

results of these on-site tests will be compared to those results previously approved and placed in the QTG or MQTG, as appropriate.

d. QTGs for new (or MQTGs for upgraded) simulators must contain or reference the information described in paragraphs 2, 3, 4, and 5 of this attachment.

END QPS REQUIREMENTS

8. SUBJECTIVE EVALUATION

BEGIN INFORMATION

The NSPM will fly the simulator in at least two of the available windshear scenarios to subjectively evaluate simulator performance as it encounters the programmed windshear conditions.

a. One scenario will include parameters that enable the pilot to maintain a satisfactory flightpath.

b. One scenario will include parameters that will not enable the pilot to maintain a satisfactory flightpath (crash).

c. Other scenarios may be examined at the NSPM's discretion.

END INFORMATION

9. QUALIFICATION BASIS

BEGIN INFORMATION

The addition of windshear programming to a simulator in order to comply with the qualification for required windshear training does not change the original qualification basis of the simulator.

END INFORMATION

10. DEMONSTRATION REPEATABILITY

BEGIN INFORMATION

For the purposes of demonstration repeatability, it is recommended that the simulator be flown by means of the simulator's autodrive function (for those simulators that have autodrive capability) during the demonstrations.

END INFORMATION

APPENDIX B TO PART 60—QUALIFICATION PERFORMANCE STANDARDS FOR AIRPLANE FLIGHT TRAINING DEVICES

BEGIN INFORMATION

This appendix establishes the standards for Airplane Flight Training Device (FTD) evaluation and qualification at Level 4, Level 5, or Level 6. The Flight Standards Service, National Simulator Program Manager (NSPM), is responsible for the development, application, and implementation of the standards contained within this appendix. The procedures and criteria specified in this appendix will be used by the NSPM, or a person or persons assigned by the NSPM when conducting airplane FTD evaluations.

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END INFORMATION

1. INTRODUCTION

BEGIN INFORMATION

a. This appendix contains background information as well as regulatory and informative material as described later in this section. To assist the reader in determining what areas are required and what areas are permissive, the text in this appendix is divided into two sections: “QPS Requirements” and “Information.” The QPS Requirements sections contain details regarding compliance with the part 60 rule language. These details are regulatory, but are found only in this appendix. The Information sections contain material that is advisory in nature, and designed to give the user general information about the regulation.

b. Related Reading References.

- (1) 14 CFR part 60.
- (2) 14 CFR part 61.
- (3) 14 CFR part 63.
- (4) 14 CFR part 119.
- (5) 14 CFR part 121.
- (6) 14 CFR part 125.
- (7) 14 CFR part 135.
- (8) 14 CFR part 141.
- (9) 14 CFR part 142.
- (10) Advisory Circular (AC) 120–28C, Criteria for Approval of Category III Landing Weather Minima.
- (11) AC 120–29, Criteria for Approving Category I and Category II Landing Minima for part 121 operators.
- (12) AC 120–35B, Line Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, Line Operational Evaluation.
- (13) AC 120–41, Criteria for Operational Approval of Airborne Wind Shear Alerting and Flight Guidance Systems.
- (14) AC 120–57A, Surface Movement Guidance and Control System (SMGS).
- (15) AC 150/5300–13, Airport Design.
- (16) AC 150/5340–1G, Standards for Airport Markings.

(17) AC 150/5340–4C, Installation Details for Runway Centerline Touchdown Zone Lighting Systems.

(18) AC 150/5340–19, Taxiway Centerline Lighting System.

(19) AC 150/5340–24, Runway and Taxiway Edge Lighting System.

(20) AC 150/5345–28D, Precision Approach Path Indicator (PAPI) Systems.

(21) International Air Transport Association document, “Flight Simulator Design and Performance Data Requirements,” as amended.

(22) AC 25–7, as amended, Flight Test Guide for Certification of Transport Category Airplanes.

(23) AC 23–8A, as amended, Flight Test Guide for Certification of Part 23 Airplanes.

(24) International Civil Aviation Organization (ICAO) Manual of Criteria for the Qualification of Flight Simulators, as amended.

(25) Airplane Flight Simulator Evaluation Handbook, Volume I, as amended and Volume II, as amended, The Royal Aeronautical Society, London, UK.

(26) FAA Publication FAA–S–8081 series (Practical Test Standards for Airline Transport Pilot Certificate, Type Ratings, Commercial Pilot, and Instrument Ratings).

(27) The FAA Aeronautical Information Manual (AIM). An electronic version of the AIM is on the internet at <http://www.faa.gov/atpubs>.

END INFORMATION

2. APPLICABILITY (§§60.1 & 60.2)

There is no additional regulatory or informational material that applies to §60.1, Applicability, or to §60.2, Applicability of sponsor rules to person who are not sponsors and who are engaged in certain unauthorized activities.

3. DEFINITIONS (§60.3)

BEGIN INFORMATION

See appendix F of this part for a list of definitions and abbreviations from part 1, part 60, and the QPS appendices of part 60.

END INFORMATION

4. QUALIFICATION PERFORMANCE STANDARDS (§60.4)

There is no additional regulatory or informational material that applies to §60.4, Qualification Performance Standards.

5. QUALITY MANAGEMENT SYSTEM (§60.5)

BEGIN INFORMATION

Additional regulatory material and informational material regarding Quality Management Systems for FTDs may be found in appendix E of this part.

END INFORMATION

 6. SPONSOR QUALIFICATION REQUIREMENTS
 (§60.7)

BEGIN INFORMATION

a. The intent of the language in §60.7(b) is to have a specific FTD, identified by the sponsor, used at least once in an FAA-approved flight training program for the airplane simulated during the 12-month period described. The identification of the specific FTD may change from one 12-month period to the next 12-month period as long as that sponsor sponsors and uses at least one FTD at least once during the prescribed period. There is no minimum number of hours or minimum FTD periods required.

b. The following examples describe acceptable operational practices:

(1) Example One.

(a) A sponsor is sponsoring a single, specific FTD for its own use, in its own facility or elsewhere—this single FTD forms the basis for the sponsorship. The sponsor uses that FTD at least once in each 12-month period in that sponsor's FAA-approved flight training program for the airplane simulated. This 12-month period is established according to the following schedule:

(i) If the FTD was qualified prior to October 30, 2007 the 12-month period begins on the date of the first continuing qualification evaluation conducted in accordance with §60.19 after October 30, 2007 and continues for each subsequent 12-month period;

(ii) A device qualified on or after October 30, 2007 will be required to undergo an initial or upgrade evaluation in accordance with §60.15. Once the initial or upgrade evaluation is complete, the first continuing qualification evaluation will be conducted within 6 months. The 12 month continuing qualification evaluation cycle begins on that date and continues for each subsequent 12-month period.

(b) There is no minimum number of hours of FTD use required.

(c) The identification of the specific FTD may change from one 12-month period to the next 12-month period as long as that sponsor sponsors and uses at least one FTD at least once during the prescribed period.

(2) Example Two.

(a) A sponsor sponsors an additional number of FTDs, in its facility or elsewhere. Each additionally sponsored FTD must be—

(i) Used by the sponsor in the sponsor's FAA-approved flight training program for the airplane simulated (as described in §60.7(d)(1));

OR

(ii) Used by another FAA certificate holder in that other certificate holder's FAA-approved flight training program for the airplane simulated (as described in §60.7(d)(1)). This 12-month period is established in the same manner as in example one.

OR

(iii) Provided a statement each year from a qualified pilot, (after having flown the airplane, not the subject FTD or another FTD, during the preceding 12-month period) stating that the subject FTD's performance and handling qualities represent the airplane (as described in §60.7(d)(2)). This statement is provided at least once in each 12-month period established in the same manner as in example one.

(b) There is no minimum number of hours of FTD use required.

(3) Example Three.

(a) A sponsor in New York (in this example, a Part 142 certificate holder) establishes "satellite" training centers in Chicago and Moscow.

(b) The satellite function means that the Chicago and Moscow centers must operate under the New York center's certificate (in accordance with all of the New York center's practices, procedures, and policies; *e.g.*, instructor and/or technician training/checking requirements, recordkeeping, QMS program).

(c) All of the FTDs in the Chicago and Moscow centers could be dry-leased (*i.e.*, the certificate holder does not have and use FAA-approved flight training programs for the FTDs in the Chicago and Moscow centers) because—

(i) Each FTD in the Chicago center and each FTD in the Moscow center is used at least once each 12-month period by another FAA certificate holder in that other certificate holder's FAA-approved flight training program for the airplane (as described in §60.7(d)(1));

OR

(ii) A statement is obtained from a qualified pilot (having flown the airplane, not the subject FTD or another FTD during the preceding 12-month period) stating that the performance and handling qualities of each FTD in the Chicago and Moscow centers represents the airplane (as described in §60.7(d)(2)).

END INFORMATION

 7. ADDITIONAL RESPONSIBILITIES OF THE SPONSOR (§60.9)

BEGIN INFORMATION

The phrase “as soon as practicable” in §60.9(a) means without unnecessarily disrupting or delaying beyond a reasonable time the training, evaluation, or experience being conducted in the FSTD.

END INFORMATION

8. FSTD USE (§60.11)

There is no additional regulatory or informational material that applies to §60.11, FSTD use.

9. FTD OBJECTIVE DATA REQUIREMENTS (§60.13)

BEGIN QPS REQUIREMENTS

a. Flight test data used to validate FTD performance and handling qualities must have been gathered in accordance with a flight test program containing the following:

- (1) A flight test plan consisting of:
 - (a) The maneuvers and procedures required for aircraft certification and simulation programming and validation.
 - (b) For each maneuver or procedure—
 - (i) The procedures and control input the flight test pilot and/or engineer used.
 - (ii) The atmospheric and environmental conditions.
 - (iii) The initial flight conditions.
 - (iv) The airplane configuration, including weight and center of gravity.
 - (v) The data to be gathered.
 - (vi) All other information necessary to recreate the flight test conditions in the FTD.
 - (2) Appropriately qualified flight test personnel.
 - (3) An understanding of the accuracy of the data to be gathered using appropriate alternative data sources, procedures, and instrumentation that is traceable to a recognized standard as described in Attachment 2, Table B2F.
 - (4) Appropriate and sufficient data acquisition equipment or system(s), including appropriate data reduction and analysis methods and techniques, as would be acceptable to the FAA’s Aircraft Certification Service.
- b. The data, regardless of source, must be presented:
 - (1) In a format that supports the FTD validation process;
 - (2) In a manner that is clearly readable and annotated correctly and completely;
 - (3) With resolution sufficient to determine compliance with the tolerances set forth in Attachment 2, Table B2A appendix.
 - (4) With any necessary guidance information provided; and

(5) Without alteration, adjustments, or bias; however the data may be re-scaled, digitized, or otherwise manipulated to fit the desired presentation.

c. After completion of any additional flight test, a flight test report must be submitted in support of the validation data. The report must contain sufficient data and rationale to support qualification of the FTD at the level requested.

d. As required by §60.13(f), the sponsor must notify the NSPM when it becomes aware that an addition to or a revision of the flight related data or airplane systems related data is available if this data is used to program and operate a qualified FTD. The data referred to in this sub-section are those data that are used to validate the performance, handling qualities, or other characteristics of the aircraft, including data related to any relevant changes occurring after the type certification is issued. This notification must be made within 10 working days.

END QPS REQUIREMENTS

BEGIN INFORMATION

e. The FTD sponsor is encouraged to maintain a liaison with the manufacturer of the aircraft being simulated (or with the holder of the aircraft type certificate for the aircraft being simulated if the manufacturer is no longer in business), and if appropriate, with the person having supplied the aircraft data package for the FTD in order to facilitate the notification described in this paragraph.

f. It is the intent of the NSPM that for new aircraft entering service, at a point well in advance of preparation of the Qualification Test Guide (QTG), the sponsor should submit to the NSPM for approval, a descriptive document (a validation data roadmap) containing the plan for acquiring the validation data, including data sources. This document should clearly identify sources of data for all required tests, a description of the validity of these data for a specific engine type and thrust rating configuration, and the revision levels of all avionics affecting the performance or flying qualities of the aircraft. Additionally, this document should provide other information such as the rationale or explanation for cases where data or data parameters are missing, instances where engineering simulation data are used, or where flight test methods require further explanations. It should also provide a brief narrative describing the cause and effect of any deviation from data requirements. The aircraft manufacturer may provide this document.

g. There is no requirement for any flight test data supplier to submit a flight test plan or program prior to gathering flight

test data. However, the NSPM notes that inexperienced data gatherers often provide data that is irrelevant, improperly marked, lacking adequate justification for selection. Other problems include inadequate information regarding initial conditions or test maneuvers. The NSPM has been forced to refuse these data submissions as validation data for an FTD evaluation. It is for this reason that the NSPM recommends that any data supplier not previously experienced in this area review the data necessary for programming and for validating the performance of the FTD and discuss the flight test plan anticipated for acquiring such data with the NSPM well in advance of commencing the flight tests.

h. In those cases where the objective test results authorize a "snapshot test" or a "series of snapshot tests" results in lieu of a time-history result, Attachment 2 requires the sponsor or other data provider to ensure that a steady state condition exists at the instant of time captured by the "snapshot." This is often verified by showing that a steady state condition existed from some period of time during which the snap shot is taken. The time period most frequently used is 5 seconds prior through 2 seconds following the instant of time captured by the snap shot. This paragraph is primarily addressing the source data and the method by which the data provider ensures that the steady state condition for the snap shot is representative.

i. The NSPM will consider, on a case-by-case basis, whether or not to approve supplemental validation data derived from flight data recording systems such as a Quick Access Recorder or Flight Data Recorder.

END INFORMATION

10. SPECIAL EQUIPMENT AND PERSONNEL REQUIREMENTS FOR QUALIFICATION OF THE FTD (§60.14)

BEGIN INFORMATION

a. In the event that the NSPM determines that special equipment or specifically qualified persons will be required to conduct an evaluation, the NSPM will make every attempt to notify the sponsor at least one (1) week, but in no case less than 72 hours, in advance of the evaluation. Examples of special equipment include flight control measurement devices, accelerometers, or oscilloscopes. Examples of specially qualified personnel include individuals specifically qualified to install or use any special equipment when its use is required.

b. Examples of a special evaluation include an evaluation conducted after an FTD is moved; at the request of the TPAA; or as a

result of comments received from FTD users that raise questions regarding the continued qualification or use of the FTD.

END INFORMATION

11. INITIAL (AND UPGRADE) QUALIFICATION REQUIREMENTS (§60.15)

BEGIN QPS REQUIREMENT

a. In order to be qualified at a particular qualification level, the FTD must:

(1) Meet the general requirements listed in Attachment 1;

(2) Meet the objective testing requirements listed in Attachment 2 (Level 4 FTDs do not require objective tests); and

(3) Satisfactorily accomplish the subjective tests listed in Attachment 3.

b. The request described in §60.15(a) must include all of the following:

(1) A statement that the FTD meets all of the applicable provisions of this part and all applicable provisions of the QPS.

(2) A confirmation that the sponsor will forward to the NSPM the statement described in §60.15(b) in such time as to be received no later than 5 business days prior to the scheduled evaluation and may be forwarded to the NSPM via traditional or electronic means.

(3) Except for a Level 4 FTD, a qualification test guide (QTG), acceptable to the NSPM, that includes all of the following:

(a) Objective data obtained from aircraft testing or another approved source.

(b) Correlating objective test results obtained from the performance of the FTD as prescribed in the applicable QPS.

(c) The result of FTD subjective tests prescribed in the applicable QPS.

(d) A description of the equipment necessary to perform the evaluation for initial qualification and the continuing qualification evaluations.

c. The QTG described in paragraph a(3) of this section, must provide the documented proof of compliance with the FTD objective tests in Attachment 2, Table B2A of this appendix.

d. The QTG is prepared and submitted by the sponsor, or the sponsor's agent on behalf of the sponsor, to the NSPM for review and approval, and must include, for each objective test:

(1) Parameters, tolerances, and flight conditions;

(2) Pertinent and complete instructions for conducting automatic and manual tests;

(3) A means of comparing the FTD test results to the objective data;

(4) Any other information as necessary to assist in the evaluation of the test results;

(5) Other information appropriate to the qualification level of the FTD.

e. The QTG described in paragraphs (a)(3) and (b) of this section, must include the following:

(1) A QTG cover page with sponsor and FAA approval signature blocks (see Attachment 4, Figure B4C, for a sample QTG cover page).

(2) A continuing qualification evaluation requirements page. This page will be used by the NSPM to establish and record the frequency with which continuing qualification evaluations must be conducted and any subsequent changes that may be determined by the NSPM in accordance with §60.19. See Attachment 4, Figure B4G, for a sample Continuing Qualification Evaluation Requirements page.

(3) An FTD information page that provides the information listed in this paragraph, if applicable (see Attachment 4, Figure B4B, for a sample FTD information page). For convertible FTDs, the sponsor must submit a separate page for each configuration of the FTD.

(a) The sponsor's FTD identification number or code.

(b) The airplane model and series being simulated.

(c) The aerodynamic data revision number or reference.

(d) The engine model(s) and its data revision number or reference.

(e) The flight control data revision number or reference.

(f) The flight management system identification and revision level.

(g) The FTD model and manufacturer.

(h) The date of FTD manufacture.

(i) The FTD computer identification.

(j) The visual system model and manufacturer, including display type.

(k) The motion system type and manufacturer, including degrees of freedom.

(4) A Table of Contents.

(5) A log of revisions and a list of effective pages.

(6) List of all relevant data references.

(7) A glossary of terms and symbols used (including sign conventions and units).

(8) Statements of compliance and capability (SOCs) with certain requirements. SOCs must provide references to the sources of information that show the capability of the FTD to comply with the requirement, a rationale explaining how the referenced material is used, mathematical equations and parameter values used, and the conclusions reached; *i.e.*, that the FTD complies with the requirement. Refer to the "General FTD Requirements" column, Table B1A, in Attachment 1, or in the "Alternative Data Sources, Procedures, and Instrumentation" column, Table B2F, in Attachment 2, to see when SOCs are required.

(9) Recording procedures or equipment required to accomplish the objective tests.

(10) The following information for each objective test designated in Attachment 2, as applicable to the qualification level sought:

(a) Name of the test.

(b) Objective of the test.

(c) Initial conditions.

(d) Manual test procedures.

(e) Automatic test procedures (if applicable).

(f) Method for evaluating FTD objective test results.

(g) List of all relevant parameters driven or constrained during the automatic test(s).

(h) List of all relevant parameters driven or constrained during the manual test(s).

(i) Tolerances for relevant parameters.

(j) Source of Validation Data (document and page number).

(k) Copy of the Validation Data (if located in a separate binder, a cross reference for the identification and page number for pertinent data location must be provided).

(1) FTD Objective Test Results as obtained by the sponsor. Each test result must reflect the date completed and must be clearly labeled as a product of the device being tested.

f. A convertible FTD is addressed as a separate FTD for each model and series airplane to which it will be converted and for the FAA qualification level sought. The NSPM will conduct an evaluation for each configuration. If a sponsor seeks qualification for two or more models of an airplane type using a convertible FTD, the sponsor must provide a QTG for each airplane model, or a supplemented QTG for each airplane model. The NSPM will conduct evaluations for each airplane model.

g. The form and manner of presentation of objective test results in the QTG must include the following:

(1) The sponsor's FTD test results must be recorded in a manner acceptable to the NSPM, that allows easy comparison of the FTD test results to the validation data (*e.g.*, use of a multi-channel recorder, line printer, cross plotting, overlays, transparencies).

(2) FTD results must be labeled using terminology common to airplane parameters as opposed to computer software identifications.

(3) Validation data documents included in a QTG may be photographically reduced only if such reduction will not alter the graphic scaling or cause difficulties in scale interpretation or resolution.

(4) Scaling on graphical presentations must provide the resolution necessary to evaluate the parameters shown in Attachment 2, Table B2A of this appendix.

(5) Tests involving time histories, data sheets (or transparencies thereof) and FTD test results must be clearly marked with appropriate reference points to ensure an accurate comparison between FTD and airplane

with respect to time. Time histories recorded via a line printer are to be clearly identified for cross-plotting on the airplane data. Over-plots must not obscure the reference data.

h. The sponsor may elect to complete the QTG objective and subjective tests at the manufacturer's facility or at the sponsor's training facility. If the tests are conducted at the manufacturer's facility, the sponsor must repeat at least one-third of the tests at the sponsor's training facility in order to substantiate FTD performance. The QTG must be clearly annotated to indicate when and where each test was accomplished. Tests conducted at the manufacturer's facility and at the sponsor's training facility must be conducted after the FTD is assembled with systems and sub-systems functional and operating in an interactive manner. The test results must be submitted to the NSPM.

i. The sponsor must maintain a copy of the MQTG at the FTD location.

j. All FTDs for which the initial qualification is conducted after October 30, 2013 must have an electronic MQTG (eMQTG) including all objective data obtained from airplane testing, or another approved source (reformatted or digitized), together with correlating objective test results obtained from the performance of the FTD (reformatted or digitized) as prescribed in this appendix. The eMQTG must also contain the general FTD performance or demonstration results (reformatted or digitized) prescribed in this appendix, and a description of the equipment necessary to perform the initial qualification evaluation and the continuing qualification evaluations. The eMQTG must include the original validation data used to validate FTD performance and handling qualities in either the original digitized format from the data supplier or an electronic scan of the original time-history plots that were provided by the data supplier. A copy of the eMQTG must be provided to the NSPM.

k. All other FTDs (not covered in subparagraph "j") must have an electronic copy of the MQTG by and after October 30, 2013. A copy of the eMQTG must be provided to the NSPM. This may be provided by an electronic scan presented in a Portable Document File (PDF), or similar format acceptable to the NSPM.

END QPS REQUIREMENTS

BEGIN INFORMATION

1. Only those FTDs that are sponsored by a certificate holder as defined in appendix F will be evaluated by the NSPM. However, other FTD evaluations may be conducted on a case-by-case basis as the Administrator deems appropriate, but only in accordance with applicable agreements.

m. The NSPM will conduct an evaluation for each configuration, and each FTD must be evaluated as completely as possible. To ensure a thorough and uniform evaluation, each FTD is subjected to the general FTD requirements in Attachment 1, the objective tests listed in Attachment 2, and the subjective tests listed in Attachment 3 of this appendix. The evaluations described herein will include, but not necessarily be limited to the following:

(1) Airplane responses, including longitudinal and lateral-directional control responses (see Attachment 2 of this appendix);

(2) Performance in authorized portions of the simulated airplane's operating envelope, to include tasks evaluated by the NSPM in the areas of surface operations, takeoff, climb, cruise, descent, approach and landing, as well as abnormal and emergency operations (see Attachment 2 of this appendix);

(3) Control checks (see Attachment 1 and Attachment 2 of this appendix);

(4) Cockpit configuration (see Attachment 1 of this appendix);

(5) Pilot, flight engineer, and instructor station functions checks (see Attachment 1 and Attachment 3 of this appendix);

(6) Airplane systems and sub-systems (as appropriate) as compared to the airplane simulated (see attachment 1 and attachment 3 of this appendix);

(7) FTD systems and sub-systems, including force cueing (motion), visual, and aural (sound) systems, as appropriate (see Attachment 1 and Attachment 2 of this appendix); and

(8) Certain additional requirements, depending upon the qualification level sought, including equipment or circumstances that may become hazardous to the occupants. The sponsor may be subject to Occupational Safety and Health Administration requirements.

n. The NSPM administers the objective and subjective tests, which includes an examination of functions. The tests include a qualitative assessment of the FTD by an NSP pilot. The NSP evaluation team leader may assign other qualified personnel to assist in accomplishing the functions examination and/or the objective and subjective tests performed during an evaluation when required.

(1) Objective tests provide a basis for measuring and evaluating FTD performance and determining compliance with the requirements of this part.

(2) Subjective tests provide a basis for:

(a) Evaluating the capability of the FTD to perform over a typical utilization period;

(b) Determining that the FTD satisfactorily simulates each required task;

(c) Verifying correct operation of the FTD controls, instruments, and systems; and

(d) Demonstrating compliance with the requirements of this part.

o. The tolerances for the test parameters listed in Attachment 2 of this appendix reflect the range of tolerances acceptable to the NSPM for FTD validation and are not to be confused with design tolerances specified for FTD manufacture. In making decisions regarding tests and test results, the NSPM relies on the use of operational and engineering judgment in the application of data (including consideration of the way in which the flight test was flown and way the data was gathered and applied) data presentations, and the applicable tolerances for each test.

p. In addition to the scheduled continuing qualification evaluation, each FTD is subject to evaluations conducted by the NSPM at any time without prior notification to the sponsor. Such evaluations would be accomplished in a normal manner (i.e., requiring exclusive use of the FTD for the conduct of objective and subjective tests and an examination of functions) if the FTD is not being used for flight crewmember training, testing, or checking. However, if the FTD were being used, the evaluation would be conducted in a non-exclusive manner. This non-exclusive evaluation will be conducted by the FTD evaluator accompanying the check airman, instructor, Aircrew Program Designee (APD), or FAA inspector aboard the FTD along with the student(s) and observing the operation of the FTD during the training, testing, or checking activities.

q. Problems with objective test results are handled as follows:

(1) If a problem with an objective test result is detected by the NSP evaluation team during an evaluation, the test may be repeated or the QTG may be amended.

(2) If it is determined that the results of an objective test do not support the qualification level requested but do support a lower level, the NSPM may qualify the FTD at a lower level. For example, if a Level 6 evaluation is requested, but the FTD fails to meet the spiral stability test tolerances, it could be qualified at Level 5.

r. After an FTD is successfully evaluated, the NSPM issues a statement of qualification (SOQ) to the sponsor. The NSPM recommends the FTD to the TPAA, who will approve the FTD for use in a flight training program. The SOQ will be issued at the satisfactory conclusion of the initial or continuing qualification. However, it is the sponsor's responsibility to obtain TPAA approval prior to using the FTD in an FAA-approved flight training program.

s. Under normal circumstances, the NSPM establishes a date for the initial or upgrade evaluation within ten (10) working days after determining that a complete QTG is acceptable. Unusual circumstances may warrant establishing an evaluation date before this determination is made. A sponsor may schedule an evaluation date as early as 6

months in advance. However, there may be a delay of 45 days or more in rescheduling and completing the evaluation if the sponsor is unable to meet the scheduled date. See Attachment 4, Figure B4A, Sample Request for Initial, Upgrade, or Reinstatement Evaluation.

t. The numbering system used for objective test results in the QTG should closely follow the numbering system set out in Attachment 2, FTD Objective Tests, Table B2A.

u. Contact the NSPM or visit the NSPM Web site for additional information regarding the preferred qualifications of pilots used to meet the requirements of §60.15(d).

v. Examples of the exclusions for which the FTD might not have been subjectively tested by the sponsor or the NSPM and for which qualification might not be sought or granted, as described in §60.15(g)(6), include engine out maneuvers or circling approaches.

END INFORMATION

12. ADDITIONAL QUALIFICATIONS FOR CURRENTLY QUALIFIED FTDs (§60.16)

There is no additional regulatory or informational material that applies to §60.16, Additional Qualifications for a Currently Qualified FTD.

13. PREVIOUSLY QUALIFIED FTDs (§60.17)

BEGIN QPS REQUIREMENTS

a. In instances where a sponsor plans to remove an FTD from active status for a period of less than two years, the following procedures apply:

(1) The NSPM must be notified in writing and the notification must include an estimate of the period that the FTD will be inactive;

(2) Continuing Qualification evaluations will not be scheduled during the inactive period;

(3) The NSPM will remove the FTD from the list of qualified FSTDs on a mutually established date not later than the date on which the first missed continuing qualification evaluation would have been scheduled;

(4) Before the FTD is restored to qualified status, it must be evaluated by the NSPM. The evaluation content and the time required to accomplish the evaluation is based on the number of continuing qualification evaluations and sponsor-conducted quarterly inspections missed during the period of inactivity.

(5) The sponsor must notify the NSPM of any changes to the original scheduled time out of service;

b. FTDs qualified prior to October 30, 2007, are not required to meet the general FTD requirements, the objective test requirements,

and the subjective test requirements of Attachments 1, 2, and 3, respectively, of this appendix.

c. [Reserved]

END QPS REQUIREMENTS

BEGIN INFORMATION

d. Other certificate holders or persons desiring to use an FTD may contract with FTD sponsors to use FTDs previously qualified at a particular level for an airplane type and approved for use within an FAA-approved flight training program. Such FTDs are not required to undergo an additional qualification process, except as described in §60.16.

e. Each FTD user must obtain approval from the appropriate TPAA to use any FTD in an FAA-approved flight training program.

f. The intent of the requirement listed in §60.17(b), for each FTD to have a Statement of Qualification within 6 years, is to have the availability of that statement (including the configuration list and the limitations to authorizations) to provide a complete picture of the FTD inventory regulated by the FAA. The issuance of the statement will not require any additional evaluation or require any adjustment to the evaluation basis for the FTD.

g. Downgrading of an FTD is a permanent change in qualification level and will necessitate the issuance of a revised Statement of Qualification to reflect the revised qualification level, as appropriate. If a temporary restriction is placed on an FTD because of a missing, malfunctioning, or inoperative component or on-going repairs, the restriction is not a permanent change in qualification level. Instead, the restriction is temporary and is removed when the reason for the restriction has been resolved.

h. It is not the intent of the NSPM to discourage the improvement of existing simulation (*e.g.*, the “updating” of a control loading system, or the replacement of the IOS with a more capable unit) by requiring the “updated” device to meet the qualification standards current at the time of the update. Depending on the extent of the update, the NSPM may require that the updated device be evaluated and may require that an evaluation include all or a portion of the elements of an initial evaluation. However, the standards against which the device would be evaluated are those that are found in the MQTG for that device.

i. The NSPM will determine the evaluation criteria for an FTD that has been removed from active status for a prolonged period. The criteria will be based on the number of continuing qualification evaluations and quarterly inspections missed during the period of inactivity. For example, if the FTD were out of service for a 1 year period, it

would be necessary to complete the entire QTG, since all of the quarterly evaluations would have been missed. The NSPM will also consider how the FTD was stored, whether parts were removed from the FTD and whether the FTD was disassembled.

j. The FTD will normally be requalified using the FAA-approved MQTG and the criteria that was in effect prior to its removal from qualification. However, inactive periods of 2 years or more will require re-qualification under the standards in effect and current at the time of requalification.

END INFORMATION

14. INSPECTION, CONTINUING EVALUATION
QUALIFICATION REQUIREMENTS (§60.19)

BEGIN QPS REQUIREMENT

a. The sponsor must conduct a minimum of four evenly spaced inspections throughout the year. The objective test sequence and content of each inspection in this sequence must be developed by the sponsor and must be acceptable to the NSPM.

b. The description of the functional pre-flight inspection must be contained in the sponsor’s QMS.

c. Record “functional preflight” in the FTD discrepancy log book or other acceptable location, including any item found to be missing, malfunctioning, or inoperative.

END QPS REQUIREMENTS

BEGIN INFORMATION

d. The sponsor’s test sequence and the content of each quarterly inspection required in §60.19(a)(1) should include a balance and a mix from the objective test requirement areas listed as follows:

- (1) Performance.
- (2) Handling qualities.
- (3) Motion system (where appropriate).
- (4) Visual system (where appropriate).
- (5) Sound system (where appropriate).
- (6) Other FTD systems.

e. If the NSP evaluator plans to accomplish specific tests during a normal continuing qualification evaluation that requires the use of special equipment or technicians, the sponsor will be notified as far in advance of the evaluation as practical; but not less than 72 hours. Examples of such tests include latencies, control sweeps, or motion or visual system tests.

f. The continuing qualification evaluations described in §60.19(b) will normally require 4 hours of FTD time. However, flexibility is necessary to address abnormal situations or situations involving aircraft with additional

levels of complexity (e.g., computer controlled aircraft). The sponsor should anticipate that some tests may require additional time. The continuing qualification evaluations will consist of the following:

(1) Review of the results of the quarterly inspections conducted by the sponsor since the last scheduled continuing qualification evaluation.

(2) A selection of approximately 8 to 15 objective tests from the MQTG that provide an adequate opportunity to evaluate the performance of the FTD. The tests chosen will be performed either automatically or manually and should be able to be conducted within approximately one-third (1/3) of the allotted FTD time.

(3) A subjective evaluation of the FTD to perform a representative sampling of the tasks set out in attachment 3 of this appendix. This portion of the evaluation should take approximately two-thirds (2/3) of the allotted FTD time.

(4) An examination of the functions of the FTD may include the motion system, visual system, sound system as applicable, instructor operating station, and the normal functions and simulated malfunctions of the airplane systems. This examination is normally accomplished simultaneously with the subjective evaluation requirements.

g. The requirement established in §60.19(b)(4) regarding the frequency of NSPM-conducted continuing qualification evaluations for each FTD is typically 12 months. However, the establishment and satisfactory implementation of an approved QMS for a sponsor will provide a basis for adjusting the frequency of evaluations to exceed 12-month intervals.

END INFORMATION

15. LOGGING FTD DISCREPANCIES (§60.20)

There is no additional regulatory or informational material that applies to §60.20, Logging FTD Discrepancies.

16. INTERIM QUALIFICATION OF FTDs FOR NEW AIRPLANE TYPES OR MODELS (§60.21)

BEGIN INFORMATION

There is no additional regulatory or informational material that applies to §60.21, Interim Qualification of FTDs for New Airplane Types or Models.

END INFORMATION

17. MODIFICATIONS TO FTDs (§60.23)

BEGIN QPS REQUIREMENTS

a. The notification described in §60.23(c)(2) must include a complete description of the planned modification, with a description of the operational and engineering effect the proposed modification will have on the operation of the FTD and the results that are expected with the modification incorporated.

b. Prior to using the modified FTD:

(1) All the applicable objective tests completed with the modification incorporated, including any necessary updates to the MQTG (e.g., accomplishment of FSTD Directives) must be acceptable to the NSPM; and

(2) The sponsor must provide the NSPM with a statement signed by the MR that the factors listed in §60.15(b) are addressed by the appropriate personnel as described in that section.

END QPS REQUIREMENTS

BEGIN INFORMATION

c. FSTD Directives are considered modification of an FTD. See Attachment 4 for a sample index of effective FSTD Directives.

END INFORMATION

18. OPERATION WITH MISSING, MALFUNCTIONING, OR INOPERATIVE COMPONENTS (§60.25)

BEGIN INFORMATION

a. The sponsor's responsibility with respect to §60.25(a) is satisfied when the sponsor fairly and accurately advises the user of the current status of an FTD, including any missing, malfunctioning, or inoperative (MMI) component(s).

b. If the 29th or 30th day of the 30-day period described in §60.25(b) is on a Saturday, a Sunday, or a holiday, the FAA will extend the deadline until the next business day.

c. In accordance with the authorization described in §60.25(b), the sponsor may develop a discrepancy prioritizing system to accomplish repairs based on the level of impact on the capability of the FTD. Repairs having a larger impact on the FTD's ability to provide the required training, evaluation, or flight experience will have a higher priority for repair or replacement.

END INFORMATION

19. AUTOMATIC LOSS OF QUALIFICATION AND PROCEDURES FOR RESTORATION OF QUALIFICATION (§ 60.27)

BEGIN INFORMATION

If the sponsor provides a plan for how the FTD will be maintained during its out-of-service period (e.g., periodic exercise of mechanical, hydraulic, and electrical systems; routine replacement of hydraulic fluid; control of the environmental factors in which the FTD is to be maintained.) there is a greater likelihood that the NSPM will be able to determine the amount of testing that required for requalification.

END INFORMATION

20. OTHER LOSSES OF QUALIFICATION AND PROCEDURES FOR RESTORATION OF QUALIFICATION (§ 60.29)

BEGIN INFORMATION

If the sponsor provides a plan for how the FTD will be maintained during its out-of-service period (e.g., periodic exercise of mechanical, hydraulic, and electrical systems; routine replacement of hydraulic fluid; control of the environmental factors in which the FTD is to be maintained.) there is a greater likelihood that the NSPM will be able to determine the amount of testing that required for requalification.

END INFORMATION

21. RECORDKEEPING AND REPORTING (§ 60.31)

BEGIN QPS REQUIREMENTS

a. FTD modifications can include hardware or software changes. For FTD modifications involving software programming changes, the record required by § 60.31(a)(2) must consist of the name of the aircraft system software, aerodynamic model, or engine model change, the date of the change, a summary of the change, and the reason for the change.

b. If a coded form for recordkeeping is used, it must provide for the preservation and retrieval of information with appropriate security or controls to prevent the inappropriate alteration of such records after the fact.

END QPS REQUIREMENTS

22. APPLICATIONS, LOGBOOKS, REPORTS, AND RECORDS: FRAUD, FALSIFICATION, OR INCORRECT STATEMENTS (§ 60.33)

There are no additional QPS requirements or informational material that apply to § 60.33, Applications, Logbooks, Reports, and Records: Fraud, Falsification, or Incorrect Statements.

23. [RESERVED]

24. LEVELS OF FTD

BEGIN INFORMATION

a. The following is a general description of each level of FTD. Detailed standards and tests for the various levels of FTDs are fully defined in Attachments 1 through 3 of this appendix.

(1) Level 4. A device that may have an open airplane-specific flight deck area, or an enclosed airplane-specific cockpit and at least one operating system with air/ground logic (no aerodynamic programming required).

(2) Level 5. A device that may have an open airplane-specific flight deck area, or an enclosed airplane-specific cockpit and a generic aerodynamic program with at least one operating system and control loading that is representative of the simulated airplane only at an approach speed and configuration.

(3) Level 6. A device that has an enclosed airplane-specific cockpit and aerodynamic program with all applicable airplane systems operating and control loading that is representative of the simulated airplane throughout its ground and flight envelope and significant sound representation.

END INFORMATION

25. FSTD QUALIFICATION ON THE BASIS OF A BILATERAL AVIATION SAFETY AGREEMENT (BASA) (§ 60.37)

BEGIN INFORMATION

There are no additional QPS requirements or informational material that apply to § 60.37, FSTD Qualification on the Basis of a Bilateral Aviation Safety Agreement (BASA).

END INFORMATION

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BEGIN QPS REQUIREMENTS

BEGIN INFORMATION

1. REQUIREMENTS

2. DISCUSSION

a. Certain requirements included in this appendix must be supported with a Statement of Compliance and Capability (SOC), which may include objective and subjective tests. The SOC will confirm that the requirement was satisfied, and describe how the requirement was met. The requirements for SOCs and tests are indicated in the “General FTD Requirements” column in Table B1A of this appendix.

a. This attachment describes the general requirements for qualifying Level 4 through Level 6 FTDs. The sponsor should also consult the objective tests in Attachment 2 and the examination of functions and subjective tests listed in Attachment 3 to determine the complete requirements for a specific level FTD.

b. Table B1A describes the requirements for the indicated level of FTD. Many devices include operational systems or functions that exceed the requirements outlined in this section. In any event, all systems will be tested and evaluated in accordance with this appendix to ensure proper operation.

b. The material contained in this attachment is divided into the following categories:

- (1) General Cockpit Configuration.
- (2) Programming.
- (3) Equipment Operation.
- (4) Equipment and facilities for instructor/evaluator functions.
- (5) Motion System.
- (6) Visual System.
- (7) Sound System.

END QPS REQUIREMENTS

c. Table B1A provides the standards for the General FTD Requirements.

END INFORMATION

TABLE B1A—MINIMUM FTD REQUIREMENTS

<<<QPS requirements>>>		FTD level			<<Information>> Notes
No.	General FTD requirements	4	5	6	
1. General Cockpit Configuration					
1.a	The FTD must have a cockpit that is a replica of the airplane simulated with controls, equipment, observable cockpit indicators, circuit breakers, and bulkheads properly located, functionally accurate and replicating the airplane. The direction of 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”.			X	For FTD purposes, the cockpit 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 item such as landing gear pin storage compartments, fire axes or extinguishers, spare light bulbs, aircraft documents pouches are not considered essential and may be omitted.
1.b	The FTS 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 cockpit or an open flight deck area. Actuation of equipment must replicate the appropriate function in the airplane.	X	X		
2. Programming					

TABLE B1A—MINIMUM FTD REQUIREMENTS—Continued

<<<QPS requirements>>>		FTD level			<<Information>> Notes
No.	General FTD requirements	4	5	6	
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.		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.	X	X	X	
2.c	Relative responses of the cockpit 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 would respond under the same conditions. <ul style="list-style-type: none"> • Latency: The FTD instrument and, if 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 signal migrating from the pilot's control 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 visual system. 		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 14.
3. Equipment Operations					
3.a	All relevant instrument indications involved in the simulation of the airplane must automatically respond to control movement or external disturbances to the simulated airplane; e.g., turbulence or winds.		X	X	
3.b	Navigation equipment must be installed and operate within the tolerances applicable for the airplane. Levels 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.		X	X	

TABLE B1A—MINIMUM FTD REQUIREMENTS—Continued

<<<QPS requirements>>>		FTD level			<<Information>> Notes
No.	General FTD requirements	4	5	6	
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. Level 6 must simulate all applicable airplane flight, navigation, and systems operation. Level 5 must have at least functional flight and navigational controls, displays, and instrumentation. Level 4 must have at least one airplane system installed and functional.	X	X	X	
3.d	The lighting environment for panels and instruments must be sufficient for the operation being conducted.			X	
3.e	The FTD must provide control forces and control travel that correspond to the airplane being simulated. Control forces must react in the same manner as in the airplane under the same flight conditions.		X		
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	X	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 may be 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. If 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 must 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 would respond under the same conditions. A Subjective Test is required.		X	X	The motion system standards set out in part 60, appendix A for at least Level A simulators is acceptable.
6. Visual System (not required)					
6.a	The FTD may have a visual system, if desired, although it is not required. If a visual system is installed, it must not be distracting.	X	X	X	

TABLE B1A—MINIMUM FTD REQUIREMENTS—Continued

<<<QPS requirements>>>		FTD level			<<Information>> Notes
No.	General FTD requirements	4	5	6	
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, the visual system must meet the following criteria:				
6.b.1	The visual system must respond to abrupt input at the pilot's position. An SOC is required. A Subjective Test is required.	X	X	X	
6.b.2	The visual system must be at least a single channel, non-collimated display? An SOC is required. A Subjective Test is required.	X	X	X	
6.b.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.b.4	The visual system must provide for a maximum parallax of 10° per pilot. An SOC is required.	X	X	X	
6.b.5	The visual scene content may not be distracting. An SOC is required. A Subjective Test is required.	X	X	X	
6.b.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.b.7	The visual system must provide for a minimum resolution of 5 arc-minutes for both computed and displayed pixel size. An SOC is required.	X	X	X	
7. Sound System					
7.a	The FTD must simulate significant cockpit sounds resulting from pilot actions that correspond to those heard in the airplane.			X	

ATTACHMENT 2 TO APPENDIX B TO PART 60—
FLIGHT TRAINING DEVICE (FTD) OBJECTIVE
TESTS

BEGIN INFORMATION

1. For the purposes of this attachment, the flight conditions specified in the Flight Conditions Column of Table B2A, are defined as follows:

- (1) *Ground*—on ground, independent of airplane configuration;
- (2) *Take-off*—gear down with flaps/slats in any certified takeoff position;
- (3) *First segment climb*—gear down with flaps/slats in any certified takeoff position (normally not above 50 ft AGL);

- (4) *Second segment climb*—gear up with flaps/slats in any certified takeoff position (normally between 50 ft and 400 ft AGL);
- (5) *Clean*—flaps/slats retracted and gear up;
- (6) *Cruise*—clean configuration at cruise altitude and airspeed;
- (7) *Approach*—gear up or down with flaps/slats at any normal approach position as recommended by the airplane manufacturer; and
- (8) *Landing*—gear down with flaps/slats in any certified landing position.

2. The format for numbering the objective tests in appendix A, Attachment 2, Table A2A, and the objective tests in appendix B, Attachment 2, Table B2A, is identical. However, each test required for FFSs is not necessarily required for FTDs. Also, each test required for FTDs is not necessarily required

for FFSs. Therefore, when a test number (or series of numbers) is not required, the term “Reserved” is used in the table at that location. Following this numbering format provides a degree of commonality between the two tables and substantially reduces the potential for confusion when referring to objective test numbers for either FFSs or FTDs.

3. The QPS Requirements section imposes a duty on the sponsor or other data provider to ensure that a steady state condition exists at the instant of time captured by the “snapshot” for cases where the objective test results authorize a “snapshot test” or a “series of snapshot tests” results in lieu of a time-history. This is often verified by showing that a steady state condition existed from some period prior to, through some period following, the snap shot. The time period most frequently used is from 5 seconds prior through 2 seconds following the instant of time captured by the snap shot. Other time periods may be acceptable as authorized by the NSPM.

4. The reader is encouraged to review the Airplane Flight Simulator Evaluation Handbook, Volumes I and II, published by the Royal Aeronautical Society, London, UK, and FAA Advisory Circulars (AC) 25–7, as may be amended, Flight Test Guide for Certification of Transport Category Airplanes, and (AC) 23–8, as may be amended, Flight Test Guide for Certification of Part 23 Airplanes, for references and examples regarding flight testing requirements and techniques.

5. If relevant winds are present in the objective data, the wind vector should be clearly noted as part of the data presentation, expressed in conventional terminology, and related to the runway being used for the test.

6. A Level 4 FTD does not require objective tests and therefore, Level 4 is not addressed in the following table.

END INFORMATION

BEGIN QPS REQUIREMENTS

1. TEST REQUIREMENTS

a. The ground and flight tests required for qualification are listed in Table B2A Objective Evaluation. Computer generated FTD test results must be provided for each test except where an alternate test is specifically authorized by the NSPM. If a flight condition or operating condition is required for the test but does not apply to the airplane being simulated or to the qualification level sought, it may be disregarded (e.g., an engine out missed approach for a single-engine airplane; a maneuver using reverse thrust for an airplane without reverse thrust capability). Each test result is compared against the validation data described in §60.13, and in appendix B. The results must be produced

on an appropriate recording device acceptable to the NSPM and must include FTD number, date, time, conditions, tolerances, and appropriate dependent variables portrayed in comparison to the validation data. Time histories are required unless otherwise indicated in Table B2A. All results must be labeled using the tolerances and units given.

b. Table B2A in this attachment sets out the test results required, including the parameters, tolerances, and flight conditions for FTD validation. Tolerances are provided for the listed tests because mathematical modeling and acquisition and development of reference data are often inexact. All tolerances listed in the following tables are applied to FTD performance. When two tolerance values are given for a parameter, the less restrictive may be used unless otherwise indicated.

c. Certain tests included in this attachment must be supported with a Statement of Compliance and Capability (SOC). In Table B2A, requirements for SOCs are indicated in the “Test Details” column.

d. When operational or engineering judgment is used in making assessments for flight test data applications for FTD validity, such judgment must not be limited to a single parameter. For example, data that exhibit rapid variations of the measured parameters may require interpolations or a “best fit” data section. All relevant parameters related to a given maneuver or flight condition must be provided to allow overall interpretation. When it is difficult or impossible to match FTD to airplane data throughout a time history, differences must be justified by providing a comparison of other related variables for the condition being assessed.

e. It is not acceptable to program the FTD so that the mathematical modeling is correct only at the validation test points. Unless noted otherwise, tests must represent airplane performance and handling qualities at operating weights and centers of gravity (CG) typical of normal operation. If a test is supported by aircraft data at one extreme weight or CG, another test supported by aircraft data at mid-conditions or as close as possible to the other extreme is necessary. Certain tests that are relevant only at one extreme CG or weight condition need not be repeated at the other extreme. The results of the tests for Level 6 are expected to be indicative of the device’s performance and handling qualities throughout all of the following:

- (1) The airplane weight and CG envelope;
- (2) The operational envelope; and
- (3) Varying atmospheric ambient and environmental conditions—including the extremes authorized for the respective airplane or set of airplanes.

f. When comparing the parameters listed to those of the airplane, sufficient data must

also be provided to verify the correct flight condition and airplane configuration changes. For example, to show that control force is within the parameters for a static stability test, data to show the correct airspeed, power, thrust or torque, airplane configuration, altitude, and other appropriate datum identification parameters must also be given. If comparing short period dynamics, normal acceleration may be used to establish a match to the airplane, but airspeed, altitude, control input, airplane configuration, and other appropriate data must also be given. If comparing landing gear change dynamics, pitch, airspeed, and altitude may be used to establish a match to the airplane, but landing gear position must also be provided. All airspeed values must be properly annotated (*e.g.*, indicated versus calibrated). In addition, the same variables must be used for comparison (*e.g.*, compare inches to inches rather than inches to centimeters).

g. The QTG provided by the sponsor must clearly describe how the FTD will be set up and operated for each test. Each FTD subsystem may be tested independently, but overall integrated testing of the FTD must be accomplished to assure that the total FTD system meets the prescribed standards. A manual test procedure with explicit and detailed steps for completing each test must also be provided.

h. In those cases where the objective test results authorize a "snapshot test" or a "series of snapshot test" results in lieu of a time-history result, the sponsor or other data provider must ensure that a steady state condition exists at the instant of time captured by the "snapshot."

i. For previously qualified FTDs, the tests and tolerances of this attachment may be used in subsequent continuing qualification evaluations for any given test if the sponsor has submitted a proposed MQTG revision to the NSPM and has received NSPM approval.

j. FTDs are evaluated and qualified with an engine model simulating the airplane data supplier's flight test engine. For qualification of alternative engine models (either variations of the flight test engines or other manufacturer's engines) additional tests with the alternative engine models may be required. This Attachment contains guidelines for alternative engines.

k. Testing Computer Controlled Airplane (CCA) simulators, or other highly augmented

airplane simulators, flight test data is required for the Normal (N) and/or Non-normal (NN) control states, as indicated in this Attachment. Where test results are independent of control state, Normal or Non-normal control data may be used. All tests in Table A2A require test results in the Normal control state unless specifically noted otherwise in the Test Details section following the CCA designation. The NSPM will determine what tests are appropriate for airplane simulation data. When making this determination, the NSPM may require other levels of control state degradation for specific airplane tests. Where Non-normal control states are required, test data must be provided for one or more Non-normal control states, and must include the least augmented state. Where applicable, flight test data must record Normal and Non-normal states for:

(1) Pilot controller deflections or electronically generated inputs, including location of input; and

(2) Flight control surface positions unless test results are not affected by, or are independent of, surface positions.

l. Tests of handling qualities must include validation of augmentation devices. FTDs for highly augmented airplanes will be validated both in the unaugmented configuration (or failure state with the maximum permitted degradation in handling qualities) and the augmented configuration. Where various levels of handling qualities result from failure states, validation of the effect of the failure is necessary. Requirements for testing will be mutually agreed to between the sponsor and the NSPM on a case-by-case basis.

m. Some tests will not be required for airplanes using airplane hardware in the FTD cockpit (*e.g.*, "side stick controller"). These exceptions are noted in Section 2 "Handling Qualities" in Table B2A of this attachment. However, in these cases, the sponsor must provide a statement that the airplane hardware meets the appropriate manufacturer's specifications and the sponsor must have supporting information to that fact available for NSPM review.

END QPS REQUIREMENTS

TABLE B2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS

Test		Tolerances	Flight conditions	Test details	FTD level		Notes
Number	Title				5	6	
1. Performance							
1.a	(Reserved).						
1.b	Takeoff.						
1.b.1	Ground Acceleration Time	±5% time or ±1 sec	Takeoff	Record acceleration time for a minimum of 80% of the segment from brake release to V _R . Preliminary aircraft certification data may be used.	X		This test is required only if FTO training credit is sought.
1.b.2. through 1.b.6.	(Reserved)						
1.b.7	Rejected Takeoff	±3% time or ±1 second	Dry Runway	Record time for at least 80% of the segment from initiation of the Rejected Takeoff to full stop.	X		
1.b.8	(Reserved)						
1.c	Climb						
1.c.1	Normal Climb all engines operating.	±3 kt airspeed, ±5% or ±100 ft/min (0.5 m/sec) climb rate.	Clean	Flight test data or air-plane performance manual data may be used. Record at nominal climb speed and at nominal altitude. May be a snapshot test result.	X	X	
1.c.2. through 1.c.4.	(Reserved)						
1.d	(Reserved)						
1.e	(Reserved)						

TABLE B2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS—Continued

Test		Tolerances	Flight conditions	Test details	FTD level		Notes
Number	Title				5	6	
2.a.2.b	Roll Controller Position vs. Force.	±2 lb (0.9 daN) breakout, ±10% or ±3 lb (1.3 daN) force.	Ground	Record results for an interrupted control sweep to the stops.	X		Applicable only on continuing qualification evaluations. The intent is to design the control feel for Level 5 to be able to manually fly an instrument approach; and not to compare results to flight test or other such data.
2.a.3.a	Rudder Pedal Position vs. Force and Surface Position Calibration.	±5 lb (2.2 daN) breakout, ±10% or ±5 lb (2.2 daN) force, ±2° rudder angle.	Ground	Record results for an interrupted control sweep to the stops.		X	
2.a.3.b	Rudder Pedal Position vs. Force.	±5 lb (2.2 daN) breakout, ±10% or ±5 lb (2.2 daN) force.	Ground	Record results for an interrupted control sweep to the stops.	X		Applicable only on continuing qualification evaluations. The intent is to design the control feel for Level 5 to be able to manually fly an instrument approach; and not to compare results to flight test or other such data.
2.a.4	Nosewheel Steering Controller Force.	±2 lb (0.9 daN) breakout, ±10% or ±3 lb (1.3 daN) force.	Ground			X	
2.a.5	Rudder Pedal Steering Calibration.	±2° nosewheel angle	Ground			X	
2.a.6	Pitch Trim Indicator vs. Surface Position Calibration.	±0.5° of computed trim surface angle	Ground			X	The purpose of the test is to compare the FTD against design data or equivalent.
2.a.7	(Reserved).						

2.a.8	Alignment of Cockpit Throttle Lever vs. Selected Engine Parameter.	$\pm 5^\circ$ of throttle lever angle ± 0.8 in (2 cm) for power control without angular travel.	Ground	Requires simultaneous recording for all engines. The tolerances apply against airplane data and between engines. In the case of propeller powered airplanes, if a propeller lever is present, it must also be checked.	X	
2.a.9	Brake Pedal Position vs. Force.	± 5 lb (2.2 daN) or 10% force	Ground	Two data points are required: zero and maximum deflection. Computer output results may be used to show compliance.	X	Test not required unless RTO credit is sought.
2.b	(Reserved)					
2.c	Longitudinal Control Tests					
Power setting is that required for level flight unless otherwise specified						
2.c.1	Power Change Force	± 5 lb (2.2 daN) or, $\pm 20\%$ force	Cruise or Approach	May be a series of snapshot test results. Power change dynamics test as described in test 2.c.1 of Table A2A of this part will be accepted.	X	
2.c.2	Flap/Slat Change Force	± 5 lb (2.2 daN) or, $\pm 20\%$ force	Takeoff through initial flap retraction, and approach to landing.	May be a series of snapshot test results. Flap/Slat change dynamics test as described in test 2.c.2 of Table A2A of this part will be accepted.	X	
2.c.3	(Reserved)					
2.c.4	Gear Change Force	± 5 lb (2.2 daN) or, $\pm 20\%$ force	Takeoff (retraction) and Approach (extension).	May be a series of snapshot test results. Gear change dynamics test as described in test 2.c.4 of Table A2A of this part will be accepted.	X	

TABLE B2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS—Continued

Test		Tolerances	Flight conditions	Test details	FTD level		Notes
Number	Title				5	6	
2.c.5	Longitudinal Trim	±0.5° trim surface angle ±1° elevator ±1° pitch angle ±5% net thrust or equivalent.	Cruise, Approach, and Landing.	May be a series of snap- shot tests. Level 5 may use equivalent stick and trim controllers in lieu of elevator and trim surface.	X	X	
2.c.6	Longitudinal Maneuvering Sta- bility (Stick Force/g).	±5 lb (±2.2 daN) or ±10% pitch con- troller force.	Cruise, Approach and Landing.	May be a series of snap- shot test results.		X	
2.c.7	Longitudinal Static Stability	±5 lb (±2.2 daN) or ±10% pitch con- troller force.	Approach	May be a series of snap- shot test results. Level 5 must exhibit positive static stability, but need not comply with the nu- merical tolerance.	X	X	
2.c.8	Stall Warning (actuation of stall warning device).	±3 kts. airspeed, ±2° bank	Second Segment Climb, and Approach or Land- ing.	Record the stall warning signal.	X	X	The stall maneuver may be entered with thrust at or near idle power and wings level (1g).
2.c.9.a	Phugoid Dynamics	±10% period, ±10% of time to ½ or double amplitude or ±0.02 of damp- ing ratio.	Cruise	The test must include whichever is less of the following: Three full cy- cles (six overshoots after the input is com- pleted), or the number of cycles sufficient to determine time to ½ or double amplitude.		X	
2.c.9.b	Phugoid Dynamics	±10% period, Representative damping	Cruise	The test must include whichever is less of the following: Three full cy- cles (six overshoots after the input is com- pleted), or the number of cycles sufficient to determine representa- tive damping.	X		

2.c.10	Short Period Dynamics	$\pm 1.5^\circ$ pitch angle or $\pm 2^\circ/\text{sec}$ pitch rate, $\pm 0.10g$ acceleration.	Cruise	X
2.d	(3) Lateral Directional Tests					
	(3) Power setting is that required for level flight unless otherwise specified.					
2.d.1	(Reserved)
2.d.2	Roll Response (Rate)	$\pm 10\%$ or $\pm 2^\circ/\text{sec}$ roll rate	Cruise, and Approach or Landing.		X	Results should be recorded for normal roll controller deflection (about one-third of maximum roll controller travel). May be combined with step input of flight deck roll controller test (2.d.3).
2.d.3	Roll Response to Cockpit Roll Controller Step Input.	$\pm 10\%$ or $\pm 2^\circ$ bank angle	Approach or Landing			X May be combined with roll response (rate) test (2.d.2).
2.d.4.a	Spiral Stability	Correct trend and $\pm 3^\circ$ or $\pm 10\%$ bank angle in 20 seconds.	Cruise			X Airplane data averaged from multiple tests in same direction may be used.
2.d.4.b	Spiral Stability	Correct trend	Cruise		X	Airplane data averaged from multiple tests in same direction may be used.
2.d.5	(Reserved)
2.d.6.a	Rudder Response	$\pm 2^\circ/\text{sec}$ or $\pm 10\%$ yaw rate.	Approach or Landing	Not required if rudder input and response is shown in Dutch Roll Test (test 2.d.7).		X A rudder step input of 20%–30% rudder pedal throw may be used.
2.d.6.b	Rudder Response	Roll rate $\pm 2^\circ/\text{sec}$, bank angle $\pm 3^\circ$	Approach or Landing	May be roll response to a given rudder deflection.	X	

TABLE B2A—FLIGHT TRAINING DEVICE (FTD) OBJECTIVE TESTS—Continued

Test		<<< QPS Requirements >>>				<< Information >>	
Number	Title	Tolerances	Flight conditions	Test details	FTD level		Notes
					5	6	
2.d.7	Dutch, Roll, (Yaw Damper OFF).	±0.5 sec or ±10% of period, ±10% of time to ½ or double amplitude or ±.02 of damping ratio.	Cruise, and Approach or Landing.	Record results for at least 6 complete cycles with stability augmentation OFF, or the number of cycles sufficient to determine time to ½ or double amplitude.	X		
2.d.8	Steady State Sideslip	For given rudder position ±2° bank angle, ±1° sideslip angle, ±10% or ±2° alleron, ±10% or ±5° spoiler or equivalent roll, controller position or force.	Approach or Landing	May be a series of snapshot test results. Propeller driven airplanes must test in each direction.	X	X	Sideslip angle is matched for repeatability on continuing qualification evaluations.
2.e. through 2.h	(Reserved)						
3	(Reserved)						
4	(Reserved)						
5	(Reserved)						
6. FTD System Response Time							
6a.	Latency.	300 ms (or less) after airplane response.	Take-off cruise, and approach or landing.	One test is required in each axis (pitch, roll and yaw) for each of the three conditions (take-off, cruise, and approach or landing).	X	X	
	Transport Delay. If Transport Delay is chosen to demonstrate response time then Latency, it is expected that when reviewing those existing tests where latency can be identified (e.g., short period, roll response, rudder response) the sponsor and the NSPM will apply additional scrutiny to ensure proper FTD response.						
		300 ms (or less) after controller movement.	N/A	A separate test is required in each axis (pitch, roll, and yaw).	X	X	

3. FOR ADDITIONAL INFORMATION ON THE FOLLOWING TOPICS, PLEASE REFER TO APPENDIX A, ATTACHMENT 2, AND THE INDICATED PARAGRAPH WITHIN THAT ATTACHMENT

- Control Dynamics, paragraph 3.
- Motion System, paragraph 5.
- Sound System, paragraph 6.
- Engineering Simulator Validation Data, paragraph 8.
- Approval Guidelines for Engineering Simulator Validation Data, paragraph 9.
- Validation Test Tolerances, paragraph 10.
- Validation Data Road Map, paragraph 11.
- Acceptance Guidelines for Alternative Engines Data, paragraph 12.
- Acceptance Guidelines for Alternative Avionics, paragraph 13.
- Transport Delay Testing, paragraph 14.
- Continuing Qualification Evaluation Validation Data Presentation, paragraph 15.

4. ALTERNATIVE OBJECTIVE DATA FOR FTD LEVEL 5.

BEGIN QPS REQUIREMENTS

a. This paragraph (including the following tables) is relevant only to FTD Level 5. It is provided because this level is required to simulate the performance and handling characteristics of a set of airplanes with similar characteristics, such as normal airspeed/altitude operating envelope and the same number and type of propulsion systems (engines).

b. Tables B2B through B2E reflect FTD performance standards that are acceptable

to the FAA. A sponsor must demonstrate that a device performs within these parameters, as applicable. If a device does not meet the established performance parameters for some or for all of the applicable tests listed in Tables B2B through B2E, the sponsor may use NSP accepted flight test data for comparison purposes for those tests.

c. Sponsors using the data from Tables B2B through B2E must comply with the following:

(1) Submit a complete QTG, including results from all of the objective tests appropriate for the level of qualification sought as set out in Table B2A. The QTG must highlight those results that demonstrate the performance of the FTD is within the allowable performance ranges indicated in Tables B2B through B2E, as appropriate.

(2) The QTG test results must include all relevant information concerning the conditions under which the test was conducted; *e.g.*, gross weight, center of gravity, airspeed, power setting, altitude (climbing, descending, or level), temperature, configuration, and any other parameter that impacts the conduct of the test.

(3) The test results become the validation data against which the initial and all subsequent recurrent evaluations are compared. These subsequent evaluations will use the tolerances listed in Table B2A.

(4) Subjective testing of the device must be performed to determine that the device performs and handles like an airplane within the appropriate set of airplanes.

TABLE B2B. — ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (RECIPROCATING) AIRPLANE

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
1. Performance		
1.c	Climb.	
1.c.1	Normal climb with nominal gross weight, at best rate-of-climb airspeed.	Climb rate = 500–1200 fpm (2.5–6 m/sec).
1.f	Engines.	
1.f.1	Acceleration; idle to takeoff power	2–4 Seconds.
1.f.2	Deceleration; takeoff power to idle	2–4 Seconds.
2. Handling Qualities		
2.c	Longitudinal Tests.	
2.c.1	Power change force	

TABLE B2B. — ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (RECIPROCATING) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
	(a) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Reduce power to flight idle. Do not change trim or configuration. After stabilization, record column force necessary to maintain original airspeed.	5-15 lbs (2.2-6.6 daN) of force (Pull).
	OR	
	(b) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Add power to maximum setting. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed.	5-15 lbs (2.2-6.6 daN) of force (Push).
2.c.2	Flap/slat change force.	
	(a) Trim for straight and level flight with flaps fully retracted at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Extend the flaps to 50% of full flap travel. After stabilized, record stick force necessary to maintain original airspeed.	5-15 lbs (2.2-6.6 daN) of force (Pull).
	OR	
	(b) Trim for straight and level flight with flaps extended to 50% of full flap travel, at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Retract the flaps to zero. After stabilized, record stick force necessary to maintain original airspeed.	5-15 lbs (2.2-6.6 daN) of force (Push).
2.c.4	Gear change force	
	(a) Trim for straight and level flight with landing gear retracted at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Extend the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2-12 lbs (0.88-5.3 daN) of force (Pull).
	OR	
	(b) Trim for straight and level flight with landing gear extended, at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Retract the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2-12 lbs (0.88-5.3 daN) of force (Push).
2.c.5	Longitudinal trim	Must be able to trim longitudinal stick force to "zero" in each of the following configurations: cruise; approach; and landing.
2.c.7	Longitudinal static stability	Must exhibit positive static stability.
2.c.8	Stall warning (actuation of stall warning device) with nominal gross weight; wings level; and a deceleration rate of approximately one (1) knot per second.	
	(a) Landing configuration	40-60 knots; ± 5° of bank.
	(b) Clean configuration	Landing configuration speed + 10-20%.
2.c.9.b	Phugoid dynamics	Must have a phugoid with a period of 30-60 seconds. May not reach 1/2 or double amplitude in less than 2 cycles.

TABLE B2B. — ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (RECIPROCATING) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
2.d	Lateral Directional Tests.	
2.d.2	Roll response Roll rate must be measured through at least 30 degrees of roll. Aileron control must be deflected ½ (50 percent) of maximum travel.	Must have a roll rate of 6–40 degrees/second.
2.d.4.b	Spiral stability Cruise configuration and normal cruise airspeed. Establish a 20–30 degree bank. When stabilized, neutralize the aileron control and release. Must be completed in both directions of turn.	Initial bank angle (± 5 degrees) after 20 seconds.
2.d.6.b	Rudder response Use 50 percent of maximum rudder deflection. (Applicable to approach or landing configuration.).	6–12 degrees/second yaw rate.
2.d.7	Dutch roll, yaw damper off (Applicable to cruise and approach configurations.).	A period of 2–5 seconds; and ½–2 cycles.
2.d.8	Steady state sideslip Use 50 percent rudder deflection. (Applicable to approach and landing degrees of configurations.).	2–10 degrees of bank; 4–10 degrees of sideslip; and 2–10 degrees of aileron.
6	FTD System Response Time.	
6.a	Cockpit instrument systems response to an abrupt pilot controller input. One test is required in each axis (pitch, roll, yaw).	300 milliseconds or less.

TABLE B2C—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, MULTI-ENGINE (RECIPROCATING) AIRPLANE

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
1. Performance		
1.c	Climb	
1.c.1	Normal climb with nominal gross weight, at best rate-of-climb airspeed.	Climb airspeed = 95–115 knots. Climb rate = 500–1500 fpm (2.5–7.5 m/sec).
1.f	Engines	
1.f.1	Acceleration; idle to takeoff power	2–5 Seconds
1.f.2	Deceleration; takeoff power to idle	2–5 Seconds
2. Handling Qualities		
2.c Longitudinal Tests		
2.c.1	Power change force	
	a) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Reduce power to flight idle. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed.	10–25 lbs (2.2–6.6 daN) of force (Pull).
	OR	

TABLE B2C—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, MULTI-ENGINE (RECIPROCATING) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
	b) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Add power to maximum setting. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed.	5-15 lbs (2.2-6.6 daN) of force (Push).
2.c.2	Flap/slat change force	
	a) Trim for straight and level flight with flaps fully retracted at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Extend the flaps to 50% of full flap travel. After stabilized, record stick force necessary to maintain original airspeed.	5-15 lbs (2.2-6.6 daN) of force (Pull).
	OR	
	b) Trim for straight and level flight with flaps extended to 50% of full flap travel, at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Retract the flaps to zero. After stabilized, record stick force necessary to maintain original airspeed.	5-15 lbs (2.2-6.6 daN) of force (Push).
2.c.4	Gear change force	
	a) Trim for straight and level flight with landing gear retracted at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Extend the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2-12 lbs (0.88-5.3 daN) of force (Pull).
	OR	
	b) Trim for straight and level flight with landing gear extended, at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Retract the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2-12 lbs (0.88-5.3 daN) of force (Push).
2.c.4	Longitudinal trim	Must be able to trim longitudinal stick force to "zero" in each of the following configurations: cruise; approach; and landing.
2.c.7	Longitudinal static stability	Must exhibit positive static stability.
2.c.8	Stall warning (actuation of stall warning device) with nominal gross weight; wings level; and a deceleration rate of approximately one (1) knot per second.	
	a) Landing configuration:	60-90 knots; ± 5° of bank.
	b) Clean configuration:	Landing configuration speed + 10-20%.
2.c.9.b	Phugoid dynamics	Must have a phugoid with a period of 30-60 seconds. May not reach ½ or double amplitude in less than 2 cycles.
2.d	Lateral Directional Tests	
2.d.2	Roll response Roll rate must be measured through at least 30 degrees of roll. Aileron control must be deflected ½ (50 percent) of maximum travel.	Must have a roll rate of 6-40 degrees/second.

TABLE B2C—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, MULTI-ENGINE (RECIPROCATING) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
2.d.4.b	Spiral stability Cruise configuration and normal cruise airspeed. Establish a 20–30 degree bank. When stabilized, neutralize the aileron control and release. Must be completed in both directions of turn.	Initial bank angle (± 5 degrees) after 20 seconds.
2.d.6.b	Rudder response Use 50 percent of maximum rudder deflection. (Applicable to approach or landing configuration.)	6–12 degrees/second yaw rate.
2.d.7	Dutch roll, yaw damper off (Applicable to cruise and approach configurations.)	A period of 2–5 seconds; and ½-2 cycles.
2.d.8	Steady state sideslip Use 50 percent rudder deflection. (Applicable to approach and landing configurations.)	2–10 degrees of bank; 4–10 degrees of sideslip; and 2–10 degrees of aileron.
6. FTD System Response Time		
6.a	Cockpit instrument systems response to an abrupt pilot controller input. One test is required in each axis (pitch, roll, yaw).	300 milliseconds or less.

TABLE B2D—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (TURBO-PROPELLER) AIRPLANE

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
1. Performance		
1.c	Climb	
1.c.1	Normal climb with nominal gross weight, at best rate-of-climb airspeed.	Climb airspeed = 95–115 knots, Climb rate = 800–1800 fpm (4–9 m/sec).
1.f	Engines	
1.f.1	Acceleration; idle to takeoff power	4–8 Seconds
1.f.2	Deceleration; takeoff power to idle	3–7 Seconds
2. Handling Qualities		
2.c Longitudinal Tests		
2.c.1	Power change force	
	a) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Reduce power to flight idle. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed.	8 lbs (3.5 daN) of Push force—8 lbs (3.5 daN) of Pull force
	OR	
	b) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Add power to maximum setting. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed.	12–22 lbs (5.3–9.7 daN) of force (Push)

TABLE B2D—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (TURBO-PROPELLER) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
2.c.2	Flap/slat change force	
	a) Trim for straight and level flight with flaps fully retracted at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Extend the flaps to 50% of full flap travel. After stabilized, record stick force necessary to maintain original airspeed.	5-15 lbs (2.2-6.6 daN) of force (Pull).
	OR	
	b) Trim for straight and level flight with flaps extended to 50% of full flap travel, at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Retract the flaps to zero. After stabilized, record stick force necessary to maintain original airspeed.	5-15 lbs (2.2-6.6 daN) of force (Push)
2.c.4	Gear change force	
	a) Trim for straight and level flight with landing gear retracted at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Extend the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2-12 lbs (0.88-5.3 daN) of force (Pull)
	OR	
	b) Trim for straight and level flight with landing gear extended, at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Retract the landing gear. After stabilized, record stick force necessary to maintain original airspeed.	2-12 lbs (0.88- 5.3 daN) of force (Push)
2.b.5	Longitudinal trim	Must be able to trim longitudinal stick force to "zero" in each of the following configurations: cruise; approach; and landing.
2.c.7	Longitudinal static stability	Must exhibit positive static stability.
2.c.8	Stall warning (actuation of stall warning device) with nominal gross weight; wings level; and a deceleration rate of approximately one (1) knot per second.	
	a) Landing configuration:	60-90 knots; ±5° of bank.
	b) Clean configuration:	Landing configuration speed + 10-20%.
2.c.8.b	Phugoid dynamics	Must have a phugoid with a period of 30-60 seconds. May not reach ½ or double amplitude in less than 2 cycles.
2.d	Lateral Directional Tests	
2.d.2	Roll response	Must have a roll rate of 6-40 degrees/second. Roll rate must be measured through at least 30 degrees of roll. Aileron control must be deflected ½ (50 percent) of maximum travel.
2.d.4.b	Spiral stability	Initial bank angle (± 5 degrees) after 20 seconds. Cruise configuration and normal cruise airspeed. Establish a 20-30 degree bank. When stabilized, neutralize the aileron control and release. Must be completed in both directions of turn.
2.d.6.b	Rudder response	6-12 degrees/second yaw rate.

TABLE B2D—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 SMALL, SINGLE ENGINE (TURBO-PROPELLER) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
Number	Title and procedure	
	Use 50 percent of maximum rudder deflection. (Applicable to approach or landing configuration.)	
2.d.7	Dutch roll, yaw damper off (Applicable to cruise and approach configurations.)	A period of 2–5 seconds; and 1.2–3 cycles.
2.d.8	Steady state sideslip Use 50 percent rudder deflection. (Applicable to approach and landing degrees of configurations.)	2–10 degrees of bank; 4–10 degrees of sideslip; and 2–10 degrees of aileron.
6. FTD System Response Time		
6.a	Cockpit instrument systems response to an abrupt pilot controller input. One test is required in each axis (pitch, roll, yaw).	300 milliseconds or less.

TABLE B2E—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 MULTI-ENGINE (TURBO-PROPELLER) AIRPLANE

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
1. Performance		
1.c	Climb	
1.b.1	Normal climb with nominal gross weight, at best rate-of-climb airspeed	Climb airspeed= 120–140 knots. Climb rate= 1000–3000 fpm (5–15 m/sec).
1.f	Engines	
1.f.1	Acceleration; idle to takeoff power	2–6 Seconds.
1.f.2	Deceleration; takeoff power to idle	1–5 Seconds.
2. Handling Qualities		
2.c Longitudinal Tests		
2.c.1	Power change force	
	a) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Reduce power to flight idle. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed	8 lbs (3.5 daN) of Push force to 8 lbs (3.5 daN) of Pull force.
	OR	
	b) Trim for straight and level flight at 80% of normal cruise airspeed with necessary power. Add power to maximum setting. Do not change trim or configuration. After stabilized, record column force necessary to maintain original airspeed	12–22 lbs (5.3–9.7 daN) of force (Push).
2.c.2	Flap/slat change force	

TABLE B2E—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 MULTI-ENGINE (TURBO-PROPELLER) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
	a) Trim for straight and level flight with flaps fully retracted at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Extend the flaps to 50% of full flap travel. After stabilized, record stick force necessary to maintain original airspeed	5-15 lbs (2.2-6.6 daN) of force (Pull).
	OR	
	b) Trim for straight and level flight with flaps extended to 50% of full flap travel, at a constant airspeed within the flaps-extended airspeed range. Do not adjust trim or power. Retract the flaps to zero. After stabilized, record stick force necessary to maintain original airspeed	5-15 lbs (2.2-6.6 daN) of force (Push).
2.c.4	Gear change force	
	a) Trim for straight and level flight with landing gear retracted at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Extend the landing gear. After stabilized, record stick force necessary to maintain original airspeed	2-12 lbs (0.88-5.3 daN) of force (Pull).
	OR	
	b) Trim for straight and level flight with landing gear extended, at a constant airspeed within the landing gear-extended airspeed range. Do not adjust trim or power. Retract the landing gear. After stabilized, record stick force necessary to maintain original airspeed	2-12 lbs (0.88-5.3 daN) of force (Push).
2.b.5	Longitudinal trim	Must be able to trim longitudinal stick force to "zero" in each of the following configurations; cruise; approach; and landing.
2.c.7	Longitudinal static stability	Must exhibit positive static stability.
2.c.8	Stall warning (actuation of stall warning device) with nominal gross weight; wings level; and a deceleration rate of approximately one (1) knot per second	
	a) Landing configuration	80-100 knots; ± 5° of bank.
	b) Clean configuration	Landing configuration speed + 10-20%
2.c.8.b	Phugoid dynamics	Must have a phugoid with a period of 30-60 seconds. May not reach 1/2 or double amplitude in less than 2 cycles.
2.d Lateral Directional Test		
2.d.2	Roll response Roll rate must be measured through at least 30 degrees of roll. Aileron control must be deflected approximately 1/2 (50 percent) of maximum travel	Must have a roll rate of 6-40 degrees/second.
2.d.4.b	Spiral stability Cruise configuration and normal cruise airspeed. Establish a 20-30 degree bank. When stabilized, neutralize the aileron control and release. Must be completed in both directions of turn	Initial bank angle (±5 degrees) after 20 seconds.

TABLE B2E—ALTERNATIVE DATA SOURCE FOR FTD LEVEL 5 MULTI-ENGINE (TURBO-PROPELLER) AIRPLANE—Continued

<<< QPS requirement >>>		
Applicable test		Authorized performance range
No.	Title and procedure	
2.d.6.b	Rudder response Use 50 percent of maximum rudder deflection (Applicable to approach or landing configuration.)	6–12 degrees/second yaw rate.
2.d.7	Dutch roll, yaw damper off (Applicable to cruise and approach configurations.)	A period of 2–5 seconds; and ½–3 cycles.
2.d.8	Steady state sideslip Use 50 percent rudder deflection (Applicable to approach and landing configurations.)	2–10 degrees of bank; 4–10 degrees of sideslip; and 2–10 degrees of aileron.
6. FTD System Response Time		
6.a	Cockpit instrument systems response to an abrupt pilot controller input. One test is required in each axis (pitch, roll, yaw)	300 milliseconds or less.

END QPS REQUIREMENTS

5. ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION: LEVEL 6 FTD ONLY.

BEGIN INFORMATION

a. In recent years, considerable progress has been made by highly experienced aircraft and FTD manufacturers in improvement of aerodynamic modeling techniques. In conjunction with increased accessibility to very high powered computer technology, these techniques have become quite sophisticated. Additionally, those who have demonstrated success in combining these modeling techniques with minimal flight testing have incorporated the use of highly mature flight controls models and have had extensive experience in comparing the output of their effort with actual flight test data—and they have been able to do so on an iterative basis over a period of years.

b. It has become standard practice for experienced FTD manufacturers to use such techniques as a means of establishing data bases for new FTD configurations while awaiting the availability of actual flight test data; and then comparing this new data with the newly available flight test data. The results of such comparisons have, as reported by some recognized and experienced simulation experts, become increasingly consistent and indicate that these techniques, applied with appropriate experience, are becoming dependably accurate for the development of aerodynamic models for use in Level 6 FTDs.

c. In reviewing this history, the NSPM has concluded that, with proper care, those who are experienced in the development of aerodynamic models for FTD application can successfully use these modeling techniques

to acceptably alter the method by which flight test data may be acquired and, when applied to Level 6 FTDs, does not compromise the quality of that simulation.

a. The information in the table that follows (Table of Alternative Data Sources, Procedures, and Information: Level 6 FTD Only) is presented to describe an acceptable alternative to data sources for Level 6 FTD modeling and validation, and an acceptable alternative to the procedures and instrumentation found in the flight test methods traditionally accepted for gathering modeling and validation data.

(1) Alternative data sources that may be used for part or all of a data requirement are the Airplane Maintenance Manual, the Airplane Flight Manual (AFM), Airplane Design Data, the Type Inspection Report (TIR), Certification Data or acceptable supplemental flight test data.

(2) The NSPM recommends that use of the alternative instrumentation noted in the following Table be coordinated with the NSPM prior to employment in a flight test or data gathering effort.

b. The NSPM position regarding the use of these alternative data sources, procedures, and instrumentation is based on three primary preconditions and presumptions regarding the objective data and FTD aerodynamic program modeling.

(1) Data gathered through the alternative means does not require angle of attack (AOA) measurements or control surface position measurements for any flight test. AOA can be sufficiently derived if the flight test program insures the collection of acceptable level, unaccelerated, trimmed flight data. Angle of attack may be validated by conducting the three basic “fly-by” trim tests. The FTD time history tests should begin in

level, unaccelerated, and trimmed flight, and the results should be compared with the flight test pitch angle.

(2) A simulation controls system model should be rigorously defined and fully mature. It should also include accurate gearing and cable stretch characteristics (where applicable) that are determined from actual aircraft measurements. Such a model does not require control surface position measurements in the flight test objective data for Level 6 FTD applications.

c. This table is *not* applicable to Computer Controlled Aircraft FTDs.

d. Utilization of these alternate data sources, procedures, and instrumentation does not relieve the sponsor from compliance with the balance of the information contained in this document relative to Level 6 FTDs.

e. The term “inertial measurement system” allows the use of a functional global positioning system (GPS).

END INFORMATION

TABLE B2F—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION LEVEL 6 FTD INFORMATION

Objective test reference number and title	Alternative data sources, procedures, and instrumentation	Notes and reminders
1.b.1 Performance Takeoff Ground acceleration time.	Data may be acquired through a synchronized video recording of a stop watch and the calibrated airplane airspeed indicator. Hand-record the flight conditions and airplane configuration.	This test is required only if RTO is sought.
1.b.7 Performance Takeoff Rejected takeoff.	Data may be acquired through a synchronized video recording of a stop watch and the calibrated airplane airspeed indicator. Hand-record the flight conditions and airplane configuration.	This test is required only if RTO is sought.
1.c.1 Performance Climb Normal climb all engines operating.	Data may be acquired with a synchronized video of calibrated airplane instruments and engine power throughout the climb range.	
1.f.1 Performance Engines Acceleration.	Data may be acquired with a synchronized video recording of engine instruments and throttle position.	
1.f.2 Performance Engines Deceleration.	Data may be acquired with a synchronized video recording of engine instruments and throttle position.	
2.a.1.a Handling qualities Static control tests Pitch controller position vs. force and surface position calibration.	Surface position data may be acquired from flight data recorder (FDR) sensor or, if no FDR sensor, at selected, significant column positions (encompassing significant column position data points), acceptable to the NSPM, using a control surface protractor on the ground (for airplanes with reversible control systems, this function should be accomplished with winds less than 5 kt). Force data may be acquired by using a hand held force gauge at the same column position data points.	
2.a.2.a Handling qualities Static control tests Wheel position vs. force and surface position calibration.	Surface position data may be acquired from flight data recorder (FDR) sensor or, if no FDR sensor, at selected, significant column positions (encompassing significant column position data points), acceptable to the NSPM, using a control surface protractor on the ground (for airplanes with reversible control systems, this function should be accomplished with winds less than 5 kt). Force data may be acquired by using a hand held force gauge at the same column position data points.	

TABLE B2F—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION LEVEL 6 FTD INFORMATION—Continued

Objective test reference number and title	Alternative data sources, procedures, and instrumentation	Notes and reminders
2.a.3.a Handling qualities Static control tests Rudder pedal position vs. force and surface position calibration.	Surface position data may be acquired from flight data recorder (FDR) sensor or, if no FDR sensor, at selected, significant column positions (encompassing significant column position data points), acceptable to the NSPM, using a control surface protractor on the ground (for airplanes with reversible control systems, this function should be accomplished with winds less than 5 kt). Force data may be acquired by using a hand held force gauge at the same column position data points.	
2.a.4 Handling qualities Static control tests Nosewheel steering force.	Breakout data may be acquired with a hand held force gauge. The remainder of the force to the stops may be calculated if the force gauge and a protractor are used to measure force after breakout for at least 25% of the total displacement capability.	
2.a.5 Handling qualities Static control tests Rudder pedal steering calibration.	Data may be acquired through the use of force pads on the rudder pedals and a pedal position measurement device, together with design data for nose wheel position.	
2.a.6 Handling qualities Static control tests Pitch trim indicator vs. surface position calibration.	Data may be acquired through calculations.	
2.a.8 Handling qualities Static control tests Alignment of power lever angle vs. selected engine parameter (e.g., EPR, N ₁ , Torque).	Data may be acquired through the use of a temporary throttle quadrant scale to document throttle position. Use a synchronized video to record steady state instrument readings or hand-record steady state engine performance readings.	
2.a.9 Handling qualities Static control tests Brake pedal position vs. force.	Use of design or predicted data is acceptable. Data may be acquired by measuring deflection at "zero" and at "maximum."	
2.c.1 Handling qualities. Longitudinal control tests Power change force.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments, throttle position, and the force/position measurements of cockpit controls.	Power change dynamics test is acceptable using the same data acquisition methodology.
2.c.2 Handling qualities Longitudinal control tests Flap/slat change force.	Data may be acquired by using an inertial measurement system and a synchronized video of calibrated airplane instruments, flap/slat position, and the force/position measurements of cockpit controls.	Flap/slat change dynamics test is acceptable using the same data acquisition methodology.
2.c.4 Handling qualities Longitudinal control tests Gear change force.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments, gear position, and the force/position measurements of cockpit controls.	Gear change dynamics test is acceptable using the same data acquisition methodology.
2.c.5 Handling qualities Longitudinal control tests Longitudinal trim.	Data may be acquired through use of an inertial measurement system and a synchronized video of the cockpit controls position (previously calibrated to show related surface position) and the engine instrument readings.	
2.c.6 Handling qualities Longitudinal control tests Longitudinal maneuvering stability (stick force/g).	Data may be acquired through the use of an inertial measurement system and a synchronized video of the calibrated airplane instruments; a temporary, high resolution bank angle scale affixed to the attitude indicator; and a wheel and column force measurement indication.	

TABLE B2F—ALTERNATIVE DATA SOURCES, PROCEDURES, AND INSTRUMENTATION LEVEL 6 FTD INFORMATION—Continued

Objective test reference number and title	Alternative data sources, procedures, and instrumentation	Notes and reminders
2.c.7 Handling qualities Longitudinal control tests Longitudinal static stability.	Data may be acquired through the use of a synchronized video of the airplane flight instruments and a hand held force gauge.	
2.c.8 Handling qualities Longitudinal control tests Stall Warning (activation of stall warning device).	Data may be acquired through a synchronized video recording of a stop watch and the calibrated airplane airspeed indicator. Hand-record the flight conditions and airplane configuration.	Airspeeds may be cross checked with those in the TIR and AFM.
2.c.9.a Handling qualities Longitudinal control tests Phugoid dynamics.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit controls.	
2.c.10 Handling qualities Longitudinal control tests Short period dynamics.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit controls.	
2.c.11 Handling qualities Longitudinal control tests Gear and flap/slat operating times.	May use design data, production flight test schedule, or maintenance specification, together with an SOC.	
2.d.2 Handling qualities Lateral directional tests Roll response (rate).	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit lateral controls.	
2.d.3 Handling qualities Lateral directional tests (a) Roll overshoot OR (b) Roll response to cockpit roll controller step input.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit lateral controls.	
2.d.4 Handling qualities Lateral directional tests Spiral stability.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments; the force/position measurements of cockpit controls; and a stop watch.	
2.d.6.a Handling qualities Lateral directional tests Rudder response.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments; the force/position measurements of rudder pedals.	
2.d.7 Handling qualities Lateral directional tests Dutch roll, (yaw damper OFF).	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit controls.	
2.d.8 Handling qualities Lateral directional tests Steady state sideslip.	Data may be acquired by using an inertial measurement system and a synchronized video of the calibrated airplane instruments and the force/position measurements of cockpit controls.	

ATTACHMENT 3 TO APPENDIX B TO PART 60—
FLIGHT TRAINING DEVICE (FTD) SUBJECTIVE
EVALUATION

1. DISCUSSION

BEGIN INFORMATION

a. The subjective tests provide a basis for evaluating the capability of the FTD to perform over a typical utilization period. The items listed in the Table of Functions and

Subjective Tests are used to determine whether the FTD competently simulates each required maneuver, procedure, or task; and verifying correct operation of the FTD controls, instruments, and systems. The tasks do not limit or exceed the authorizations for use of a given level of FTD as described on the Statement of Qualification or as may be approved by the TPAA. All items in the following paragraphs are subject to examination.

b. All simulated airplane systems functions will be assessed for normal and, where appropriate, alternate operations. Simulated airplane systems are listed separately under "Any Flight Phase" to ensure appropriate attention to systems checks. Operational navigation systems (including inertial navigation systems, global positioning systems, or other long-range systems) and the associ-

ated electronic display systems will be evaluated if installed. The NSP pilot will include in his report to the TPAA, the effect of the system operation and any system limitation.

e. At the request of the TPAA, the NSP Pilot may assess the FTD for a special aspect of a sponsor's training program during the functions and subjective portion of an evaluation. Such an assessment may include a portion of a Line Oriented Flight Training (LOFT) scenario or special emphasis items in the sponsor's training program. Unless directly related to a requirement for the qualification level, the results of such an evaluation would not affect the qualification of the FTD.

END INFORMATION

TABLE B3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD

<<< QPS requirement >>>	No.
	Tasks in this table are subject to evaluation if appropriate for the airplane system or systems simulated as indicated in the SOQ Configuration List as defined in appendix B, Attachment 2 of this part.
1. Preflight	
	Accomplish a functions check of all installed switches, indicators, systems, and equipment at all crewmembers' and instructors' stations, and determine that the cockpit (or flight deck area) design and functions replicate the appropriate airplane.
2. Surface Operations (pre-takeoff)	
2.a	Engine start:
2.a.1	Normal start.
2.a.2	Alternative procedures start.
2.a.3	Abnormal procedures start/shut down.
2.b	Pushback/Powerback (powerback requires visual system).
3. Takeoff (requires appropriate visual system as set out in Table B1A, item 6.b.; appendix B, Attachment 1.)	
3.a	Instrument takeoff:
3.a.1	Engine checks (e.g., engine parameter relationships, propeller/mixture controls).
3.a.2	Acceleration characteristics.
3.a.3	Nosewheel/rudder steering.
3.a.4	Landing gear, wing flap, leading edge device operation.
3.b	Rejected takeoff:
3.b.1	Deceleration characteristics.
3.b.2	Brakes/engine reverser/ground spoiler operation.
3.b.3	Nosewheel/rudder steering.
4. In-Flight Operations	
4.a	Normal climb.
4.b	Cruise:

TABLE B3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD—Continued

<<< QPS requirement >>>	No.
4.b.1	Demonstration of performance characteristics (speed vs. power).
4.b.2	Normal turns.
4.b.3	Demonstration of high altitude handling.
4.b.4	Demonstration of high airspeed handling/overspeed warning.
4.b.5	Demonstration of Mach effects on control and trim.
4.b.6	Steep turns.
4.b.10	In-Flight engine shutdown (procedures only).
4.b.11	In-Flight engine restart (procedures only).
4.b.13	Specific flight characteristics.
4.b.14	Response to loss of flight control power.
4.b.15	Response to other flight control system failure modes.
4.b.19	Operations during icing conditions.
4.b.20	Effects of airframe/engine icing.
4.c	Other flight phase:
4.c.1	Approach to stalls in the following configurations:
4.c.1.a	Cruise.
4.c.1.b	Takeoff or approach.
4.c.1.c	Landing.
4.c.2	High angle of attack maneuvers in the following configurations:
4.c.2.a	Cruise.
4.c.2.b	Takeoff or approach.
4.c.2.c	Landing.
4.c.3	Slow flight.
4.c.4	Holding.
5.a.1	Non-precision Instrument Approaches:
5.a.1.a.1 ...	With use of autopilot and autothrottle, as applicable.
5.a.1.a.2 ...	Without use of autopilot and autothrottle, as applicable.
5.a.1.b.1 ...	With 10 knot tail wind.
5.a.1.b.2 ...	With 10 knot crosswind.
5.a.2	Precision Instrument Approaches:
5.a.2.a.1 ...	With use of autopilot, autothrottle, and autoland, as applicable.
5.a.2.a.2 ...	Without use of autopilot, autothrottle, and autoland, as applicable.
5.a.2.b.1 ...	With 10 knot tail wind.
5.a.2.b.2 ...	With 10 knot crosswind.
6. Missed Approach	
6.a	Manually controlled.

TABLE B3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD—Continued

<<< QPS requirement >>>	No.
6.b	Automatically controlled (if applicable).
7. Any Flight Phase, as appropriate	
7.a	Normal system operation (installed systems).
7.b	Abnormal/Emergency system operation (installed systems).
7.c	Flap operation.
7.d	Landing gear operation.
7.e	Engine Shutdown and Parking.
7.e.1	Systems operation.
7.e.2	Parking brake operation.
8. Instructor Operating Station (IOS), as appropriate	
8.a	Functions in this section are subject to evaluation only if appropriate for the airplane and/or installed on the specific FTD involved. Power Switch(es).
8.b	Airplane conditions.
8.b.1	Gross weight, center of gravity, and fuel loading and allocation.
8.b.2	Airplane systems status.
8.b.3	Ground crew functions (e.g., external power, push back).
8.c	Airports.
8.c.1	Selection.
8.c.2	Runway selection.
8.c.3	Preset positions (e.g., ramp, over FAF).
8.d	Environmental controls.
8.d.1	Temperature.
8.d.2	Climate conditions (e.g., ice, rain).
8.d.3	Wind speed and direction.
8.e	Airplane system malfunctions.
8.e.1	Insertion/deletion.
8.e.2	Problem clear.
8.f	Locks, Freezes, and Repositioning.
8.f.1	Problem (all) freeze/release.
8.f.2	Position (geographic) freeze/release.
8.f.3	Repositioning (locations, freezes, and releases).
8.f.4	Ground speed control.
8.f.5	Remote IOS, if installed.
9. Sound Controls. On/off/adjustment	

TABLE B3A—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS LEVEL 6 FTD—Continued

<<< QPS requirement >>>	No.
10. Control Loading System (as applicable) On/off/emergency stop	
11. Observer Stations	
11.a	Position.
11.b	Adjustments.

END QPS REQUIREMENTS

TABLE B3B—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS—LEVEL 5 FTD

<<< QPS Requirements >>>	
No.	Operations tasks
	Tasks in this table are subject to evaluation if appropriate for the airplane system or systems simulated as indicated in the SOQ Configuration List as defined in appendix B, Attachment 2 of this part.
1. Preflight	
	Accomplish a functions check of all installed switches, indicators, systems, and equipment at all crewmembers' and instructors' stations, and determine that the cockpit (or flight deck area) design and functions replicate the appropriate airplane.
2. Surface Operations (pre-takeoff)	
2.a	Engine start (if installed):
2.a.1	Normal start.
2.a.2	Alternative procedures start.
2.a.3	Abnormal/Emergency procedures start / shut down.
3. In-Flight Operations	
3.a	Normal climb.
3.b	Cruise:
3.b.1	Performance characteristics (speed vs. power).
3.b.2	Normal turns.
3.c	Normal descent.
4. Approaches	
4.a.	Coupled instrument approach maneuvers (as applicable for the systems installed).
5. Any Flight Phase	
5.a	Normal system operation (Installed systems).
5.b	Abnormal/Emergency system operation (installed systems).
5.c	Flap operation.
5.d	Landing gear operation.
5.e	Engine Shutdown and Parking (if installed).
5.e.1	Systems operation.
5.e.2	Parking brake operation.
6. Instructor Operating Station (IOS)	

TABLE B3B—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS—LEVEL 5 FTD—Continued

<<< QPS Requirements >>>	
No.	Operations tasks
6.a	Power Switch(es).
6.b	Preset positions—ground, air.
6.c	Airplane system malfunctions (Installed systems).
6.c.1	Insertion/deletion.
6.c.2	Problem clear.

TABLE B3C—TABLE OF FUNCTIONS AND SUBJECTIVE TESTS—LEVEL 4 FTD

<<< QPS Requirements >>>	
No.	Operations tasks
	Tasks in this table are subject to evaluation if appropriate for the airplane system or systems simulated as indicated in the SOQ Configuration List as defined in appendix B, Attachment 2 of this part.
1	Level 4 FTDs are required to have at least one system. However, the NSP will accomplish a functions check of all installed systems, switches, indicators, and equipment at all crewmembers' and instructors' stations, and determine that the cockpit (or flight deck area) design and functions replicate the appropriate airplane.

ATTACHMENT 4 TO APPENDIX B TO PART 60—
SAMPLE DOCUMENTS

BEGIN INFORMATION

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Title of Sample

Figure B4A—Sample Letter, Request for Initial, Upgrade, or Reinstatement Evaluation

Figure B4B—Attachment: FSTD Information Form

Figure B4C—Sample Qualification Test Guide Cover Page

Figure B4D—Sample Statement of Qualification—Certificate

Figure B4E—Sample Statement of Qualification—Configuration List

Figure B4F—Sample Statement of Qualification—List of Qualified Tasks

Figure B4G—Sample Continuing Qualification Evaluation Requirements Page

Figure B4H—Sample MQTG Index of Effective FSTD Directives

**Attachment 4 to Appendix B to Part 60—
Figure B4A – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation..
INFORMATION**

Date _____

Edward D. Cook, Ph.D.
Manager, National Simulator Program
Federal Aviation Administration
100 Hartsfield Centre Parkway
Suite 400
Atlanta, GA 30354

Dear Dr. Cook:

RE: Request for Initial/Upgrade Evaluation Date

This is to advise you of our intent to request an (initial or upgrade) evaluation of our (FSTD Manufacturer), (Aircraft Type/Level) Flight Simulation Training Device (FSTD), (FAA ID Number, if previously qualified), located in (City, State) at the (Facility) on (Proposed Evaluation Date). (The proposed evaluation date shall not be more than 180 days following the date of this letter.) The FSTD will be sponsored by (Name of Training Center/Air Carrier), FAA Designator (4 Letter Code). The FSTD will be sponsored under the following options: (Select One)

The FSTD will be used within the sponsor's FAA approved training program and placed on the sponsor's Training/Operations Specifications; or

The FSTD will be used for dry lease only in accordance with Paragraph 3b, FSTD Guidance Bulletin 03-08.

We agree to provide the formal request for the evaluation (*Ref: Appendix 4, AC 120-40B*) to your staff as follows: (check one)

For QTG tests run at the factory, not later, than 45 days prior to the proposed evaluation date with the additional "1/3 on-site" tests provided not later than 14 days prior to the proposed evaluation date.

For QTG tests run on-site, not later than 30 days prior to the proposed evaluation date.

We understand that the formal request will contain the following documents:

4. Sponsor's Letter of Request (*Company Compliance Letter*).
5. Principal Operations Inspector (POI) or Training Center Program Manager's (TCPM) endorsement.
6. Complete QTG.

If we are unable to meet the above requirements, we understand this may result in a significant delay, perhaps 45 days or more, in rescheduling and completing the evaluation.

(The sponsor should add additional comments as necessary).

Please contact (Name Telephone and Fax Number of Sponsor's Contact) to confirm the date for this initial evaluation. We understand a member of your National Simulator Program staff will respond to this request within 14 days.

A copy of this letter of intent has been provided to (Name), the Principal Operations Inspector (POI) and/or Training Center Program Manager (TCPM).

Sincerely,

Attachment: FSTD Information and Characteristics Form
cc: POI/TCPM

**ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure B4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION**

Date: _____			
Section 1. FSTD Information and Characteristics			
Sponsor Name: _____		FSTD Location: _____	
Address: _____		Physical Address: _____	
City: _____		City: _____	
State: _____		State: _____	
Country: _____		Country: _____	
ZIP: _____		ZIP: _____	
Manager: _____		_____	
Sponsor ID No: <i>(Four Letter FAA Designator)</i>		Nearest Airport: <i>(Airport Designator)</i>	
Type of Evaluation Requested: <input type="checkbox"/> Initial <input type="checkbox"/> Upgrade <input type="checkbox"/> Recurrent <input type="checkbox"/> Special <input type="checkbox"/> Reinstatement			
Qualification Basis: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> 6 <input type="checkbox"/> 7	<input type="checkbox"/> Interim C <input type="checkbox"/> C <input type="checkbox"/> D	<input type="checkbox"/> Provisional Status	
Initial Qualification: (If Applicable)	Date: _____ Level _____	Manufacturer's Identification/Serial No:	_____
Upgrade Qualification: (If Applicable)	Date: _____ Level _____ MM/DD/YYYY	<input type="checkbox"/> eQTG	
Other Technical Information:			
FAA FSTD ID No: (If Applicable)	_____	FSTD Manufacturer:	_____
Convertible FSTD: <input type="checkbox"/> Yes		Date of Manufacture:	_____ MM/DD/YYYY
Related FAA ID No. (If Applicable)	_____	Sponsor FSTD ID No:	_____
Aircraft model/series: _____		Source of aerodynamic model: _____	
Engine model(s) and data revision: _____		Source of aerodynamic coefficient data: _____	
FMS identification and revision level: _____		Aerodynamic data revision number: _____	
Visual system manufacturer/model: _____		Visual system display: _____	
Flight control data revision: _____		FSTD computer(s) identification: _____	
Motion system manufacturer/type: _____			
National Aviation Authority (NAA): (If Applicable)	_____		_____

**ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure B4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION**

Visual System Manufacturer and Type: _____		Motion System Manufacturer and Type: _____	
Aircraft Make/Model/Series: _____		FSTD Seats Available: _____	
Aircraft Equipment	ENGINE TYPE(S): _____	Flight Instrumentation: <input type="checkbox"/> EFIS <input type="checkbox"/> HUD <input type="checkbox"/> HGS <input type="checkbox"/> EFVS <input type="checkbox"/> TCAS <input type="checkbox"/> GPWS <input type="checkbox"/> Plain View <input type="checkbox"/> GPS <input type="checkbox"/> FMS Type: _____ <input type="checkbox"/> WX Radar <input type="checkbox"/> Other: _____	Engine Instrumentation: <input type="checkbox"/> EICAS <input type="checkbox"/> FADEC <input type="checkbox"/> Other: _____
Airport Models:	3.6.1 _____ <i>Airport Designator</i>	3.6.2 _____ <i>Airport Designator</i>	3.6.3 _____ <i>Airport Designator</i>
Circle to Land:	3.7.1 _____ <i>Airport Designator</i>	3.7.2 _____ <i>Approach</i>	3.7.3 _____ <i>Landing Runway</i>
Visual Ground Segment	3.8.1 _____ <i>Airport Designator</i>	3.8.2 _____ <i>Approach</i>	3.8.3 _____ <i>Landing Runway</i>
Section 2. Supplementary Information			
FAA Training Program Approval Authority:		<input type="checkbox"/> POI <input type="checkbox"/> TCPM <input type="checkbox"/> Other: _____	
Name:	_____	Office:	_____
Tel:	_____	Fax:	_____
Email:	_____		
FSTD Scheduling Person:			
Name:	_____		
Address 1:	_____	Address 2	_____
City:	_____	State:	_____
ZIP:	_____	Email:	_____
Tel:	_____	Fax:	_____
FSTD Technical Contact:			
Name:	_____		
Address 1:	_____	Address 2	_____
City:	_____	State:	_____
ZIP:	_____	Email:	_____
Tel:	_____	Fax:	_____
Section 3. Training, Testing and Checking Considerations			
Area/Function/Maneuver	Requested	Remarks	
Private Pilot - Training / Checks: (142)	<input type="checkbox"/>	_____	
Commercial Pilot - Training /Checks:(142)	<input type="checkbox"/>	_____	
Multi-Engine Rating - Training / Checks (142)	<input type="checkbox"/>	_____	
Instrument Rating -Training / Checks (142)	<input type="checkbox"/>	_____	
Type Rating - Training / Checks (135/121/142)	<input type="checkbox"/>	_____	
Proficiency Checks (135/121/142)	<input type="checkbox"/>	_____	

**ATTACHMENT 4 TO APPENDIX A TO PART 60—
Figure B4B – Sample Letter , Request for Initial, Upgrade, or Reinstatement Evaluation
Attachment: FSTD Information Form
INFORMATION**

Section 3: Training, Testing and Checking Considerations		
<u>Area/Function/Maneuver</u>	<u>Requested</u>	<u>Remarks</u>
Private Pilot - Training / Checks: (142)	<input type="checkbox"/>	_____
Commercial Pilot - Training /Checks:(142)	<input type="checkbox"/>	_____
Multi-Engine Rating - Training / Checks (142)	<input type="checkbox"/>	_____
Instrument Rating -Training / Checks (142)	<input type="checkbox"/>	_____
Type Rating - Training / Checks (135/121/142)	<input type="checkbox"/>	_____
Proficiency Checks (135/121/142)	<input type="checkbox"/>	_____
CAT I: (RVR 2400/1800 ft. DH200 ft)	<input type="checkbox"/>	_____
CAT II: (RVR 1200 ft. DH 100 ft)	<input type="checkbox"/>	_____
CAT III * (lowest minimum) _____ RVR _____ ft. * State CAT III (≤ 700 ft.), CAT IIIb (≤ 150 ft.), or CAT IIIc (0 ft.)	<input type="checkbox"/>	_____
Circling Approach	<input type="checkbox"/>	_____
Windshear Training: (FSTD GB 03-05)	<input type="checkbox"/>	_____
Windshear Training IAW 121.409d (121 Turbojets Only) (FSTD GB 03-05)	<input type="checkbox"/>	_____
Generic Unusual Attitudes and Recoveries within the Normal Flight Envelope (FSTD GB 04-03)	<input type="checkbox"/>	_____
Specific Unusual Attitudes Recoveries (HBAT 95-10) (FSTD GB 04-03)	<input type="checkbox"/>	_____
Auto-coupled Approach/Auto Go Around	<input type="checkbox"/>	_____
Auto-land / Roll Out Guidance	<input type="checkbox"/>	_____
TCAS/ACAS I / II	<input type="checkbox"/>	_____
WX-Radar	<input type="checkbox"/>	_____
HUD (FSTD GB 03-02)	<input type="checkbox"/>	_____
HGS (FSTD GB 03-02)	<input type="checkbox"/>	_____
EFVS (FSTD GB 03-03)	<input type="checkbox"/>	_____
Future Air Navigation Systems (HBAT 98-16A)	<input type="checkbox"/>	_____
GPWS / EGPWS	<input type="checkbox"/>	_____
ETOPS Capability	<input type="checkbox"/>	_____
GPS	<input type="checkbox"/>	_____
SMGCS	<input type="checkbox"/>	_____
Helicopter Slope Landings	<input type="checkbox"/>	_____
Helicopter External Load Operations	<input type="checkbox"/>	_____
Helicopter Pinnacle Approach to Landings	<input type="checkbox"/>	_____
Helicopter Night Vision Maneuvers	<input type="checkbox"/>	_____
Helicopter Category A Takeoffs	<input type="checkbox"/>	_____

ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4C – Sample Qualification Test Guide Cover Page
INFORMATION

SPONSOR NAME	
SPONSOR ADDRESS	
FAA QUALIFICATION TEST GUIDE	
(SPECIFIC AIRPLANE MODEL)	
<i>for example</i>	
Stratos BA797-320A	
(Type of FTD)	
(FTD Identification Including Manufacturer, Serial Number, Visual System Used)	
(FTD Level)	
(Qualification Performance Standard Used)	
(FTD Location)	
FAA Initial Evaluation	
Date: _____	
_____	Date: _____
(Sponsor)	
_____	Date: _____
Manager, National Simulator Program, FAA	

ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4D – Sample Statement of Qualification - Certificate

INFORMATION

**Federal Aviation Administration
National Simulator Program**



Statement of Qualification

This is to certify that representatives of the National Simulator Program
Completed an evaluation of the

**Go-Fast Airlines
Farnsworth Z-100 Flight Training Device
FAA Identification Number 998**

**And found it to meet the standards set forth in
AC 120-45A**

**The Master Qualification Test Guide and the attached
Configuration List and Restrictions List
Provide the Qualification Basis for this device to operate at**

**Level 6
Until December 31, 2008**

Unless sooner rescinded or extended by the National Simulator Program Manager

November 15, 2007

(date)

I. B. Checkin, Jr.

(for the NSPM)

**ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4E – Sample Statement of Qualification; Configuration List
INFORMATION**

**STATEMENT of QUALIFICATION
CONFIGURATION LIST**

Date: _____			
Section 1. FSTD Information and Characteristics			
Sponsor Name: _____		FSTD Location: _____	
Address: _____		Physical Address: _____	
City: _____		City: _____	
State: _____		State: _____	
Country: _____		Country: _____	
ZIP: _____		ZIP: _____	
Manager: _____			
Sponsor ID No: <i>(Four Letter FAA Designator)</i>		Nearest Airport: <i>(Airport Designator)</i>	
Type of Evaluation Requested:		<input type="checkbox"/> Initial <input type="checkbox"/> Upgrade <input type="checkbox"/> Recurrent <input type="checkbox"/> Special <input type="checkbox"/> Reinstatement	
Qualification Basis: _____	<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> Interim C <input type="checkbox"/> C <input type="checkbox"/> D
	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> Provisional Status
Initial Qualification: <i>(If Applicable)</i>	Date: _____ Level _____	Manufacturer's Identification/Serial No:	_____
Upgrade Qualification: <i>(If Applicable)</i>	Date: _____ Level _____ MM/DD/YYYY	<input type="checkbox"/> eQTG	
Other Technical Information:			
FAA FSTD ID No: <i>(If Applicable)</i>	_____	FSTD Manufacturer:	_____
Convertible FSTD:	<input type="checkbox"/> Yes:	Date of Manufacture:	_____ MM/DD/YYYY
Related FAA ID No. <i>(If Applicable)</i>	_____	Sponsor FSTD ID No: _____	
Aircraft model/series: _____	Source of aerodynamic model: _____		
Engine model(s) and data revision: _____	Source of aerodynamic coefficient data: _____		
FMS identification and revision level: _____	Aerodynamic data revision number: _____		
Visual system manufacturer/model: _____	Visual system display: _____		
Flight control data revision: _____	FSTD computer(s) identification: _____		
Motion system manufacturer/type: _____			
National Aviation Authority (NAA): <i>(If Applicable)</i>	_____	_____	_____

ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4E – Sample Statement of Qualification; Configuration List
INFORMATION

Visual System Manufacturer and Type: _____		Motion System Manufacturer and Type: _____	
Aircraft Make/Model/Series: _____		FSTD Seats Available: _____	
Aircraft Equipment	ENGINE TYPE(S): _____	Flight Instrumentation: <input type="checkbox"/> EFIS <input type="checkbox"/> HUD <input type="checkbox"/> HGS <input type="checkbox"/> EFVS <input type="checkbox"/> TCAS <input type="checkbox"/> GPWS <input type="checkbox"/> Plain View <input type="checkbox"/> GPS <input type="checkbox"/> FMS Type: _____ <input type="checkbox"/> WX Radar <input type="checkbox"/> Other: _____	Engine Instrumentation: <input type="checkbox"/> EICAS <input type="checkbox"/> FADEC <input type="checkbox"/> Other: _____
Airport Models:	3.6.1 _____ <i>Airport Designator</i>	3.6.2 _____ <i>Airport Designator</i>	3.6.3 _____ <i>Airport Designator</i>
Circle to Land:	3.7.1 _____ <i>Airport Designator</i>	3.7.2 _____ <i>Approach</i>	3.7.3 _____ <i>Landing Runway</i>
Visual Ground Segment	3.8.1 _____ <i>Airport Designator</i>	3.8.2 _____ <i>Approach</i>	3.8.3 _____ <i>Landing Runway</i>
Section 2. Supplementary Information			
FAA Training Program Approval Authority:		<input type="checkbox"/> POI <input type="checkbox"/> TCPM <input type="checkbox"/> Other: _____	
Name:	_____	Office:	_____
Tel:	_____	Fax:	_____
Email:	_____		
FSTD Scheduling Person:			
Name:	_____	Address 2:	_____
Address 1:	_____	State:	_____
City:	_____	Email:	_____
ZIP:	_____	Fax:	_____
Tel:	_____		
FSTD Technical Contact:			
Name:	_____	Address 2:	_____
Address 1:	_____	State:	_____
City:	_____	Email:	_____
ZIP:	_____	Fax:	_____
Tel:	_____		
Section 3. Training, Testing and Checking Considerations			
<u>Area/Function/Maneuver</u>	<u>Requested</u>	<u>Remarks</u>	
Private Pilot - Training / Checks: (142)	<input type="checkbox"/>	_____	
Commercial Pilot - Training /Checks:(142)	<input type="checkbox"/>	_____	
Multi-Engine Rating - Training / Checks (142)	<input type="checkbox"/>	_____	
Instrument Rating -Training / Checks (142)	<input type="checkbox"/>	_____	
Type Rating - Training / Checks (135/121/142)	<input type="checkbox"/>	_____	
Proficiency Checks (135/121/142)	<input type="checkbox"/>	_____	
CAT I: (RVR 2400/1800 ft. DH200 ft)	<input type="checkbox"/>	_____	

**ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4E – Sample Statement of Qualification; Configuration List
INFORMATION**

Commercial Pilot - Training /Checks:(142)	<input type="checkbox"/>	_____
Multi-Engine Rating - Training / Checks (142)	<input type="checkbox"/>	_____
Instrument Rating -Training / Checks (142)	<input type="checkbox"/>	_____
Type Rating - Training / Checks (135/121/142)	<input type="checkbox"/>	_____
Proficiency Checks (135/121/142)	<input type="checkbox"/>	_____
CAT I: (RVR 2400/1800 ft. DH200 ft)	<input type="checkbox"/>	_____
CAT II: (RVR 1200 ft. DH 100 ft)	<input type="checkbox"/>	_____
CAT III * (lowest minimum) _____ RVR _____ ft. * State CAT III (≤ 700 ft.), CAT IIIb (≤ 150 ft.), or CAT IIIc (0 ft.)	<input type="checkbox"/>	_____
Circling Approach	<input type="checkbox"/>	_____
Windshear Training: (FSTD GB 03-05)	<input type="checkbox"/>	_____
Windshear Training IAW 121.409d (121 Turbojets Only) (FSTD GB 03-05)	<input type="checkbox"/>	_____
Generic Unusual Attitudes and Recoveries within the Normal Flight Envelope (FSTD GB 04-03)	<input type="checkbox"/>	_____
Specific Unusual Attitudes Recoveries (HBAT 95-10) (FSTD GB 04-03)	<input type="checkbox"/>	_____
Auto-coupled Approach/Auto Go Around	<input type="checkbox"/>	_____
Auto-land / Roll Out Guidance	<input type="checkbox"/>	_____
TCAS/ACAS I / II	<input type="checkbox"/>	_____
WX-Radar	<input type="checkbox"/>	_____
HUD (FSTD GB 03-02)	<input type="checkbox"/>	_____
HGS (FSTD GB 03-02)	<input type="checkbox"/>	_____
EFVS (FSTD GB 03-03)	<input type="checkbox"/>	_____
Future Air Navigation Systems (HBAT 98-16A)	<input type="checkbox"/>	_____
GPWS / EGPWS	<input type="checkbox"/>	_____
ETOPS Capability	<input type="checkbox"/>	_____
GPS	<input type="checkbox"/>	_____
SMGCS	<input type="checkbox"/>	_____
Helicopter Slope Landings	<input type="checkbox"/>	_____
Helicopter External Load Operations	<input type="checkbox"/>	_____
Helicopter Pinnacle Approach to Landings	<input type="checkbox"/>	_____
Helicopter Night Vision Maneuvers	<input type="checkbox"/>	_____
Helicopter Category A Takeoffs	<input type="checkbox"/>	_____

ATTACHMENT 4 TO APPENDIX B TO PART 60—
Figure B4F – Sample Statement of Qualification;– List of Qualified Tasks
INFORMATION

STATEMENT of QUALIFICATION
List of Qualified Tasks

Go Fast Airline Training -- Farnsworth Z-100 -- Level D -- FAA ID# 999

The FSTD is qualified to perform all of the tasks listed in
Appendix 1, Table B1B
for its assigned level of qualification *except* for the following listed tasks.

Qualified for all tasks in Table B1B, for which the sponsor has requested qualification,
except for the following:

- 4.e. Circling Approach
- 6. (a) Emergency Descent (maximum rate)
- 6. (b) Inflight Fire and Smoke Removal
- 6. (c) Rapid Decompression
- 6. (d) Emergency Evacuation

Additional tasks for which this FSTD is qualified (i.e., in addition to the list in Table B1B):

NONE

**Attachment 4 to Appendix B to Part 60—
Figure B4G – Sample Continuing Qualification Evaluation Requirements Page
Information**

Recurrent Evaluation Requirements Completed at conclusion of Initial Evaluation	
Recurrent Evaluations to be conducted each <u> (fill in) </u> months Allotting _____ hours of FTD time.	Recurrent evaluations are due as follows: <u> (month) </u> and <u> (month) </u> and <u> (month) </u> (enter or strike out, as appropriate)
Signed: _____ NSPM / Evaluation Team Leader	_____ Date

Revision: Based on (enter reasoning):

Recurrent Evaluations are to be conducted each <u> (fill in) </u> months. Allotting _____ hours.	Recurrent evaluations are due as follows: <u> (month) </u> and <u> (month) </u> and <u> (month) </u> (enter or strike out, as appropriate)
Signed: _____ NSPM Evaluation Team Leader	_____ Date

Revision: Based on (enter reasoning):

Recurrent Evaluations are to be conducted each <u> (fill in) </u> months. Allotting _____ hours.	Recurrent evaluations are due as follows: <u> (month) </u> and <u> (month) </u> and <u> (month) </u> (enter or strike out, as appropriate)
Signed: _____ NSPM Evaluation Team Leader	_____ Date

(Repeat as Necessary)

