examiner who satisfactorily completes a curriculum required by Paragraph (a) of this section in the calendar month before or the calendar month after the month in which it is due is considered to have taken it in the month in which it was due for the purpose of computing when the next training is due.

(c) The Chairman may give credit for the requirements of paragraph (a) (3) of this section to an examiner who has satisfactorily completed an examiner training course for a

CAP6-1 DCP course certificate holder if the CAAB finds such a course equivalent to the requirements of paragraph (a) (3) of this section.

2.6 Flight simulators and flight training devices.

(a) An applicant for, or holder of, a training center certificate must show that each flight simulator and flight training device used for training, testing, and checking will be or is specifically qualified and approved by the CAAB for-
  (1) Each maneuver and procedure for the make, model, and series of aircraft, set of aircraft, or aircraft type simulated, as applicable; and
  (2) Each curriculum or training course in which the flight simulator or flight training device is used, if that curriculum or course is used to satisfy any requirement of CAAB such as ANO-1 para 2.2, para 2.4 para 2.6 , para 2.7 and para 2.8. And also type course syllabus.

(b) The approval required by paragraph (a) (2) of this section must include-
  (1) The set of aircraft, or type aircraft;
  (2) If applicable, the particular variation within type, for which the training, testing, or checking is being conducted; and
  (3) The particular maneuver, procedure, or crewmember function to be performed.

(c) Each qualified and approved flight simulator or flight training device used by a training center must-
  (1) Be maintained to ensure the reliability of the performances, functions, and all other characteristics that were required for qualification;
  (2) Be modified to conform with any modification to the aircraft being simulated if the modification results in changes to performance, function, or other characteristics required for qualification;
  (3) Be given a functional preflight check each day before being used; and
  (4) Have a discrepancy log in which the instructor or evaluator, at the end of each training session, enters each discrepancy.

(d) Unless otherwise authorized by the CAAB, each component on a qualified and approved flight simulator or flight training device used by a training center must be operative if the component is essential to, or involved in the training, testing, or checking of airmen.

(e) Training centers shall not be restricted to specific-
  (1) Route segments during line-oriented flight training scenarios; and
  (2) Visual data bases replicating a specific customer's bases of operation.

(f) Training centers may request evaluation, qualification, and continuing evaluation for qualification of flight simulators and flight training devices without
  (1) Holding an air carrier certificate; or
  (2) Having a specific relationship to an air carrier certificate holder

3.0 OPERATING RULES

3.1 Applicability

This Subpart prescribes the operating rules applicable to a training center certificated under this Part and operating a course or training program curriculum approved in accordance with para 2.0 of this chapter.

3.3 Privileges

A certificate holder may allow flight simulator instructors and examiner to meet recency of experience requirements through the use of a qualified and approved flight simulator or qualified and approved flight training device if that flight simulator or flight training device is-

(a) Used in a course approved in accordance with para 2 of this Part; or

(b) Approved for meeting recency of experience requirements.

3.3 Limitations.

(a) A certificate holder shall-

(1) Ensure that a flight simulator or flight training device freeze, slow motion, or repositioning

feature is not used during testing or checking; and
(2) Ensure that a repositioning feature is used during line operational simulation for evaluation and line-oriented flight training only to advance along a flight route to the point where the descent and
approach phase of the flight begins.
(b) When flight testing, flight checking, or line operational simulation is being conducted, the certificate holder must ensure that one of the following occupies each crewmember position:
(1) A crewmember qualified in the aircraft category, class, and type, if a type rating is required, provided that no flight instructor who is giving instruction may occupy a crewmember position.
(2) A student, provided that no student may be used in a crewmember position with any other student not in the same specific course.
(c) The holder of a training center certificate may not recommend a trainee for a license or rating, unless the trainee-
(1) Has satisfactorily completed the training specified in the course approved under section ANO-1; and
(2) Has passed the final tests required by ANO-1.
(d) The holder of a training center certificate may not graduate a student from a course unless the student has satisfactorily completed the curriculum requirements of that course.

3.4 Quality of training quality control, quality assurance, and safety management system Quality o f training

(a) Each training center must meet the following requirements:
(1) Comply with its approved training course; and
(2) Provide training of such quality that at least 80 percent of the trainees passed their tests on the first attempt;
(3) A Training Center must require any student to attend classes not less than 90 percent of instructions (theoretical and practical).
(b) The failure of a training center to maintain the quality of training specified in paragraph (a) of this section may be the basis for suspending or revoking that training center's certificate.
(c) When requested by the CAAB, a training center must allow the CAAB to administer any knowledge test, practical test, stage check, or end-of- course test to its students.
(d) When a stage check or end-of-course test is administered by the CAAB under the provisions of paragraph (c) of this section, and the student has not completed the training course, then that test will be based on the standards prescribed in the training center's approved training course.
(e) When a practical test or knowledge test is administered by the CAAB under the provisions of paragraph (c) of this section, to a student who has completed the training center's training course, that test will be based upon the areas of operation approved by the CAAB.

3.6 Quality control system

(a) A certified training center shall establish a quality control system to ensure that the policies and procedures described in the Training Procedures Manual are effectively in place.
(b) The training center shall appoint a person who will be responsible to ensure the integrity of the quality control program.
(c) The person appointed in accordance with paragraph (b) shall have:
(1) A minimum of five years experience as a pilot for the training center conducting course for pilot;
(2) Experience as a trainer and *l or* administrator at a recognized training center;
(3) Demonstrated ability to administer a quality control program.

3.7 Quality assurance system

(a) A certified training center shall establish a quality assurance system that includes an

independent internal audit in order to monitor compliance with the policies and procedures described in the raining Procedures Manual.
(b) A quality feedback reporting system to the accountable manager that ensures proper and timely corrective action is taken in response to reports resulting from the internal independent audit established to meet paragraph (a).

3.8 Safety management system.
(a) A certified training center shall have in place a Safety Management System (SMS) that is acceptable to Directorate General of Civil Aviation that, as a minimum:
(1) Identifies safety hazards and assesses and mitigates risks;
(2) Ensures that remedial action necessary to maintain an acceptable level of safety is implemented;
(3) Provides for continuous monitoring and regular assessment of the safety level achieved; and
(4) Aims to make continuous improvement to the overall level of safety.
(b) In order to be acceptable to the Directorate General of Civil Aviation, the SMS shall meet the requirements in CAAB ANO-19, Safety Management System.

4.0 RECORD KEEPING
This Subpart prescribes the training center recordkeeping requirements for trainees enrolled in a course, and instructors and evaluators designated to instruct a course, approved in accordance with Subpart B of this Part.

4.1 Recordkeeping requirements.
(a) A certificate holder must maintain a record for each trainee that contains -
(1) The name of the trainee;
(2) A copy of the trainee's pilot license, if any, and medical certificate;
(3) The name of the course and the make and model of flight training equipment used;
(4) The trainee's prerequisite experience and course time completed;
(5) The trainee's performance on each lesson and the name of the instructor providing instruction;
(6) The date and result of each end-of-course practical test and the name of the examiner conducting the test; and
(7) The number of hours of additional training that was accomplished after any unsatisfactory practical test.

(b) A certificate holder shall maintain a record for each instructor or examiner designated to instruct a course approved in accordance with Subpart B of this Part that indicates that the instructor or examiner has complied with the requirements of section ANO-1, CAP6-1
(c) The certificate holder shall-
(1) Maintain the records required by paragraphs (a) of this section for at least 5 (five year) following the completion of training, testing or checking;
(2) Maintain the qualification records required by paragraph (b) of this section while the instructor or examiner is in the employ of the certificate holder and for 5 (five) year thereafter; and
(3) Maintain the recurrent demonstration of proficiency records required by paragraph (b) of this section for at least 3 (three) year.
(d) The certificate holder must provide the records required by this section to the CAAB, upon request and at a reasonable time, and shall keep the records required by -
(1) Paragraph (a) of this section at the training center, or satellite training center where the training, testing, or checking, if appropriate, occurred; and
(2) Paragraph (b) of this section at the training center or satellite training center where the instructor or examiner is primarily employed.
(e) The certificate holder shall provide to a trainee, upon request and at a reasonable time, a

'copy of his or her training records.

5.0 OTHER APPROVED COURSE

5.1 Conduct of other approved course in simulator (Cabin crew, ATC)

(a) An applicant for, or holder of, a training center certificate may apply for approval to conduct a course for which a curriculum is not prescribed by this Part.

(b) The course for which application is made under paragraph (a) of this section may be for crewmembers other than flight-crewmembers, including flight attendants, flight operation officers, and others approved by the CAAB.

(c) An applicant for course approval under this Subpart must comply with the applicable requirements of para 1.0 through para 5.0 of this Part.

(d) The CAAB approves the course for which the application is made if the training center or training center applicant shows that the course contains a curriculum that will achieve a level of competency equal to, or greater than, that required by the appropriate ANO-1, ANO-ATO

SUBPART A - GENERAL

6.1 Applicability

This Part applies to synthetic training devices that may be used by a person to gain aeronautical experience.

6.2 Definitions

Full Flight Simulator (FFS) —a replica of a specific type, make, model, or series aircraft. It includes the equipment and computer programs necessary to represent aircraft operations in ground and flight conditions, a visual system providing an out-of-the-flight deck view, a system that provides cues at least equivalent to those of a three-degree-of-freedom motion system, and has the full range of capabilities of the systems installed in the device as described in part 60 of this chapter and the QPS for a specific FFS qualification level.

Flight Training Device (FTD) —a replica of aircraft instruments, equipment, panels, and controls in an open flight deck area or an enclosed aircraft flight deck replica. It includes the equipment and computer programs necessary to represent aircraft (or set of aircraft) operations in ground and flight conditions having the full range of capabilities of the systems installed in the device as described in part 60 of this chapter and the qualification performance standard (QPS) for a specific FTD

FNPT *(*Flight and navigation procedures trainer *):* means a training device which represents the flight deck/cockpit environment including the assemblage of equipment and computer programmes necessary to represent an aircraft or class of aeroplane in flight operations to the extent that the systems appear to function as in an aircraft. It is in compliance with the minimum standards for a specific FNPT level of qualification.

FBS(Fixed Base Simulator): means a full size replica of a specific type or make, model and series aeroplane flight deck, including the assemblage of equipment and computer program necessary to represent the aeroplane in ground and flight conditions, a visual system providing an out of flight deck view but without motion.

Master Qualification Test Guide (MQTG) The authority approved test guide which incorporates the results of tests witnessed by the authority. The MQTG serves as the reference for future evaluations

Qualification Test Guide (QTG), for a synthetic training device, means a document that:

(a) shows that:

(i) the performance and handling qualities of the synthetic training device agree, within the limits set out in the Manual of Standards, with those of the aircraft to which it relates; and

(ii) all applicable requirements in these Regulations have been met; and

(b) includes the following information that relates to the matters mentioned in paragraph (a):

(i) data relating to the performance and handling qualities of the aircraft and synthetic training device;

(ii) the validation tests, and all functions and subjective tests for the device.

Certificate holder is a person who seeks or maintains synthetic training devices qualification and is responsible for the prescribed actions as prescribed in this part.

Qualification level, for a flight simulator or flight training device, has the meaning given by this part.

Statement Of Compliance (SOC) - Statement of Compliance and Capability.

SUBPART B : FLIGHT SIMULATORS AND FLIGHT TRAINING DEVICES

6.3 Qualification levels

(a) The qualification level of a flight simulator(FSTD) is the level met by the simulator determined in accordance with the simulator standards level in the Appendices ANO-1 mentioned in the following table :

ITEM	LEVEL
1	A
2	B
3	C
4	D

(b) The qualification level of a flight training device(FTD) is the level met by the simulator determined in accordance with the standards in the Appendices ANO-1 mentioned in the following table:

LEVEL	**Description of FTD**	**Creditable hours**
Level 1 Level 2 Level 3	Devices previously approved as Levels 1 to 3 have "grandfathered" rights to continue in operation	0 hours
Level 4	procedures for instruments or flight management systems. There will be no control yoke	0 Hours
Level 5/ FNPT-I	the device is starting to look more like the aircraft model fly. Use for class rating. Require certification and device specific documents	PPL 5 hours CPL 10 hours IR 15 hours
Level 6/ FNPT-II	spatial relations and actual functions. Like all flight training devices and simulators. Require certification and device specific documents . More realism , and more accurate with real aircraft data	PPL 5 hours CPL 15 hours IR 20 hours
Level 7	Enclosed flightdeck and fully operational aerodynamic program with all helicopter system operation.	PPL 5 hours CPL 15 hours IR 20 hours

Description :

6.6 Application for flight simulator qualification or flight training device qualification

(a) The applicant of a flight simulator or flight training device may apply to CAAB, in writing, for qualification of the simulator or device.

(b) An application must include:

(1) a Qualification Test Guide (QTG) for the simulator or device; and

(2) a document describing the quality system that the operator proposes to use to satisfy this regulation.

6.7 Initial evaluation and qualification

(a) If CAAB receives an application for the qualification of a flight simulator or flight training device, CAAB must conduct an evaluation (an ***initial*** evaluation) of the simulator or device, including consideration of:

(1) any inspection or trial of the simulator or device; and

(2) the data provided in the QTG; and

(3) information available from any test conducted during the initial evaluation.

(b) If, after the initial evaluation, CAAB is satisfied that:

(1) the operator's quality system will be suitable for the simulator or device; and

(2) the simulator or device meets a qualification level; CAAB must qualify the simulator or device at the qualification level.

(c) CAAB may qualify a simulator or device that will simulate a new type of aircraft for which fully validated aircraft data is not available at an interim qualification level that is based on partially validated aircraft data.

(d) An interim qualification level applies for the period agreed between CAAB and the operator of the simulator or device.

(e) If CAAB qualifies a simulator or device, it must at the same time approve the QTG for the simulator or device.

6.8 Issue of flight simulator qualification certificate or flight training device qualification certificate

(a) CAAB must issue a flight simulator qualification certificate to the operator of a flight simulator, or a flight training device qualification certificate to the operator of a flight training device, if CAAB qualifies the simulator or device.

(b) The certificate must include the name of the operator and:

(1) include information identifying the simulator or device; and

(2) specify the aircraft that is simulated by the simulator or device; and

(3) specify the qualification level for the simulator or device.

6.9 Period of validity of flight simulator qualification or flight training device

qualification

(a) A flight simulator qualification or flight training device qualification is valid for:

(1) 24 months from the month of issue of the flight simulator qualification certificate or flight training device qualification certificate; or

(2) if a shorter period is specified in the certificate — that period.

(b) However, a qualification ceases to be valid if:

(1) the simulator or device is deactivated or relocated; or,

(2) there is a change of certificate holder of the simulator or device; or,

(3) it is revoked by CAAB; or,

(4) it is surrendered to CAAB

(c) A qualification is no longer valid for the period of any suspension imposed by CAAB.

6.10 **Recurrent evaluation of qualified flight simulator or qualified flight training device**

(a) The certificate holder of a qualified flight simulator or qualified flight training device at least 60 days before the expiry of the flight simulator qualification or flight training device qualification, ask CAAB, in writing, to conduct an evaluation (a recurrent evaluation of the simulator or device.

(b) As per ANO-ATO apply in respect of a recurrent evaluation in the same way as they apply to the initial evaluation.

(c) During a recurrent evaluation, a qualified flight simulator or qualified flight training device must be assessed against:

(1) the qualification level at which the simulator or device was qualified at the initial qualification or accreditation of the simulator or device; or

(2) if CAAB has changed the qualification level since the initial evaluation — the qualification level as changed.

6.11 Variation, revocation or suspension of flight simulator qualification or flight training device qualification

(a) CAAB may, by notice in writing to the certificate holder of a qualified flight simulator or qualified flight training device, vary, revoke or suspend the qualification of the simulator or device if:

(1) the simulator or device no longer meets the qualification level specified in its qualification certificate; or

(2) the certificate holder has failed to comply with a requirement of this Part in relation to the simulator or device.

(b) If an certificate holder receives a notice of variation or revocation under paragraph
(a) of this section, the certificate holder must return the qualification certificate to CAAB at least 14 days after receiving the notice.

(c) If CAAB varies a qualification, CAAB must reissue the qualification certificate specifying the qualification as varied.

6.12 (Reserved)

6.13 Quality system

(a) The certificate holder of a qualified flight simulator or qualified flight training device must establish and maintain a quality system that ensures the correct operation and maintenance of the simulator or device.

(b) The quality system must cover at least the following matters:

(1) quality policy;

(2) management responsibility;

(3) document control;

(4) resource allocation;

(5) quality procedures;

(6) internal audit.

6.14 On going fidelity requirements

(a) The certificate holder of a qualified flight simulator or qualified flight training device must, progressively during the 12 months after the issue of the applicable flight simulator qualification certificate or flight training device qualification certificate, perform:

(1) all validation tests mentioned in the master QTG for the simulator or device; and

(2) all functions and subjective tests within the current (and any planned) training program (or an equivalent sample approved by CAAB).

(b) The requirement of paragraph (a) of this section must be fulfilled on four-monthly basis.

(c) The certificate holder must establish a configuration management system to ensure the continued integrity of the equipment and software of the simulator or device.

(d) The certificate holder must maintain an on-going modification program to ensure that the equipment, software and performance of the simulator or device accurately simulates the aircraft specified in the certificate.

(e) The certificate holder must notify each user of the simulator or device, before its use, if the simulator or device is unsuitable for any training, testing or checking sequence specified in the certificate.

6.15 Modification of qualified flight simulator or qualified flight training devices

(a) The certificate holder of a qualified flight simulator or qualified flight training device must notify CAAB, in writing, if it proposes to modify the equipment or software of the simulator or device in a way that will change the characteristics of the simulator or device.

(b) If CAAB receives a notice, CAAB may conduct an evaluation (a **spec/a/ evaluation)** of the simulator or device as it is proposed to be modified.

(c) Subject to paragraph (d) and (e), para 60.9 and 60.11 of this part apply in respect of a special evaluation in the same way as they apply to the initial evaluation.

(d) If CAAB decides not to conduct a special evaluation:

(1) the operator may make the proposed modification of the simulator or device; and

(2) the flight simulator or flight training device qualification continues to be in force.

(e) During a special evaluation, a simulator or device must be assessed against:

(1) the qualification level at which the simulator or device was qualified at the initial qualification or accreditation of the simulator or device; or if CAAB has changed the qualification level since the initial evaluation — the qualification level as changed.

(f} This regulation does not apply to the modification of a device for the purpose of a change in the qualification level of the simulator or device.

6.16 Operation with missing, malfunctioning, or inoperative components.

(a) No person may knowingly use or allow the use of or misrepresent the capability of an flight simulator or flight training device for any maneuver, procedure, or task that is to be accomplished to meet training, evaluation, or flight experience requirements of this chapter for flight crewmember certification or qualification when there is a missing, malfunctioning, or inoperative (MMI) component that is required to be present and correctly operate for the satisfactory completion of that maneuver, procedure, or task.

(b) Each MMI component as described in paragraph (a) of this section, or any MMI component installed and required to operate correctly to meet the current Statement of Qualification, must be repaired or replaced within 30 calendar days, unless otherwise required or authorized by the CAAB

(c) A list of the current MMI components must be readily available in or adjacent to the flight simulator or flight training device for review by users of the device. Electronic access to this list via an appropriate terminal or display in or adjacent to the flight simulator or flight training device is satisfactory. The discrepancy log may be used to satisfy this requirement provided each currently MMI component is listed in the discrepancy log.

6.17 Change in qualification level of qualified flight simulator or qualified flight training device

(a) The certificate holder of a qualified flight simulator or qualified flight training device may ask CAAB, in writing, to change the qualification level of the simulator or device.

(b) If CAAB receives a request under paragraph (a), it must conduct a special evaluation of the simulator or device, applying the standards in the Appendices.

(c) If CAAB changes the qualification level, it must:

(1) approve any resulting amendments to the master QTG of the simulator or device; and

(2) issue a revised flight simulator qualification certificate or flight training device qualification certificate.

6.18 Deactivation, relocation or reactivation of qualified night simulator or qualified flight training device

(a) The certificate holder of a qualified flight simulator or qualified flight training device must notify CAAB, in writing, if the simulator or device is deactivated.

(b) A certificate holder must notify CAAB, in writing, before the operator reactivates or relocates a simulator or device, and CAAB may then conduct a special evaluation of the simulator or device.

(1) During a special evaluation, a flight simulator or flight training device must be assessed against:

(2) the qualification level at which the simulator or device was qualified at the initial qualification or accreditation of the simulator or device; or

(3) if CAAB has changed the qualification level since the initial evaluation — the qualification level as changed.

6.19 Change of certificate holder of qualified flight simulator or qualified **flight**
training device

(a) The certificate holder of a qualified flight simulator or qualified flight training device must notify CAAB, in writing, of any proposed change of certificate holder of the simulator or device.

(b) If there is a change of certificate holder of a simulator or device:

(1) the former certificate holder must give to the new certificate holder the records mentioned in section 60.35 of this part that apply to the simulator or device; and

(2) the new certificate holder may apply to CAAB, in writing, for qualification of the simulator or device.

(c) An application under paragraph (b) (2) must be accompanied by a plan of transfer setting out in detail how the new certificate holder will comply with the requirements of this part.

(d) If CAAB is satisfied that the new certificate holder is able to comply with the requirements of this part, CAAB must:

(1) approve the plan; and

(2) issue a new flight simulator qualification certificate or flight training device qualification certificate.

6.20 Evaluation Teams of CAAB:

(a) Arrange for an evaluation mentioned in this section to be conducted by a CAAB evaluation team.

(b) CAAB will appoint a person to be an evaluation team leader, having regard to the skills, qualifications and experience necessary to undertake the evaluation.

(c) CAAB will follow ICAO guide line of DOC 8335 para 6.2.2.1 which implies Inspectors from Operation side required to be current on type. In addition the inspector need experience to operate FSTD as instructor.

6.21 Records

(a) The certificate holder of a qualified flight simulator or qualified flight training device must keep the following records relating to the simulator or device for at least 2 years after the simulator or device is decommissioned:

(1) the master QTG and Results of the qualification evaluations (initial and each upgrade) since the issuance of the original Statement of Qualification.

(2) modification records;

(3) quality system records.

(4) A record of all discrepancies entered in the discrepancy log over the previous 2 years, including the following:

(i) A list of the components or equipment that were or are missing, malfunctioning, or inoperative.

(ii) The action taken to correct the discrepancy.

(iii) The date the corrective action was taken.

(iv) The identity of the person determining that the discrepancy has been corrected.

(b) The certificate holder must also keep the results of each test carried out under section 60.23 (a) for the simulator or device for at least 2 years after the test.

(c) If there is a change of certificate holder of a simulator or device, the new certificate holder must keep the records and test results relating to the simulator or device that were kept by the former certificate holder.

6.22 Applications, logbooks, reports, and records: Fraud, falsification, or incorrect statements.

(a) No person may make, or cause to be made, any of the following:

(1) A fraudulent or intentionally false statement in any application or any amendment thereto, or any other report or test result required by this part.

(2) A fraudulent or intentionally false statement in or a known omission from any record or report that is kept, made, or used to show compliance with this part, or to exercise any privileges under this part.

APPENDIX A

GENERAL REQUIREMENT LEVEL OF SYNTHETIC TRAINING DEVICES - AEROPLANE

(1) This paragraph describes the general simulator requirements described in table A1.

TABLE A1: Standard Requirement for Flight Simulator

Requirements	A	B	C	D	Comments
1. GENERAL					
a) Flight deck: a full-scale replica of the aeroplane simulated. Direction of movement of controls and switches identical to that in the aeroplane. Equipment for operation of the cockpit windows should be included in the flight simulator, but the actual windows need not be operable. **Note:** *The flight deck, for flight simulator purposes, consists of all that space forward of a cross section of the fuselage at the most extreme aft setting of the pilots' seats. Additional required flight crew member duty stations and those required bulkheads aft of the pilot seats are also considered part of the flight deck and shall replicate the aeroplane.*	X	X	X	X	Flight deck observer seats are not considered to be additional flight crew member duty stations and may be omitted (See) below). Bulkheads containing items such as switches, circuit breakers, supplementary radio panels, etc. to which the flight crew may require access during any event after pre-flight cockpit preparation is complete are considered essential and may not be omitted. Bulkheads containing only items such as landing gear pin storage compartments, fire axes or extinguishers, spare light bulbs, aircraft document pouches etc. are not considered essential and may be omitted. Such items, or reasonable facsimile, shall still be available in the flight simulator but may be relocated to a suitable location as near as practical to the original position. Fire axes and any similar purpose instruments need only be represented in silhouette.
b) Circuit breakers that affect procedures and/or result in observable flight deck indications properly located and functionally accurate.	X	X	X	X	
c) Flight dynamics model that accounts	X	X	X	X	For Level A, generic ground

Requirements		A	B	C	D	Comments
	for various combinations of drag and thrust normally encountered in flight corresponding to actual flight conditions, including the effect of change in aeroplane attitude, thrust, drag, altitude, temperature, gross mass, moments of inertia, centre of gravity location and configuration.					handling, flare and touchdown effect are acceptable.
d)	All relevant instrument indications involved in the simulation of the applicable aeroplane to automatically respond to control movement by a flight crew member or external disturbance to the simulated aeroplane, i.e., turbulence or wind shear.	X	X	X	X	Numerical values shall be presented in accordance with ICAO Annex 5.
e)	Communications, navigation and caution and warning equipment corresponding to that installed in the applicable aeroplane with operation within the tolerances prescribed for the applicable airborne equipment.	X	X	X	X	
f)	In addition to the flight crew member duty stations, three suitable seats for the instructor/observer and authority inspector. The authority will consider options to this requirement based on unique flight deck configurations. These seats shall provide adequate vision to the pilots' panels and forward windows. Observer seats need not represent those found in the aeroplane, but shall be adequately secured to the floor of the flight simulator, fitted with positive restraint devices and of sufficient integrity to safely restrain the occupant during any known or predicted motion system excursion.	X	X	X	X	
g)	Flight simulator systems to simulate the applicable aeroplane system operation, both on the ground and in flight. Systems shall be operative to the extent that all normal, abnormal and emergency operating procedures can be accomplished.	X	X	X	X	
h)	Instructor controls to enable the operator to control all required	X	X	X	X	

Requirements		A	B	C	D	Comments
	system variables and insert abnormal or emergency conditions into the aeroplane systems.					
j	Control forces and control travel which correspond to that of the replicated aeroplane. Control forces should react in the same manner as in the aeroplane under the same flight conditions.	X	X	X	X	
j)	Ground handling and aerodynamic programming to include: 1) **Ground effect.** For example: round-out, flare and touchdown. This requires data on lift, drag, pitching moment, trim and power in ground effect. 2) **Ground reaction.** Reaction of the aeroplane upon contact with the runway during landing to include strut deflections, tyre friction, side forces and other appropriate data, such as weight and speed, necessary to identify the flight condition and configuration. 3) **Ground handling characteristics.** Steering inputs to include cross-wind, braking, thrust reversing, deceleration and turning radius.	X	X	X	X	SOC required. Tests required. For Level A flight simulators, ground handling may generically be represented to the extent that allows turns within the confines of the runway and adequate control on the landing and roll-out from a cross-wind landing.
k)	Wind shear models which provide training in the specific skills required for recognition of wind shear phenomena and execution of required manoeuvres. Such models shall be representative of measured or accident derived winds, but may include simplifications which ensure repeatable encounters. For example, models may consist of independent variable winds in multiple simultaneous components. Wind models should be available for the following critical phases of flight: 1) prior to take-off rotation; 2) at lift-off; 3) during initial climb;			X	X	Tests required. See Section 3.2 Test 2 q).

Requirements	A	B	C	D	Comments
4) short final approach. **/\late:** *The United States Federal Aviation Administration (FAA) Wind shear Training Aid, wind models from the United Kingdom Royal Aerospace Establishment (RAE), the Joint Airport Weather Studies (JAWS) project or other recognised sources may be implemented and shall be supported and properly referenced in the QTG. Wind models from alternative sources may also be used if supported by aeroplane related data and such data are properly supported and referenced in the QTG. Use of alternative data must be coordinated with the authority prior to submission of the QTG for approval.*					
) Representative cross-winds and instructor controls for wind speed and direction.	X	X	X	X	
m) Representative stopping and directional control forces for at least the following runway conditions based on aeroplane related data: 1) dry; 2) wet; 3) icy; 4) patchy wet; 5) patchy icy; 6) wet on rubber residue in touchdown zone.			X	X	SOC required. Objective tests required for 1), 2), 3). Subjective check for 4), 5), 6). See Section 3.2 Test 1 e).
n) Representative brake and tyre failure dynamics (including antiskid) and decreased braking efficiency due to brake temperatures based on aeroplane related data.			X	X	SOC required. Subjective test required for decreased braking efficiency due to brake temperature, if applicable.
0) A means for quickly and effectively conducting daily testing of flight simulator programming and hardware.			X	X	SOC required.
p) Flight simulator computer capacity, accuracy, resolution and dynamic response to fully support the overall	X	X	X	X	SOC required.

Requirements	A	B	C	D	Comments
flight simulator fidelity.					
q) Control feel dynamics which replicate the aeroplane simulated. Free response of the controls shall match that of the aeroplane within tolerance given in Section 3.2. Initial and upgrade evaluations will include control-free response (pitch, roll and yaw controllers) measurements recorded at the controls. The measured responses shall correspond to those of the aeroplane in take-off, cruise and landing configurations. 1) For aeroplanes with irreversible control systems, measurements may be obtained on the ground if proper pitot static inputs are provided to represent conditions typical of those encountered in flight. Engineering validation or aeroplane manufacturer rationale shall be submitted as justification to ground test or to omit a configuration. 2) For simulators requiring static and dynamic tests at the controls, special test fixtures will not be required during initial evaluations if the QTG shows both test fixture results and alternate test method results, such as computer data plots, which were obtained concurrently. Repeat of the alternate method during initial evaluation may then satisfy this requirement.			X	X	Tests required. See Section 3.2, Tests 2 b) 1), 2 b 2 and 2 b 3 . See Section 3.3.1 for a discussion of acceptable methods of validating control dynamics.
) Verify the relative response of the visual system, flight deck instruments and initial motion system response to ensure that they are coupled cllosellyto provide integrated sensory cues. Visual scene changes from steady state disturbance, i.e., the start of the scan of the first video field containing different information,	X	X X	X	Test required. See Section 3.2, Test 4 a) and AC 60-3 Section 11. For Level A and B simulators the maximum permissible delay is 300 milliseconds. For Level C and D simulators the maximum permissible delay is 150 milliseconds.

Requirements	A	B	C	D	Comments
shall occur within the permissible delay. Motion onset shall also occur within the permissible delay. Motion onset should occur before the start of the scan of the first video field containing different information; but shall occur before the end of the scan of the same video field. The test to determine compliance with these requirements shall include simultaneously recording the output from the pilot's pitch, roll and yaw controllers, the output from the accelerometer attached to the motion system platform located at an acceptable location near the pilots' seats, the output signal to the visual system display (including visual system analogue delays) and the output signal to the pilot's attitude indicator or an equivalent test approved by the authority. The following two methods are acceptable means to prove compliance with the above requirement: **1) Transport Delay. A** transport delay test may be used to demonstrate that the flight simulator system response does not exceed the permissible delay. This test shall measure all the delays encountered by a step signal migrating from the pilot's control through the control loading electronics and interfacing through all the simulation software modules in the correct order, using a handshaking protocol, finally through the normal output interfaces to the motion system, to the visual system and instrument displays. A recordable start time for the test should be provided by a pilot flight control input. The test mode shall permit normal computation time to be consumed and shall not alter the flow of information through the					

Requirements	A	B	C	D	Comments
hardware/ software system. The transport delay of the system is then the time between the control input and the individual hardware responses. It need only be measured once in each axis. 2) **Latency.** The visual system, flight deck instruments and initial motion system response shall respond to abrupt pitch, roll and yaw inputs from the pilot's position within the permissible delay, but not before the time, when the aeroplane would respond under the same conditions. The objective of the test is to compare the recorded response of the flight simulator to that of the actual aeroplane data in the take-off, cruise and landing configuration for rapid control inputs in all three rotational axes. The intent is to verify that the simulator system response does not exceed the permissible delay (this does not include aeroplane response time as per the manufacturer's data) and that the motion and visual cues relate to actual aeroplane responses. For aeroplane response, acceleration in the appropriate corresponding rotational axis is preferred.					
s) Aerodynamic modelling that includes, for aeroplanes issued an original type certificate after June 1980, low altitude level flight ground effect, Mach effect at high altitude, normal and reverse dynamic thrust effect on control surfaces, aeroelastic effect and representations of non-linearities due to side-slip based on aeroplane flight test data provided by the aeroplane manufacturer.				**X**	SOC required. See Section 3.3.2 and Section 3.2, Test 2 f} for further information on ground effect. Mach effect, aeroelastic representations and non-linearities due to side-slip are normally included in the flight simulator aerodynamic model. The SOC shall address each of these items. Separate tests for thrust effects and an SOC are required.

Requirements	A	B	C	D	Comments
t) Modelling that includes the effects of airframe and engine icing.			X	X	A statement of compliance shall be provided describing the effects, which provide training in the specific skills required for recognition of icing phenomena and execution of recovery.
u) Aerodynamic and ground reaction modelling for the effects of reverse thrust on directional control.		X	X	X	SOC required. Tests required. See Section 3.2, Test 2. e) 8) and 2. e) 9).
v) Realistic implementation of aeroplane mass properties, including mass, centre of gravity and moments of inertia as a function of payload and fuel loading.	X	X	X	X	SOC required. SOC should include a range of tabulated target values to enable a demonstration of the mass properties model to be conducted from the instructor's station.
w) Self-testing for simulator hardware and programming to determine compliance with the simulator performance tests as prescribed in Section 3.2. Evidence of testing must include flight simulator number, date, time, conditions, tolerances and the appropriate dependent variables portrayed in comparison to the aeroplane data. Automatic flagging of 'out-of-tolerance' situations is encouraged.			X	X	SOC required. Tests required.
Timely permanent update of flight simulator hardware and programming subsequent to aeroplane modification sufficient for the qualification level sought.	X	X	X	X	
y) Daily pre-flight documentation either in the daily log or in a location easily accessible for review.	X	X	X	X	
2. MOTION SYSTEM					
a) Motion cues perceived by the pilot representative of aeroplane motions, e.g., touchdown cues should be a function of the simulated rate of descent.	X	X	X	X	
b) A motion system: 1) providing sufficient cueing which may be of a generic nature to accomplish the required tasks.	X				SOC required. Tests required.

Requirements	A	B	C	D	Comments
2) having a minimum of 3 degrees of freedom (pitch, roll and heave).		**X**			
3) which produces cues at least equivalent to those of a six degree-of-freedom synergistic platform motion system.			X	X	
c) A means of recording the motion response time as required.	X	X	X	X	See Section 3.2, Test 4 a).
d) Motion effects programming to include:	X	X	X	X	See Section 3.3.4 and Section 3.4.
1) effects of runway rumble, oleo deflections, ground speed, uneven runway, centreline lights, and taxiway characteristics;					For Level A, effects may be of a generic nature sufficient to accomplish the required tasks.
2) buffets on the ground due to spoiler/speedbrake extension and thrust reversal;					
3) bumps associated with the landing gear;					
4) buffet during extension and retraction of landing gear;					
5) buffet in the air due to flap and spoiler/speedbrake extension;					
6) approach to stall buffet;					
7) touchdown cues for main and nose gear;					
8) nose-wheel scuffing;					
9) thrust effect with brakes set;					
10) Mach and manoeuvre buffet;					
11) tyre failure dynamics;					
12) engine malfunction and engine damage;					
13) tail and pod strike.					
e) **Motion Vibrations.** Tests with recorded results that allow the comparison of relative amplitudes versus frequency are required:				**X**	SOC required. Tests required.
1) Characteristic motion vibrations that result from operation of the aeroplane, in so far as vibration					See Section 3.3.4 and Section 3.2 Test 3. e).

Requirements	A	B	C	D	Comments
marks an event or aeroplane state that can be sensed at the flight deck, shall be present. The flight simulator shall be programmed and instrumented in such a manner that the characteristic vibration modes can be measured and compared to aeroplane data. 2) Aeroplane data are also required to define flight deck motions when the aeroplane is subjected to atmospheric disturbances. General-purpose disturbance models that approximate demonstrable flight test data are acceptable. Tests with recorded results that allow the comparison of relative amplitudes versus frequency are required.					
3. VISUAL SYSTEMS					
a) Visual system capable of meeting all the standards of this Section, Section 3.2 (Validation Tests) and Section 3.4 (Functions and Subjective Tests).	X	X	X	X	
b) Continuous minimum collimated visual field of view of 45 degrees horizontal and 30 degrees vertical field of view simultaneously for each pilot.	X	X			See Section 3.2 Test 4. b) 1). A SOC is acceptable in place of this test.
Continuous cross-cockpit minimum collimated visual field of view providing each pilot with 180 degrees horizontal and 40 degrees vertical field of view. Application of tolerances require the field of view to be not less than a total of 176 measured degrees horizontal field of view (including not less than +/- 88 measured degrees either side of the centre of the design eye point) and not less than a total of 36 measured degrees vertical field of view from the pilot's and co-pilot's eye points.			X	X	Consideration should be given to optimising the vertical field of view for the respective aeroplane cut-off angle.
c) A means of recording the visual response time for visual systems as	X	X	X	X	See Section 3.2 Test 4 a).

Requirements	A	B	C	D	Comments
required.					
d) System geometry. The system fitted shall be free from optical discontinuities and artefacts that create non-realistic cues, e.g., image swimming and image roll-off, that may lead a pilot to make incorrect assessments of speed, acceleration and/or situational awareness.	X	X	X	X	See Section 3.2 Test 4.b) 2. A SOC is acceptable in place of this test.
e) Visual textural cues to assess sink rate and depth perception during take-off and landing.	X	X	X	X	For Level A, visual cueing sufficient to support changes in approach path by using runway perspective.
f) Horizon and attitude shall correlate to the simulated attitude indicator.	X	X	X	X	SOC required. Tests required. See Section 3.4 Test 2. e).
g) Occulting shall be demonstrated. A minimum of ten levels of occulting.	X	X	 X	 X	SOC required. See Section 3.4, Test 2. g) 4).
h) Surface (vernier) resolution shall be demonstrated by a test pattern of objects shown to occupy a visual angle of not greater than 2 arc minutes in the visual display used on a scene from the pilot's eyepoint.			X	X	SOC required containing calculations confirming resolution. See Section 3.2, Test 4. b) 5.
i) Lightpoint size: not greater than 5 arc minutes.			X	X	SOC required. See paragraph 3.3.5.1 d). This is equivalent to a lightpoint resolution of 2.5 arc minutes.
j) Lightpoint contrast ratio: not less than 10:1. Lightpoint contrast ratio: not less than 25:1.	X	X	 X	 X	SOC required. See Section 3.2, Test 4. b) 7.
k) Daylight, twilight (dusk/dawn) and night visual capability as applicable for level of qualification sought. The visual system shall be capable of meeting, as a minimum, the system brightness and contrast ratio requirements as identified in Section 3.2, Test 4. b}. Total scene content shall be comparable in detail to that produced by 10 000 visible textured surfaces and {in day) 6 000 visible	X X	X X	X X X	X X X	SOC required for system capability. Scene content tests are also required—see Section 3.4, Test 2.

Requirements	A	B	C	D	Comment
lights or (in twilight or night) 15 000 visible lights and sufficient system capacity to display 16 simultaneously moving objects. The system when used in training, should provide:					
1) In daylight, full colour presentations and sufficient surfaces with appropriate textural cues to conduct a visual approach, landing and airport movement (taxi). Surface shading effects should be consistent with simulated (static) sun position.			X	X	
2) At twilight, as a minimum, full colour presentations of reduced ambient intensity, sufficient surfaces with appropriate textural cues that include self-illuminated objects such as road networks, ramp lighting and airport signage to conduct a visual approach, landing and airport movement (taxi). Scenes shall include a definable horizon and typical terrain characteristics such as fields, roads and bodies of water and surfaces illuminated by representative ownship lighting, e.g., landing lights. If provided, directional horizon lighting shall have correct orientation and be consistent with surface shading effects.			X	X	
3) At night, as a minimum, all features applicable to the twilight scene, as defined above, with the exception of the need to portray reduced ambient intensity that removes ground cues that are not self-illuminating or illuminated by ownship lights, e.g., landing lights.	X	X	X	X	
4. SOUND SYSTEM					
a) Significant flight deck sounds which result from pilot actions corresponding to those of the aeroplane.	X	X	X	X	
b) Sound of precipitation, rain removal equipment and other significant aeroplane noises perceptible to the			X	X	SOC required.

Requirements	A	B	C	D	Comments
pilot during normal and abnormal operations and the sound of a crash when the simulator is landed in excess of limitations.					
c) Comparable amplitude and frequency of flight deck noises, including engine and airframe sounds. The sounds shall be co-ordinated with the required weather.				X	See Section 3.3.6 and Section 3.2, Tests 5.a), and .
d) The volume control shall have an indication of sound level setting which meets all qualification requirements.	X	X	X	X	

(2) This paragraph describes the general Flight Training Devices requirements for level 1, 2, and 4, 5, 6 described in table A2.

TABLE A2 :

Standard Requirement for Flight Training Devices Level 1 and Level 2

Qualification **Levei**	**General Technical Requirements**	**Maximum Credit**
1	Type specific with at least 1 system fully represented Closed or open flight deck (Note: Choice of systems simulated is the responsibility of the Organisation seeking approval or re-approval for the course)	Suitable for : - Selective system management credits (except for pilot manual control handling skills) as follow : part of an approved conversion/transition course, recurrent training, checking
2	- 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	Suitable for : - 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

	support aeroplane systems) - Adequate test capability - Primary flight controls which control the - flight path and be broadly representative of aeroplane control characteristics.	controls). - CRM Training, as part of approved course. - LOFT (Route and area familiarisation only where at least - Level A simulator visual system fitted).

Standard Requirement for Flight Training Devices for Level 4, 5, and 6

					Information
Entry No.	**General FTD requirements**	**FTD level**			**Notes**
		4	5	6	
1. General Flight Deck Configuration					
1.a.	The FTD must have a flight deck that is a replica of the airplane simulated with controls, equipment, observable flight deck indicators, circuit breakers and bulkheads properly located functionally accurate and replicating the airplane. The direction 01 movement of controls and switches must be identical to that in the airplane. Pilot seat(s) must afford the capability for the occupant to be able to achieve the design “eye position.’ Equipment for the operation of the flight deck windows must be included but the actual windows need not be operable. Fire axes, extinguishers and spare light bulbs must be available in the flight simulator, but may be relocated to a suitable location as near as practical to the origina position. Fire axes, landing gear pins and any similar purpose instruments need only be represented in silhouette			X	For FTD purposes, the flight deck consists of all that space forward of a cross section of the fuselage at the most extreme aft setting of the pilots seats including additional, required flight crewmember duty stations and those required bulkheads aft of the pilot seats. For clarification bulkheads containing only items such as landing gear pin storage compartments, fire axes and extinguishers, spare light bulbs aircraft documents pouches are not considered essential and may be omitted.

1.b.	The FTD must have equipment (e.g. instruments, panels, systems, circuit breakers, and controls) simulated sufficiently for the authorized training/checking events to be accomplished. The installed equipment must be located in a spatially correct location and may be in a flight deck or an open flight deck area. Additional equipment required for the authorized training/checking events must be available in the FTD but may be located in a suitable location as near as practical to the spatially correct position. Actuation of equipment must replicate the appropriate function in the airplane Fire axes, landing gear pins, and any similar purpose instruments need only be represented in silhouette		X	X	
2. Programming					
2.a.	The FTD must provide the proper effect of aerodynamic changes for the combinations of drag and thrust normally encountered in flight. This must include the effect of change in airplane attitude, thrust, drag, altitude temperature, and configuration				
	Level 6 additionally requires the effects of changes in gross weight and center of gravity				
	Level 5 requires only generic aerodynamic programming				
	An SOC is required				
2.b.	The FTD must have the computer (analog or digital) capability (i.e. capacity, accuracy, resolution, and dynamic response) needed to meet the qualification level sought	X	X	X	

	An SOC is required.				
2.c.	Relative responses of the flight deck instruments must be measured by latency tests, or transport delay tests and may not exceed 300 milliseconds The instruments must respond to abrupt input at the pilot's position within the allotted time, but not before the time when the airplane responds under the same conditions		X	X	The intent is to verify that the FTD provides instrument cues that are within the stated time delays, like the airplane responses. For airplane response, acceleration in the appropriate, corresponding rotational axis is preferred Additional information regarding Latency and Transport Delay testing may be found in Appendix A Attachment 2, paragraph 15.
	• Latency: The FTD instrument and, i1 applicable, the motion system and the visual system response must not be prior to that time when the airplane responds and may respond up to 300 milliseconds after that time under the same conditions				
	• Transport Delay: As an alternative to the Latency requirement, a transport delay objective test may be used to demonstrate that the FTD system does not exceed the specified limit The sponsor must measure all the delay encountered by a step signa migrating from the pilot's contro through all the simulation software modules in the correct order, using a handshaking protocol, finally through the normal output interfaces to the instrument display and, if applicable the motion system, and the visua system				
3. Equipment Operation					
3.a.	All relevant instrument indications involved in the simulation of the airplane must automatically respond to control movement or externa disturbances to the simulated airplane e.g., turbulence or winds	X	X	X	

3.b.	Navigation equipment must be installed and operate within the tolerances applicable for the airplane	X	X		
	Level 6 must also include communication equipment (inter-phone and air/ground) like that in the airplane and, if appropriate to the operation being conducted, an oxygen mask microphone system				
	Level 5 need have only that navigation equipment necessary to fly an instrument approach				
3.c.	Installed systems must simulate the applicable airplane system operation both on the ground and in flight Installed systems must be operative to the extent that applicable normal abnormal, and emergency operating procedures included in the sponsor's training programs can be accomplished	X	X	X	
	Level 6 must simulate all applicable airplane flight, navigation, and systems operation				
	Level 5 must have at least functiona flight and navigational controls displays, and instrumentation				
	Level 4 must have at least one airplane system installed and functional				
3.d.	The lighting environment for panels and instruments must be sufficient for the operation being conducted	X	X	X	Back-lighted panels and instruments may be installed but are not required.
3.e.	The FTD must provide control forces and control travel that correspond to the airplane being simulated. Contro			X	

	forces must react in the same manner as in the airplane under the same flight conditions					
3.f.	The FTD must provide control forces and control travel of sufficient precision to manually fly an instrument approach		X			
4. Instructor or Evaluator Facilities						
4.a.	In addition to the flight crewmember stations, suitable seating arrangements for an instructor/check airman and FAA Inspector must be available. These seats must provide adequate view of crewmember's panel(s)		X	X		These seats need not be a replica o an aircraft seat and may be as simple as an office chair placed in an appropriate position.
4.b.	The FTD must have instructor controls that permit activation of normal abnormal, and emergency conditions as appropriate. Once activated, proper system operation must result from system management by the crew and not require input from the instructor controls	X	X	X		
5. Motion System (not required)						
5.a.	The FTD may have a motion system if desired, although it is not required. I a motion system is installed and additional training, testing, or checking credits are being sought on the basis of having a motion system, the motion system operation may not be distracting and must be coupled closely to provide integrated sensory cues. The motion system must also respond to abrupt input at the pilot's position within the allotted time, but not before the time when the airplane responds under the same conditions			X	X	The motion system standards set out in part 60, Appendix A for at least Level A simulators is acceptable.

5.b.	If a motion system is installed, it must be measured by latency tests or transport delay tests and may not exceed 300 milliseconds. Instrument response may not occur prior to motion onset	X The motion system standards set out in part 60, Appendix A for at least Level A simulators is acceptable.
6. Visual System		
6.a.	The FTD may have a visual system, if desired, although it is not required. If a visual system is installed, it must meet the following criteria:	X X X
6.a.1.	The visual system must respond to abrupt input at the pilot's position An SOC is required.	X X
6.a.2.	The visual system must be at least a single channel, non-collimated display An SOC is required.	X X X
6.a.3.	The visual system must provide at least a field-of-view of 18° vertical / 24° horizontal for the pilot flying An SOC is required.	X X X
6.a.4.	The visual system must provide for a maximum parallax of 10° per pilot An SOC is required.	X X X
6.a.5.	The visual scene content may not be distracting An SOC is required.	X X X
6.a.6.	The minimum distance from the pilot's eye position to the surface of a direct view display may not be less than the distance to any front panel instrument An SOC is required.	X X X
6.a.7.	The visual system must provide for a minimum resolution of 5 arc-minutes	X X X

	for both computed and displayed pixe size An SOC is required.					
6.b.	If a visual system is installed and additional training, testing, or checking credits are being sought on the basis of having a visual system, a visua system meeting the standards set out for at least a Level A FFS (see Appendix A of this part) will be required. A “direct-view,” non-collimated visual system (with the other requirements for a Level A visua system met) may be considered satisfactory for those installations where the visual system design “eye point” is appropriately adjusted for each pilot’s position such that the parallax error is at or less than 10° simultaneously for each pilot An SOC is required.				X	Directly projected, non-collimated visual displays may prove to be unacceptable for dual pilot applications.
7. Sound System						
7.a.	The FTD must simulate significant flight deck sounds resulting from pilot actions that correspond to those heard in the airplane			X		

(3) This paragraph describes the general Flight Training Devices requirements for level 1 and 2 described in table A3.

APPENDIX B

GENERAL REQUIREMENT LEVEL OF SYNTHETIC TRAINING DEVICES - HELICOPTER

(I) This paragraph describes the general Flight Simulator requirements described in table B1

TABLE B 1

Entry No.		Simulator levels			Information
	General simulator requirements	**B**	**C**	**D**	**Notes**
1.	**General Flight Deck Configuration**				
1.a.	The simulator must have a flight deck that is a replica of the helicopter being simulated The simulator must have controls equipment, observable flight deck indicators, circuit breakers, and bulkheads properly located functionally accurate and replicating the helicopter. The direction 01 movement of controls and switches must be identical to that in the helicopter. Pilot seats must afford the capability for the occupant to be able to achieve the design “eye position” established for the helicopter being simulated Equipment for the operation of the flight deck windows must be included, but the actual windows need not be operable. Fire axes extinguishers, and spare light bulbs must be available in the FFS but may be relocated to a suitable location as near as practical to the original position. Fire axes, landing gear pins, and any similar purpose instruments need only be represented in silhouette	X	X	X	For simulator purposes, the flight deck consists of all that space forward of a cross section of the fuselage at the most extreme aft setting of the pilots’ seats including additional, required flight crewmember duty stations and those required bulkheads aft of the pilot seats. For clarification, bulkheads containing only items such as landing gear pin storage compartments, fire axes and extinguishers, spare light bulbs and aircraft documents pouches are not considered essential and may be omitted.

1.b.	Those circuit breakers that affect procedures or result in observable flight deck indications must be properly located and functionally accurate	X	X	X	
2.	**Programming**				
2.a.	A flight dynamics model that accounts for various combinations o1 air speed and power normally encountered in flight mus correspond to actual flight conditions, including the effect o\ change in helicopter attitude aerodynamic and propulsive forces and moments, altitude, temperature mass, center of gravity location, and configuration An SOC is required	X	X	X	
2.b.	The simulator must have the computer capacity, accuracy resolution, and dynamic response needed to meet the qualification level sought An SOC is required	X	X	X	
2.c.	Ground handling (where appropriate) and aerodynamic programming must include the following:				
2.c.1.	Ground effect Level B does not require hover programming An SOC is required	X	X	X	Applicable areas include flare and touch down from a running landing as well as for in-ground-effect (IGE) hover. A reasonable simulation of ground effect includes modelling of lift, drag pitching moment, trim, and power while in ground effect.
2.c.2.	Ground reaction Level B does not require hover programming	X	X	X	Reaction of the helicopter upon contact with the landing surface during landing (e.g., stru deflection, tire or skid friction

	An SOC is required				side forces) may differ with changes in gross weight airspeed, rate of descent on touchdown, and slide slip.
2.d.	The simulator must provide for manual and automatic testing o1 simulator hardware and software program.		X	X	This may include an automated system, which could be used for conducting at least a portion of the QTG tests. Automatic “flagging” of out-of-tolerance situations is encouraged. (*)
2.e.	The relative responses of the motion system, visual system, and flight deck instruments must be measured by latency tests or transport delay tests. Motion onset must occur before the end of the scan of that video field. Instrument response may not occur prior to motion onset Test results must be within the following limits:				The intent is to verify that the simulator provides instrument motion, and visual cues that are like the helicopter responses within the stated time delays. It is preferable motion onset occur before the start of the visua scene change (the start of the scan of the first video field containing different information) For helicopter response acceleration in the appropriate corresponding rotational axis is preferred.
2.e.1.	Response must be within 150 milliseconds of the helicopter response	**X**			
2.e.2.	Response must be within 100 milliseconds of the helicopter response		X	X	
2.f.	The simulator must simulate brake and tire failure dynamics (including antiskid failure, if appropriate) An SOC is required.		X	X	The simulator should represent the motion (in the appropriate axes) and the directional contro characteristics of the helicopter when experiencing simulated brake or tire failures.
2.g.	The aerodynamic modelling in the simulator must include		X	X	(*)

	(1) Ground effect (2) Effects of airframe and rotor icing (if applicable) (3) Aerodynamic interference effects between the rotor wake and fuselage, (4) Influence of the rotor on control and stabilization systems (5) Representations of settling with power, and (6) Retreating blade stall An SOC is required.				
2.h.	The simulator must provide for realistic mass properties, including gross weight, center of gravity, and moments of inertia as a function o1 payload and fuel loading An SOC is required.	X	X	X	
3.	**Equipment Operation**				
3.a.	All relevant instrument indications involved in the simulation of the helicopter must automatically respond to control movement or external disturbances to the simulated helicopter; e.g. turbulence or windshear. Numerical values must be presented in the appropriate units	X	X	X	
3.b.	Communications, navigation caution, and warning equipment must be installed and operate within the tolerances applicable for the helicopter being simulated	X	X	X	(*)
3.c.	Simulated helicopter systems must operate as the helicopter systems operate under normal, abnormal and emergency operating conditions on the ground and in flight	X	X	X	
3.d.	The simulator must provide pilot controls with control forces and control travel that correspond to the	X	X	X	

	simulated helicopter. The simulator must also react in the same manner as the helicopter under the same flight conditions				
3.e.	Simulator control feel dynamics must replicate the helicopter simulated. This must be determined by comparing a recording of the control feel dynamics of the simulator to helicopter measurements. For initial and upgrade evaluations, the control dynamic characteristics must be measured and recorded directly from the flight deck controls, and must be accomplished in takeoff cruise, and landing conditions and configurations		X	X	
4.	**Instructor/Evaluator Facilities**				
4.a.	In addition to the flight crewmember stations, the simulator must have at least two suitable seats for the instructor/check airman and CAAB inspector. These seats must provide adequate vision to the pilot's pane and forward windows. All seats other than flight crew seats need not represent those found in the helicopter but must be adequately secured to the floor and equipped with similar positive restraint devices	X	X	X	The team leader will consider alternatives to this standard for additional seats based on unique flight deck configurations.
4.b.	The simulator must have controls that enable the instructor/evaluator to control all required system variables and insert all abnormal or emergency conditions into the simulated helicopter systems as described in the CAAB approved training program, or as described in the relevant operating manual as appropriate	X	X	X	
4.c.	The simulator must have instructor	X	X	X	

	controls for all environmental effects expected to be available at the IOS (Instructor Operating Station) ; e.g. clouds, visibility, icing, precipitation temperature, storm cells, and wind speed and direction				
4.d.	The simulator must provide the instructor or evaluator the ability to present ground and air hazards		X	X	For example, another aircraft crossing the active runway and converging airborne traffic.
4.e.	The simulator must provide the instructor or evaluator the ability to present the effect of re-circulating dust, water vapor, or snow conditions that develop as a result o rotor downwash		X	X	This is a selectable condition that is not required for all operations on or near the surface.
5.	**Motion System**				
5.a.	The simulator must have motion (force) cues perceptible to the pilot that are representative of the motion in a helicopter	X	X	X	For example, touchdown cues should be a function of the rate of descent (RoD) of the simulated helicopter.
5.b.	The simulator must have a motion (force cueing) system with a minimum of three degrees of freedom (at least pitch, roll, and heave) An SOC is required.	**X**			
5.c.	The simulator must have a motion (force cueing) system that produces cues at least equivalent to those of a six-degrees-of-freedom, synergistic platform motion system (i.e., pitch roll, yaw, heave, sway, and surge) An SOC is required.		X	X	
5.d.	The simulator must provide for the recording of the motion system response time An SOC is required.	X	X	X	

5.e	The simulator must provide motion effects programming to include the following:				
	(1) Runway rumble, oleo deflections effects of ground speed, uneven runway, characteristics.	X	X	X	
	(2) Buffets due to transverse flow effects.				
	(3) Buffet during extension and retraction of landing gear.				
	(4) Buffet due to retreating blade stall.				
	(5) Buffet due to vortex ring (settling with power).				
	(6) Representative cues resulting from touchdown.				
	(7) High speed rotor vibrations.				
	(8) Tire failure dynamics		X	X	
	(9) Engine malfunction and engine damage				
	(10) Airframe ground strike				
	(11) Motion vibrations that result from atmospheric disturbances			X	For air turbulence, genera purpose disturbance models are acceptable if, when used, they produce test results that approximate demonstrable flight test data.
5.f.	The simulator must provide characteristic motion vibrations that			X	The simulator should be programmed and instrumented in

	result from operation of the helicopter (for example, retreating blade stall, extended landing gear settling with power) in so far as vibration marks an event or helicopter state, which can be sensed in the flight deck				such a manner that the characteristic buffet modes can be measured and compared to helicopter data.
6.	**Visual System**				Additional horizontal field-of-view capability may be added at the sponsor's discretion provided the minimum field-of-view is retained.
6.a.	The simulator must have a visual system providing an out-of-the-flight deck view	X	X	X	
6.b.	The simulator must provide a continuous field-of-view of at least 75° horizontally and 30° vertically per pilot seat. Both pilot seat visual systems must be operable simultaneously. The minimum horizontal field-of-view coverage must be plus and minus one-half 1/2) of the minimum continuous field-of-view requirement, centered on the zero degree azimuth line relative to the aircraft fuselage. An SOC must explain the geometry o the installation An SOC is required.	X			
6.c.	The simulator must provide a continuous visual field-of-view of a1 least 146° horizontally and 36° vertically per pilot seat. Both pilot seat visual systems must be operable simultaneously. Horizontal field-of-view is centered on the zero degree azimuth line relative to the aircraft fuselage. The minimum horizontal field-of-view coverage must be plus and minus one-half 1/2) of the minimum continuous field-of-view requirement, centered on the zero degree azimuth line		X		Optimization of the vertical field-of-view may be considered with respect to the specific helicopter flight deck cut-off angle. The sponsor may request the team leader to evaluate the FFS for specific authorization(s) for the following: (1) Specific areas within the database needing higher resolution to support landings take-offs and ground cushion exercises and training away from a heliport, including elevated

	relative to the aircraft fuselage An SOC must explain the geometry of the installation. Capability for a field-of-view in excess of the minimum is not required for qualification at Level C. However, where specific tasks require extended fields of view beyond the 146° by 36° (e.g., to accommodate the use of “chin windows” where the accommodation is either integra with or separate from the primary visual system display), then the extended fields of view must be provided. When considering the installation and use of augmented fields of view, the sponsor must meet with the team leader to determine the training, testing checking, and experience tasks for which the augmented field-of-view capability may be required An SOC is required.				heliport, helidecks and confined areas. (2) For cross-country flights sufficient scene details to allowed for ground to map navigation over a sector length equal to 3C minutes at an average cruise speed. (3) For offshore airborne radar approaches (ARA), harmonized visual/radar representations o1 installations.
6.d.	The simulator must provide a continuous visual field-of-view of at least 176° horizontally and 56° vertically per pilot seat. Both pilot seat visual systems must be operable simultaneously. Horizontal field-of-view is centered on the zero degree azimuth line relative to the aircraft fuselage. The minimum horizontal field-of-view coverage must be plus and minus one-half 1/2) of the minimum continuous field-of-view requirement, centered on the zero degree azimuth line relative to the aircraft fuselage. An SOC must explain the geometry of the installation. Capability for a field-of-view in excess of the minimum is not required for qualification at Leve D. However, where specific tasks require extended fields of view beyond the 176° by 56° (e.g., to accommodate the use of “chin windows” where the accommodation is either integral with or separate from the primary visual system display), then the extended fields o1			X	Optimization of the vertical field-of-view may be considered with respect to the specific helicopter flight deck cut-off angle. The sponsor may request the team leader to evaluate the FFS for specific authorization(s) for the following: (1) Specific areas within the database needing higher resolution to support landings take-offs and ground cushion exercises and training away from a heliport, including elevated heliport, helidecks and confined areas. (2) For cross-country flights sufficient scene details to allow for ground to map navigation over a sector length equal to 30 minutes at an average cruise speed. (3) For offshore airborne radar approaches (ARA), harmonized visual/radar representations of installations.

	view must be provided. When considering the installation and use of augmented fields of view, the sponsor must meet with the team leader to determine the training testing, checking, and experience tasks for which the augmented field-of-view capability may be required An SOC is required.				
6.e.	The visual system must be free from optical discontinuities and artifacts that create non-realistic cues	X	X	X	Non-realistic cues might include image “swimming” and image “roll-off,” that may lead a pilot to make incorrect assessments o1 speed, acceleration and/oi situational awareness.
6.f.	The simulator must have operational landing lights for night scenes Where used, dusk (or twilight) scenes require operational landing lights.	X	X	X	
6.g.	The simulator must have instructor controls for the following: (1) Visibility in statute miles (kilometers) and runway visua range (RVR) in ft. (meters) (2) Airport or landing area selection (3) Airport or landing area lighting	X	X	X	
6.h.	Each airport scene displayed must include the following (1) Airport runways and taxiways (2) Runway definition (a) Runway surface and markings (b) Lighting for the runway in use including runway threshold, edge centerline, touchdown zone, VAS (or PAPI), and approach lighting of appropriate colors, as appropriate (c) Taxiway lights	X	X	X	
6.i.	The simulator must provide visual system compatibility with dynamic response programming	X	X	X	

6.j.	The simulator must show that the segment of the ground visible from the simulator flight deck is the same as from the helicopter flight deck (within established tolerances) when at the correct airspeed and altitude above the touchdown zone	X	X	X	This will show the modelling accuracy of the scene with respect to a predetermined position from the end of the runway “in use.”
6.k.	The simulator must provide visua cues necessary to assess rate o change of height, height AGL, and translational displacement and rates during takeoffs and landings	**X**			
6.I.	The simulator must provide visual cues necessary to assess rate o1 change of height, height AGL, as well as translational displacement and rates during takeoff, low altitude/low airspeed maneuvering, hover, and landing		X	X	
6.m.	The simulator must provide for accurate portrayal of the visual environment relating to the simulator attitude	X	X	X	visual attitude vs. simulation attitude is a comparison of pitch and roll of the horizon as displayed in the visual scene compared to the display on the attitude indicator.
6.n	The simulator must provide for quick confirmation of visual system color RVR, focus, and intensity An SOC is required.		X	X	
6.o.	The simulator must be capable of producing at least 10 levels of occulting		X	X	
6.p.	Night Visual Scenes. The simulator must provide night visual scenes with sufficient scene content to recognize the airport, the terrain and major landmarks around the airport. The scene content must allow a pilot to successfully accomplish a visual landing. Night	X	X	X	

	scenes, as a minimum, must provide presentations of sufficient surfaces with appropriate textural cues that include self-illuminated objects such as road networks, ramp lighting, and airport signage, to conduct a visual approach, a landing, and airport movement (taxi). Scenes must include a definable horizon and typical terrain characteristics such as fields, roads and bodies of water and surfaces illuminated by helicopter landing lights				
6.q.	Dusk (Twilight) Visual Scenes. The simulator must provide dusk (or twilight) visual scenes with sufficient scene content to recognize the airport, the terrain, and major landmarks around the airport. The scene content must allow a pilot to successfully accomplish a visual landing. Dusk (or twilight) scenes, as a minimum, must provide full color presentations of reduced ambient intensity, sufficient surfaces with appropriate textural cues that include self-illuminated objects such as road networks, ramp lighting and airport signage, to conduct a visual approach, landing and airport movement (taxi). Scenes must include a definable horizon and typical terrain characteristics such as fields, roads and bodies of water and surfaces illuminated by representative aircraft lighting (e.g. landing lights). If provided directional horizon lighting must have correct orientation and be consistent with surface shading effects. Total scene content must be comparable in detail to that produced by 10,000 visible textured surfaces and 15,000 visible lights with sufficient system capacity to display 16 simultaneously moving objects An SOC is required.		X	X	

6.r.	Daylight Visual Scenes. The simulator must have daylight visual scenes with sufficient scene content to recognize the airport, the terrain and major landmarks around the airport. The scene content must allow a pilot to successfully accomplish a visual landing. No ambient lighting may “washout” the displayed visual scene. Total scene content must be comparable in detail to that produced by 10,000 visible textured surfaces and 6,000 visible lights with sufficient system capacity to display 16 simultaneously moving objects. The visual display must be free o1 apparent and distracting quantization and other distracting visual effects while the simulator is in motion An SOC is required.		X	X	
6.s	The simulator must provide operational visual scenes that portray physical relationships known to cause landing illusions to pilots		X	X	For example: short runways, landing approaches over water, uphill or downhill runways, rising terrain on the approach path unique topographic features.
6.t.	The simulator must provide special weather representations of light medium, and heavy precipitation near a thunderstorm on takeoff and during approach and landing Representations need only be presented at and below an altitude of 2,000 ft. (610 m) above the airport surface and within 10 miles (16 km) of the airport		X	X	
6.u.	The simulator must present visual scenes of wet and snow-covered runways, including runway lighting reflections for wet conditions, and partially obscured lights for snow conditions		X	X	The team leader will consider suitable alternative effects.

6.v.	The simulator must present realistic color and directionality of all airport lighting		X	X	
7. Sound System					
7.a.	The simulator must provide flight deck sounds that result from pilot actions that correspond to those that occur in the helicopter	X	X	X	
7.b.	Volume control, if installed, must have an indication of the sound level setting	X	X	X	
7.c.	The simulator must accurately simulate the sound of precipitation windshield wipers, and other significant helicopter noises perceptible to the pilot during norma and abnormal operations, and include the sound of a crash (when the simulator is landed in an unusual attitude or in excess of the structure gear limitations); normal engine sounds; and the sounds of gear extension and retraction An SOC is required.		X	X	
7.d.	The simulator must provide realistic amplitude and frequency of flight deck noises and sounds. Simulator performance must be recorded compared to amplitude and frequency of the same sounds recorded in the helicopter, and made a part of the QTG			**X**	

(2) This paragraph describes the general Flight Training Devices requirements for level 1, 2, and 4, 5, 6, 7described in table B 2.

TABLE B 2 :

Standard Requirement for Flight Training Devices Level 1 and Level 2

Qualification Level	**General Technical Requirements**	**Maximum *Credits***
1	Type specific with at least 1 system fully represented Closed or open flight deck (Note: Choice of systems simulated is the responsibility of the Organisation seeking approval or re-approval for the course)	Suitable for : - Selective system management credits (except for pilot manual control handling skills) as follow : part of an approved conversion/transition course, recurrent training, checking
2	- 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.	Suitable for : - Systems Management Initial and Recurrent training, checking and testing, (except pilot manual control handling skills i.e. those flight maneuvers executed via the pilots primary flying controls). - CRM Training, as part of approved course. - LOFT (Route and area familiarization only where at least - Level A simulator visual system fitted).

						Information
Entry No.	**General FTD requirements**	FTD level 4	5	6	7	Notes
1. General Flight Deck Configuration.						
1.a.	The FTD must have a flight deck that is a replica of the helicopter, or set of helicopters simulated with controls equipment, observable flight deck indicators, circuit breakers, and bulkheads properly located, functionally accurate and replicating the helicopter or set of helicopters. The direction of movement of controls and switches must be identical to that in the helicopter or set of helicopters Crewmember seats must afford the capability for the occupant to be able to achieve the design “eye position.’ Equipment for the operation of the flight deck windows must be included, but the actual windows need not be operable. Those circuit breakers that affect procedures or result in observable flight deck indications must be properly located and functionally accurate. Fire axes, extinguishers, landing gear pins, and spare light bulbs must be available, and may be represented in silhouette, in the flight simulator. This equipment must be present as near as practical to the original position			X		For FTD purposes, the flight deck consists of all that space forward of a cross section of the flight deck at the most extreme aft setting of the pilots' seats including additional, required crewmember duty stations and those required bulkheads aft o the pilot seats. Bulkheads containing only items such as landing gear pin storage compartments, fire axes and extinguishers, spare light bulbs and aircraft documents pouches are not considered essential and may be omitted. If omitted these items, or the silhouettes o these items, may be placed on the wall of the simulator, or in any other location as near as practical to the original position of these items.
1.b.	The FTD must have equipment (i.e. instruments, panels, systems, circuit breakers, and controls) simulated sufficiently for the authorized training/checking events to be accomplished. The installed equipment, must be located in a spatially correct configuration, and may be in a flight deck	X	X			

	or an open flight deck area. Those circuit breakers that affect procedures or result in observable flight deck indications must be properly located and functionally accurate Additional equipment required for the authorized training and checking events must be available in the FTD but may be located in a suitable location as near as practical to the spatially correct position Actuation of this equipment must replicate the appropriate function in the helicopter Fire axes, landing gear pins, and any similar purpose instruments need only be represented in silhouette					
2. Programming.						
2.a.	The FTD must provide the proper effect of aerodynamic changes for the combinations of drag and thrust normally encountered in flight. This must include the effect of change in helicopter attitude, thrust, drag altitude, temperature, and configuration Levels 6 and 7 additionally require the effects of changes in gross weight and center of gravity. Level 5 requires only generic aerodynamic programming. An SOC is required		X	X	X	
2.b.	The FTD must have the computer (analog or digital) capability (i.e., capacity accuracy, resolution, and dynamic response) needed to meet the qualification level sought An SOC is required	X	X	X	X	
2.c.	Relative responses of the flight deck instruments must be measured by latency tests or transport delay tests, and may not exceed 150 milliseconds. The instruments must respond to abrupt input at the pilot's position within the allotted time, but not before the time that the helicopter or set of helicopters respond under the same conditions • Latency: The FTD instrument and, if applicable, the motion system and the visual system response must not be prior		X		X	The intent is to verify that the FTD provides instrument cues that are, within the stated time delays, like the helicopter responses. For helicopter response, acceleration in the appropriate, corresponding rotational axis is preferred.

	to that time when the helicopter responds and may respond up to 150 milliseconds after that time under the same conditions • Transport Delay: As an alternative to the Latency requirement, a transport delay objective test may be used to demonstrate that the FTO system does not exceed the specified limit. The sponsor must measure all the delay encountered by a step signa migrating from the pilot's control through al the simulation software modules in the correct order, using a handshaking protocol, finally through the normal output interfaces to the instrument display and, if applicable, the motion system, and the visual system					
3. Equipment Operation.						
3.a.	All relevant instrument indications involved in the simulation of the helicopter must automatically respond to control movement or external disturbances to the simulated helicopter or set of helicopters; e.g., Turbulence or winds				A	X X X
3.b.	Navigation equipment must be installed and operate within the tolerances applicable for the helicopter or set of helicopters. Levels 6 and 7 must also include communication equipment (inter-phone and air/ground) like that in the helicopter. Level 5 only needs that navigation equipment necessary to fly an instrument approach				A	X X X
3.c.	Installed systems must simulate the applicable helicopter system operation both on the ground and in flight. At least one helicopter system must be represented. Systems must be operative to the extent that applicable normal abnormal, and emergency operating procedures included in the sponsor's training programs can be accomplished Levels 6 and 7 must simulate all applicable helicopter flight, navigation, and systems operation. Level 5 must have functiona	A	X	X	X	

	flight and navigational controls, displays, and instrumentation						
3.d.	The lighting environment for panels and instruments must be sufficient for the operation being conducted	XX	X				Back-lighted panels and instruments may be installed but are not required.
3.e.	The FTD must provide control forces and control travel that correspond to the replicated helicopter or set of helicopters. Control forces must react in the same manner as in the helicopter or set of helicopters under the same flight conditions			X	X		
3.f.	The FTD must provide control forces and control travel of sufficient precision to manually fly an instrument approach. The control forces must react in the same manner as in the helicopter or set of helicopters under the same flight conditions			X			
4. Instructor or Evaluator Facilities.							
4.a.	In addition to the flight crewmember stations, suitable seating arrangements for an instructor/check airman and CAAB Inspector must be available. These seats must provide adequate view of crewmember's panel(s)	X	XX				These seats need not be a replica of an aircraft seat and may be as simple as an office chair placed in an appropriate position.
4.b.	The FTD must have instructor controls that permit activation of normal, abnormal, and emergency conditions, as appropriate Once activated, proper system operation must result from system management by the crew and not require input from the instructor controls.	X	X	X	X		
5. Motion System							
5.a.	A motion system may be installed in an FTD. If installed, the motion system operation must not be distracting. If a	X	X	X	X		

	motion system is installed and additional training, testing, or checking credits are being sought, sensory cues must also be integrated. The motion system must respond to abrupt input at the pilot's position within the allotted time, but not before the time when the helicopter responds under the same conditions. The motion system must be measured by latency tests or transport delay tests and may not exceed 150 milliseconds Instrument response must not occur prior to motion onset	
5.b.	The FTD must have at least a vibration cueing system for characteristic helicopter vibrations noted at the pilot station(s)	X May be accomplished by a “seat shaker” or a bass speaker sufficient to provide the necessary cueing.
6. Visual System		
6.a.	The FTD may have a visual system, if desired, although it is not required. If a visual system is installed, it must meet the following criteria:	
6.a.1.	The visual system must respond to abrupt input at the pilot’s position An SOC is required	XXX
6.a.2.	The visual system must be at least a single channel, non-collimated display An SOC is required	XX X
6.a.3.	The visual system must provide at least a field-of-view of 18° vertical/24° horizonta for the pilot flying. An SOC is required	XXX
6.a.4.	The visual system must provide for a maximum parallax of 10° per pilot. An SOC is required	XXX
6.a.5.	The visual scene content may not be distracting.	XXX

	An SOC is required				
6.a.6.	The minimum distance from the pilot's eye position to the surface of a direct view display may not be less than the distance o to any front panel instrument n SOC is required	X	X	X	
6.a.7.	The visual system must provide for a minimum resolution of 5 arc-minutes for both computed and displayed pixel size. n SOC is required	X	X	X	
6.b.	If a visual system is installed and additional training, testing, or checking credits are being sought on the basis of having a visual system, a visual system meeting the standards set out for at least a Level A FFS (see Appendix A of this part) will be required. A “direct-view,” non-collimated visual system (with the other requirements for a Level A visual system met) may be considered satisfactory for those installations where the visual system design “eye point” is appropriately adjusted for each pilot’s position such that the parallax error is at or less than 10° simultaneously for each pilot An SOC is required	X	X	X	
6.c.	The FTD must provide a continuous visua field-of-view of at least 146° horizontally and 36° vertically for both pilot seats simultaneously. The minimum horizonta field-of-view coverage must be plus and minus one-half (1/2) of the minimum continuous field-of-view requirement centered on the zero degree azimuth line relative to the aircraft fuselage. Additiona horizontal field-of-view capability may be added at the sponsor’s discretion provided the minimum field-of-view is retained Capability for a field-of-view in excess o these minima is not required for qualification at Level 7. However, where specific tasks require extended fields o view beyond the 146° by 36° (e.g., to accommodate the use of “chin windows'			X	Optimization of the vertical field-of-view may be considered with respect to the specific helicopter flight deck cut-off angle. When considering the installation/use of augmented fields of view, as described here, it will be the responsibility of the sponsor to meet with the team leader to determine the training, testing checking, or experience tasks for which the augmented field-of-view capability may be critica to that approval.

	where the accommodation is either integra with or separate from the primary visual system display), then such extended fields of view must be provided An SOC is required and must explain the geometry of the installation	
7. Sound System		
7.a.	The FTD must simulate significant flight deck sounds resulting from pilot actions that correspond to those heard in the helicopter	XX

(“) CAAB may qualify Helicopter FTD using the criteria, validation tests, and function and subjective tests detailed in either:

1. *The Federal Aviation Regulations (FAR) Part 60 Appendix D, Qualification Performance Standards for Helicopter Flight Training Devices; or*
2. *The Joint Aviation Requirement — Flight Simulation Training Devices Helicopter Flight Simulation Training Devices (JAR FSTD H).*