U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Guidance for Conducting and Use of Flight Standardization Board Evaluations

Date: 10/24/16 **AC No:** 120-53B

Initiated by: AFS-200 **Change:** 1

1. PURPOSE. This advisory circular (AC) provides a means, but not the only means, of evaluating manufactured or modified aircraft by the use of standard systems, processes, and tests necessary to determine pilot training and qualification requirements. It also describes an acceptable means, but not the only means, of compliance with applicable Title 14 of the Code of Federal Regulations (14 CFR) that provide for differences in training and qualification between aircraft with the same type certificate (TC).

2. PRINCIPAL CHANGES. This change removes references to currency differences levels and system operator difference requirements (ODR) tables from Appendices 1 through 3, adds a definition of Differences Tables to Appendix 1, and updates the elements of Flight Standardization Board (FSB) reports in Appendix 2.

PAGE CONTROL CHART

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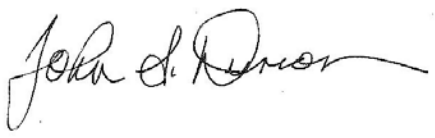

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U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Guidance for Conducting and Use of Flight Standardization Board Evaluations

Date: 11/5/13 **AC No:** 120-53B

Initated by: AFS-200 **Change:**

1. PURPOSE. This advisory circular (AC) has two purposes:

a. Evaluating Manufactured or Modified Aircraft. It provides a means, but not the only means, of evaluating manufactured or modified aircraft by the use of standard systems, processes, and tests necessary to determine pilot training and qualification requirements.

b. Differences in Training and Qualification Between Aircraft. It describes an acceptable means, but not the only means, of compliance with applicable Title 14 of the Code of Federal Regulations (14 CFR) that provide for differences in training and qualification between aircraft with the same type certificate (TC). It further describes an acceptable means for providing related aircraft differences training and qualification under provision of 14 CFR part 121 between aircraft with different TCs that have been "designated" by the Administrator as related. Both of these processes use the provision of the Flight Standardization Board (FSB) report as the basis for the approval of pilot training and qualification necessary for the operation of aircraft. This AC is intended to enhance safety by:

(1) Providing a standard method of assessing applicant programs.

(2) Directly relating pilot training and qualification requirements to fleet characteristics, operating concepts, and pilot assignments.

(3) Permitting better industry planning and management by outlining what Federal Aviation Administration (FAA) requirements apply, what training resources or devices are needed, and what alternatives are possible.

(4) Encouraging aircraft manufacturers to design with the goal of developing common characteristics between related aircraft.

(5) Providing a recommended framework for application of suitable credits or constraints to better address new technology and future safety enhancements.

2. CANCELLATION. AC 120-53A, Guidance for Conducting and Use of Flight Standardization Board Evaluations, dated October 15, 2008, is canceled.

3. FOCUS. This AC addresses aircraft manufacturers or modifiers who design, test, and certificate aircraft. In addition, it reflects those changes in part 121 applied to operators whose

pilots operate related aircraft of the same manufacturer in a mixed fleet seeking training and qualification credit in those related aircraft.

4. DISCUSSION. When requested by industry, the Flight Standards Service (AFS) of the FAA, through the Aircraft Evaluation Groups (AEG), undertakes analyses of new and related aircraft and their associated systems for the purpose of providing recommendations for pilot training and qualification. These recommendations are documented in FSB reports for each specific or related aircraft, and may be used by a certificate holder to develop its training and qualification programs.

5. SUMMARY OF REVISIONS. As part of its process of evaluating aircraft for the assignment of a type rating, the FSB, when asked, may make comparisons with other aircraft of the same type to evaluate their differences. This AC recognizes the concept of designating related aircraft, provided for in part 121, as an extension of a differences evaluation to include aircraft of different types.

APPENDIX 1. DEFINITIONS AND REFERENCES

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APPENDIX 1. DEFINITIONS AND REFERENCES

1. DEFINITIONS:

NOTE: Definitions provided in Appendix 1 apply exclusively to this advisory circular (AC).

a. Aircraft Evaluation Group (AEG). A Federal Aviation Administration (FAA) organization that sets training, checking, currency, type rating, Master Minimum Equipment List (MMEL), and maintenance standards for assigned certificated aircraft types. AEGs also address operational aspects of aircraft type certification and resolution of service difficulties.

b. Applicant. For the purposes of this AC, an applicant may be a manufacturer, modifier, or operator.

c. Base Aircraft. An aircraft identified by the applicant and used as a reference to compare differences with another aircraft.

d. Candidate Aircraft. The aircraft that will be subjected to the Flight Standardization Board (FSB) evaluation process outlined in this AC for comparison purposes.

e. Check. An assessment of crewmember proficiency during which limited training or practice is allowed. The assessment is of knowledge and skill in tasks to the standards identified by the FAA. If the check is given for the purpose of flightcrew member certification it will be considered a test and must be administered by the FAA or a designated examiner.

f. Common Takeoff and Landing Credit (CTLC). CTLC is a program/process that identifies recency-of-experience credit between related aircraft (same make) with different type certificates (TC) that can be demonstrated to have an equivalent level of safety (ELOS) during the following:

- Takeoff and initial climb, and
- Approach and landing, including the establishment of final landing configuration.

NOTE: The T6 test is used for aircraft that were not tested (T2) during the initial aircraft evaluation for type rating designation.

g. Configuration. Aircraft physical features, which are distinguishable by pilots, with respect to differences in systems, cockpit geometry, visual cutoff angles, controls, displays, aircraft geometry, and/or number of required pilots.

h. Currency. Currency is the experience necessary, within a specified period of time, for the safe operation of aircraft, equipment, and systems as determined by the FSB. Currency may include, but is not limited to, recency of experience.

i. Difference Levels. Difference levels are formally determined levels of training methods and checking methods that satisfy difference requirements between related aircraft. A range

of five difference levels in order of increasing requirements, identified as A through E, are specified for training and checking purposes.

j. Differences Tables. Tables that describe the differences between a pair of related aircraft, and the minimum levels operators must use to conduct differences training and checking of crewmembers. These tables have been validated by the FSB.

k. Differences Training. Training required before any person may serve as a required crewmember on a particular aircraft type, when the Administrator finds differences training is necessary before a crewmember serves on a particular variation of that aircraft.

- **Related Aircraft Differences Training.** Training required before any person may serve as a required flightcrew member in Title 14 of the Code of Federal Regulations (14 CFR) part 121 operations on an aircraft with a different TC that has been designated as related by the Administrator.

l. Differences Checking. Checking between related aircraft with the same aircraft TC based on the certificate holder's approved training and qualification program.

- **Related Aircraft Differences Checking.** When permitted, checking between designated related aircraft based on the certificate holder's approved training and qualification program.

m. Flight Characteristics. Flight characteristics are handling characteristics or performance characteristics perceivable by a pilot. Flight characteristics relate to the natural aerodynamic response of an aircraft, particularly as affected by changes in configuration and/or flightpath parameters (e.g., flight control use, flap extension/retraction, airspeed change, etc.).

n. Flight Simulation Training Device (FSTD). A full flight simulator (FFS) or a flight training device (FTD).

o. Flight Standardization Board (FSB). The FSB is responsible for specification of minimum training, checking, currency, and type rating requirements, if necessary, for U.S.-certificated civil aircraft. The board members are drawn from the FAA (AEG, headquarters (HQ), and Flight Standards (AFS) field offices operations personnel).

p. Handling Characteristics. The manner in which the aircraft responds with respect to rate and magnitude of pilot initiated control inputs to the primary flight control surfaces (e.g., ailerons, elevator, rudder, spoilers, cyclic, collective, etc.).

q. Line-Oriented Flying (LOF). A phase of the T3 test used at the discretion of the FSB to validate the proposed training and checking. This LOF fully assesses particular difference areas, examines implications of mixed fleet flying, assesses special circumstances such as minimum equipment list (MEL) effects, and evaluates the effects of pilot errors potentially associated with the differences.

r. Master Differences Requirement (MDR). MDRs are those requirements applicable to pilot training and qualifications that pertain to differences between related aircraft. MDRs are

specified by the FSB in terms of the minimum difference levels. MDRs are derived from the Differences Tables and form the basis for an operator to develop their operator difference requirements (ODR). Differences levels are arranged as training/checking on an MDR table.

s. Mixed Fleet Flying. Mixed fleet flying is the operation of a base aircraft and one or more related aircraft for which credit may be taken for training, checking, and/or currency events. The FSB process defines minimum training, checking, and currency difference levels between related aircraft.

t. Operator Difference Requirements (ODR). If differences exist within an operator's fleet that affect pilot knowledge, skills, or abilities pertinent to systems or procedures, ODR tables provide a uniform means for operators to comprehensively manage differences or related aircraft differences training programs and provide a basis for FAA approval of mixed fleet flying.

u. Qualification. The process by which a flightcrew member completes the certificate holder's FAA-approved curriculum, including any necessary checks or tests for the aircraft type and duty position.

v. Recency of Experience. With respect to flight experience as required by the applicable 14 CFR part, means a pilot's completion of the required number of takeoffs and landings as sole manipulator of the controls within a specified period of time.

w. Related Aircraft. Any two or more aircraft of the same make with either the same or different TCs that have been demonstrated and determined by the Administrator to have commonality.

- **Designated Related Aircraft.** Any two or more aircraft of the same make with different TCs that have been designated as related by the Administrator based upon a request from the part 121 operator. This designation *may* allow credit between those aircraft to be applied for training, checking, recent experience, operating experience (OE), operating cycles, and line operating flight time for consolidation of knowledge and skills.

x. Supervised Line Flying (SLF). Supervised experience associated with the introduction of equipment or procedures requiring postqualification skill enhancement during which a pilot occupies a specific pilot position and performs particular assigned duties for that pilot position under the supervision of a qualified company check airman.

y. Type. As used with respect to the certification of aircraft, means those aircraft which are similar in design. Examples include: Boeing 737/Boeing 737-300 and A320/A321. These examples are described as series of the same type.

z. Type Rating. A type rating is a one-time, permanent endorsement on a pilot certificate indicating that the holder of the certificate has completed the appropriate training and testing as required by the applicable CFR. It is recorded by the FAA on the pilot's certificate indicating the make and type. In some cases, it will include the series of aircraft (e.g., Boeing 747-400), if applicable.

- **Common Type Rating.** "Common type rating" is a term used in FSB reports to describe a relationship between type ratings for aircraft with different TCs that have no greater than level D training differences. The type rating for a certificated aircraft can be determined to be related to another type rating of another certificated aircraft of the same make provided the aircraft meet the criteria of the T1 (equivalence) or the T2 (handling characteristics) and T3 (core pilot skills with no greater than level D differences).
- The pilot who is receiving a type rating on the basis of being related must be current and qualified in the base aircraft at the time of the check and is issued a type rating after receiving designated related aircraft differences training and checking on the candidate-related aircraft as described in this AC under training and checking difference levels. This check is not a "full" proficiency check, but an abbreviated check on the differences (B, C, and D) from the base to the candidate aircraft. The designated related aircraft differences check, unless it includes the requirements for a recurrent check, cannot reset the "recurrent clock" (a pilot's base month for checking purposes).

2. REFERENCES (current editions):

- Title 14 CFR Parts 60, 61, 91 Subpart K (91K), 121, and 135.
- FAA Order 8900.1, Flight Standards Information Management System (FSIMS).
- AC 61-89, Pilot Certificates, Aircraft Type Ratings.
- AC 120-35, Flightcrew Member Line Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, Line Operational Evaluation.
- AC 120-51, Crew Resource Management Training.
- FAA-S-8081-5, Airline Transport Pilot and Aircraft Type Rating Practical Test Standards for Airplane.

APPENDIX 2. PILOT TRAINING, QUALIFICATION, AND RATING REQUIREMENTS

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ILLUSTRATIONS

APPENDIX 2. PILOT TRAINING, QUALIFICATION, AND RATING REQUIREMENTS

1. PURPOSE. This appendix describes a comprehensive system for pilot training and qualifications outlined in this advisory circular (AC). It includes definitions, criteria, processes, tests, methods, and procedures necessary for uniform application of the system.

2. FOCUS. The appendix applies to and is used by:

- Aircraft manufacturers or modifiers who design, test, and certificate under Title 14 of the Code of Federal Regulations (14 CFR).
- Operator, manufacturer, or other training centers having programs approved for use under the applicable CFR.
- Federal Aviation Administration (FAA) offices and inspectors administering programs under the applicable CFR.

3. INTRODUCTION.

a. Comprehensive System for Pilot Training and Qualification. This AC and its appendices provide a systematic means to address requirements for training, checking, and currency within applicable CFRs. Definitions, criteria, processes, procedures, tests, and methods are consistent with and clarify application of current rules in particular situations for specific aircraft. This AC describes a comprehensive system for the FAA and industry to evaluate and approve use of particular aircraft and operator programs. The respective roles of training, checking, and currency are clarified. This includes defining the role and criteria for determining type ratings for existing, new, or modified aircraft. The system is particularly suited to addressing transition, differences and related aircraft differences training programs, and mixed fleet flying. The system aids in ensuring that pilots attain and maintain the knowledge, skills, and abilities needed to operate assigned aircraft safely.

b. Designation of Related Aircraft. Certain aircraft with different type certificates (TC) may be demonstrated and determined to have commonality to the extent that credit between those aircraft *may* be applied for training, checking, recency of experience, operating experience (OE), operating cycles, or line operating flight time for consolidation of knowledge and skills. In order for a certificate holder to use these training and qualification efficiencies in that certificate holder's operation, the certificate holder must obtain a related aircraft designation from the Administrator. The process for related aircraft designation and deviation approval is as follows:

(1) The certificate holder identifies the related aircraft (including specific information regarding make and type) and makes a request through the principal operations inspector (POI) to the Air Transportation Division (AFS-200) for the designation. This designation should be based on FAA analysis published in the applicable Flight Standardization Board (FSB) report.

(2) A request for a deviation provided in 14 CFR part 121, §§ 121.434, 121.439, and 121.441 must be sent to AFS-200 through its associated certificate-holding district office (CHDO) and regional office. AFS-200 will consider the deviation on the basis of guidance from the Aircraft Evaluation Group (AEG) and its FSB reports and will provide a memo of concurrence or nonconcurrence to the CHDO through its associated regional office.

c. Master Differences Requirement (MDR) Formulation by the FAA. The FAA's FSB formulates MDRs to address differences between related aircraft. These MDRs are presented in tabular format in the appropriate FSB report. See subparagraph 4b.

d. Specification of Constraints or Credits. The system permits the specification of constraints or permissible credits. Constraints or credits may relate to knowledge, skills, abilities, flight simulation training devices (FSTD), maneuvers, checks, currency, or any other such factors necessary for safe operations. Constraints or credits may apply generally to aircraft, particular pilot positions, or other situations or conditions.

e. Recognition of Unique Operator Characteristics. The system recognizes the unique characteristics of individual operators while achieving uniformity in application of FAA safety standards. FAA MDRs determine uniform bounds to tailor individual operator's unique requirements to a particular fleet and situation. POIs approve each operator's unique requirements within FAA MDRs. Operator-unique requirements accommodate particular combinations of related aircraft flown, pilot assignment policies, training methods and devices, and other factors that relate to the application of the FAA MDRs. Accordingly, the system preserves operator flexibility while standardizing the FAA's role in review, approval, and monitoring of training, checking, currency, and mixed fleet flying programs, as applicable.

f. Basis for Requirements. The determination of type rating, minimum differences training, checking, and currency requirements focus on basic operation of aircraft in the National Airspace System (NAS) under both instrument flight rules (IFR) and visual flight rules (VFR). All flight phases, from preflight to shutdown, under both normal and non-normal conditions, are included.

g. Relationship to Other FAA Policies. Although this AC, and the FSB recommendations in some instances, address particular types of operations or specific aircraft systems (e.g., use of flight guidance control systems for Category (CAT) II/III instrument approaches, long-range navigation (LRN), etc.), other ACs address these issues more thoroughly. This AC and FSB recommendations address such issues only to the extent necessary to ensure that pilots are qualified to operate pertinent systems or equipment as part of initial or continuing qualification.

4. CONCEPTS.

a. An Integrated System for Pilot Training and Qualification.

(1) System Elements. An integrated FAA/industry system and process established to determine appropriate requirements, apply the requirements, and meet those requirements on a continuing basis, for uniform pilot training and qualification.

(2) System Overview. The system uniformly applies FAA master requirements in a way that tailors a particular aircraft to any operator's unique situation or fleet. The FAA approves unique operator and fleet requirements for each operator based on FAA master requirements. The system develops FAA master requirements based on objective criteria and tests, with the applicant's (usually an aircraft manufacturer) support for analysis and testing. FSB reports for related aircraft describe FAA master requirements. MDRs express the minimum acceptable difference levels between related aircraft. An operator's training and qualification program, checklist, operations manuals, and other such approvals are byproducts of compliance with MDRs. Operators comply with MDRs using unique operator difference requirements (ODR), tailored to that operator's programs and approved by the FAA. ODRs based on and in compliance with the MDRs specify requirements uniquely applicable to a particular operator's mixed fleet flying situation. An operator's specific document describes ODRs by identifying a base aircraft, differences between related aircraft, and that operator's compliance methods for each related aircraft.

b. Master Differences Requirements (MDR).

(1) MDR Applicability. MDRs are those requirements applicable to training and qualification that pertain to differences between related aircraft. MDRs specify the minimum acceptable difference levels between related aircraft that may be approved for operators. One related aircraft is selected by the operator as a reference for comparison purposes and is considered a base aircraft. This is typically the first aircraft on which pilots are qualified, or is the aircraft of which an operator has the largest number. Difference levels between the base aircraft and other related aircraft then specify the minimum difference requirements to be met for pilot training and qualification. Major differences in a particular fleet are defined between groups of related aircraft rather than specifying differences between each possible configuration and combination of configurations between related aircraft. MDRs are specified in terms of training and checking difference levels as shown on an MDR table.

(2) MDR Content. MDRs specify the minimum training and checking acceptable to the FAA for pilot training and qualification regarding differences.

(3) MDR Formulation, Description, and Revision. MDRs are formulated by the FAA FSB for related aircraft. MDRs are originally specified when an aircraft is first TC'd. MDRs are formulated using standardized tests and evaluations in conjunction with the aircraft type certification or supplemental type certification process. MDRs are based on an applicant's proposal, FAA evaluation of that proposal, in-service experience, and test results when tests are necessary. FSB determinations also consider operator recommendations, safety history, and other relevant information. MDRs are described in recommendations of an FSB report and may be revised if necessary. MDRs are revised when aircraft are developed or modified, tests or in-service experience shows a need for revision, a revision is requested by an applicant and evidence indicates the need for revision, or rules or FAA policies change. MDRs are revised by a process similar to that used for initial formulation of requirements.

(4) MDR Use. MDRs are applied to specific operators through formally described ODRs that are developed by and tailored to each operator. FAA field offices use the MDRs as the basis

for approval of an individual operator's differences or related aircraft differences training program.

(5) The MDR Table. An example of typical MDRs for the Boeing 737-200, -300, -400, -500, -600, -700, -800, and -900 is shown in Figure 1. MDR table requirements are shown for each pair of aircraft by notations in each element of corresponding columns and rows of the table. Each element of the table identifies the minimum difference training and checking requirements applicable to mixed fleet flying. Differences levels are arranged as training/checking. The MDR table identifies a pertinent base aircraft and particular aircraft for which requirements are sought. Note the minimum difference levels that correspond to the pertinent column and row, and special requirements in footnotes, if applicable.

(6) Use of Higher or Lower Difference Levels. Operators will satisfy difference requirements by using the methods acceptable for the specified level or a higher level. Lower level methods may be used in addition to the required levels but may not substitute for the required level or be used exclusively instead of the required level.

FIGURE 1. MASTER DIFFERENCES REQUIREMENTS TABLE

		FROM AIRCRAFT				
		Boeing 737 BASIC Boeing 737 -100, -200 (SP77)	**Boeing 737-200 ADV**	**Boeing 737-300, -400, -500 (NON-EFIS)**	**Boeing 737-300, -400, -500 (EFIS)**	**Boeing 737-600, -700, -800, -900**
TO AIRCRAFT	**Boeing 737 BASIC Boeing 737-100, -200 (SP77)**	A/A (2) NAV-B/B (6) PMS-C/B	B/A (2) NAV-B/B (6) PMS-C/B	C*/C	C/C*	D/D
	Boeing 737-200 ADV	B/A (1) PDCS-C/B (2) NAV-B/B (4) AFCS-C/B (6) PMS-C/B	A/A (1) PDCS-C/B (2) NAV-B/B (4) AFCS-C/B (6) PMS-C/B	C*/C* (1) PDCS-B/B (2) NAV-B/B (5) LIMITED FMS-C/B	C*/C* (1) PDCS-B/B (2) NAV-B/B	D/D (1) PDCS-B/B (2) NAV-B/B
	Boeing 737-300, -400, -500 (NON-EFIS)	C*/C* (5) LIMITED FMS-C/B	C*/C* (5) LIMITED FMS-C/B	A/A (7) CROSS SERIES-A/A	C/B	(8) C/B
	Boeing 737-300, -400, -500 (EFIS)	(3) C*/C* (5) LIMITED FMS-C/B	(3) C*/C* (5) LIMITED FMS-C/B	(3) C/B	A/A (7) CROSS SERIES-A/A	(8) C/B (9) PFD/ND-D/C
	Boeing 737-600, -700, -800, -900	D/D	D/D	(8) C/B (9) PFD/ND-D/C	(8) C/B (9) PFD/ND-D/C	A/A (9) PFD/ND-D/C (11) EDFCS-C/C

(7) Differences Within a Series. Differences may exist even within series shown on an MDR table. MDR elements may show requirements from one series to another identified in the footnotes. Such requirements, however, apply only if pertinent differences exist between those aircraft.

(8) More Than One Related Aircraft. When an operator assigns a pilot to more than one related aircraft of the same TC (e.g., Boeing 737-100/-200/-300/-400/-500/next generation), or more than one aircraft with different TCs (e.g., Boeing 757 and Boeing 767) designated as related, each pertinent requirement of the MDR table applies.

(9) Special Requirements.

(a) MDR Footnotes. Footnotes can be used to credit, constrain, or set alternate levels when special situations apply. Use of footnotes permits accommodation of variations in installed equipment, options, pilot knowledge, or experience on other aircraft, training methods or devices, or other factors that are not addressed by basic levels between aircraft. For example, a footnote may allow credit or apply constraints to the use of a particular flight guidance control system (FGCS), flight management system (FMS), or electronic flight instrument system (EFIS), which is installed on aircraft. Footnotes are an appropriate means to address requirements that relate to specific systems (e.g., flight director and FMS) rather than a particular aircraft. In such instances, generic knowledge or experience with the particular system may be readily transferable between related aircraft. Footnotes may also be used to set different requirements for initial training or checking rather than for recurrent training or checking. When necessary, footnotes are fully described in the body of the FSB report.

(b) Other Limitations. Other limitations may occasionally be identified within a difference level (e.g., C*). The asterisk following the difference level in such instances identifies a special requirement or limitation pertaining to a particular training method, checking method, or device. Such notes typically relate to acceptable FSTDs when the FSTD evaluation and approval process or standard criteria of this AC are not available to address a particular situation appropriately.

(10) MDRs for Aircraft with the Same or Different TC. A single FSB report and MDR table may apply to aircraft that are assigned the same TC with the same type rating (e.g., Boeing 737-100/-200/-300/-400/-500 and next generation). A single FSB report and MDR table may also apply to different TC'd aircraft (e.g., Boeing 757 and Boeing 767). When it is determined that level E training is required for an aircraft with the same aircraft TC and a different type rating is determined, a single MDR table for all series of that TC'd aircraft still applies (e.g., Boeing 747 and Boeing 747-400). Minimum acceptable difference levels are assigned based on standard tests described in Appendix 3, Rating and Level Tests—Planning and Application.

c. Difference Levels.

(1) General Description. Difference levels specify FAA requirements proportionate to and corresponding with increasing differences between related aircraft. A range of five difference levels in order of increasing requirements, identified as A through E, are each specified for training and checking. MDRs are specified in terms of difference levels. Difference

levels are used to credit knowledge, skills, and abilities applicable to an aircraft for which a pilot is already qualified and current, during initial, transition, or upgrade training for other related aircraft. Operators who conduct mixed fleet flying where credit is sought, should apply difference levels and address all mixed fleet flying requirements to ensure compliance with FAA requirements necessary to ensure safe operations.

(2) Basis for Levels. Difference levels apply when a difference with potential to affect flight safety exists between related aircraft. Differences may also affect knowledge, skills, or abilities required of a pilot. If no differences exist or if differences exist but do not affect knowledge, skills, abilities, or flight safety, then difference levels are not assigned; nor are they applicable to pilot training and qualification. When difference levels A through E apply, each difference level is based on a scale of differences in design features or maneuvers. In assessing the effects of differences, both flight characteristics and procedures are considered, since flight characteristics address handling qualities and performance, while procedures include normal and abnormal/non-normal/emergency items.

(3) Relationship Between Training and Checking Levels. While particular aircraft are often assigned the same level (e.g., C/C) for training and checking, such assignment is not necessary. Levels may be assigned independently. For example, an aircraft may be assigned level C for training and level D for checking (e.g., C/D).

(4) Evaluation for Determination of Aircraft Type Ratings.

(a) Aircraft with the same TC when evaluated for type rating determination are assigned the same type rating if training differences are no greater than level D.

(b) Aircraft of the same make having different TCs, that have training differences no greater than level D, will be assigned different type ratings that may be considered in common with each other.

(c) Aircraft of the same make that have level E training difference requirements will be assigned a different type rating. Aircraft with systems such as Head-Up Display (HUD), Enhanced Vision Systems (EVS), or Synthetic Visions Systems (SVS) may require Level E training without requiring a new type rating.

d. Training Difference Levels.

(1) Level A Training. Level A training is that training between related aircraft that can adequately be addressed through self-instruction. Level A training represents a knowledge requirement that, once appropriate information is provided, understanding and compliance can be assumed. Level A compliance is achieved by such methods as issuance of operating manual page revisions, dissemination of operating bulletins, or differences handouts to describe minor differences in aircraft. Level A training is limited to the following situations:

(a) A change that introduces a different version of a system/component for which the pilot has already shown the ability to understand and use (e.g., an updated version of an engine).

(b) A change that results in minor or no procedural changes and does not adversely affect safety if the information is not reviewed or forgotten (e.g., a different vibration damping engine mount is installed, expect more vibration in descent; logo lights are installed, use is optional).

(c) Information that highlights a difference, which is evident to the pilot, inherently obvious, and easily accommodated (e.g., different location of a communication radio panel, a different exhaust gas temperature limit that is placarded, or changes to non-normal "read and do" procedures).

(2) Level B Training. Level B training applies to related aircraft with system or procedure differences that can adequately be addressed through aided instruction. At level B, aided instruction is appropriate to ensure pilot understanding, emphasize issues, provide a standardized method of presenting material, or aid retention of material following training. Level B aided instruction can utilize audiovisual presentations, computer-based tutorial instruction, or stand-up lectures. Situations not covered under level A training may require level B training (or higher levels) if certain tests described in later paragraphs fail.

(3) Level C Training. Level C training applies to related aircraft having part task differences that affect knowledge, skills, and/or abilities. Level C training can only be accomplished through use of devices that are capable of systems training. The training objectives focus on mastering individual systems, procedures, or tasks, as opposed to performing highly integrated flight operations and maneuvers in "real time." Level C may require self-instruction or aided instruction, but cannot be adequately addressed by a knowledge requirement alone. Training devices are required to supplement instruction, ensure attainment or retention of pilot skills and abilities, and accomplish the more complex tasks, usually related to operation of particular aircraft systems. Typically, the minimum acceptable training method for level C training would be interactive computer-based training (CBT), cockpit procedure trainers, part task trainers (e.g., FMS or Traffic Alert Collision and Avoidance System (TCAS)), or a level 4 or 5 flight training device (FTD).

(4) Level D Training. Level D training applies to related aircraft having full task differences of knowledge, skills, and/or abilities. Level D training can only be accomplished with devices capable of performing flight maneuvers in a dynamic real-time environment. The devices enable integration of knowledge, skills, and abilities in a simulated flight environment, involving combinations of operationally oriented tasks and realistic task loading for each relevant phase of flight. Level D training requires mastery of interrelated skills that cannot be adequately addressed by separate acquisition of those skills. However, the differences are not so significant that a full transition training course is required. Training for level D differences requires a training device that has accurate, high-fidelity integration of systems and controls, and realistic instrument indications. Level D training may also require maneuvers, visual cues, motion cues, dynamics, control loading, or specific environmental conditions. Weather phenomenon such as low visibility, CAT III, or windshear may or may not be incorporated. Where simplified or generic characteristics of an aircraft type are used in devices to satisfy difference level D training, significant negative training must not occur as a result of the simplification. Typically, the minimum acceptable training method for level D training would be FTD level 6.

(5) Level E Training. Level E training applies to aircraft having such significant full task differences that a high-fidelity environment is required to attain or maintain knowledge, skills, or abilities. Training at level E can only be satisfied by the use of a full flight simulator (FFS) qualified at level C or D consistent with FAA criteria. Level E training, if done in an aircraft, should be modified for safety reasons where maneuvers can result in a high degree of risk (e.g., an engine set at idle thrust to simulate an engine failure). As with other levels, when level E training is assigned, suitable credit or constraints may be applied for knowledge, skills, and/or abilities related to other pertinent related aircraft. Credits or constraints are specified for the subjects, procedures, or maneuvers shown in FSB reports and are applied through the ODR table.

NOTE: Training difference levels specified by the FSB represent minimum requirements. Operators may use a device associated with a higher difference level to satisfy a training difference requirement. For example, if level C differences are assessed due to installation of a different FMS, operators may train pilots using the FMS installed in a FFS as a system trainer if a dedicated part task FMS training device is not available.

e. Checking Difference Levels.

(1) Initial and Recurrent Checking. Differences and related aircraft differences checking addresses any pertinent pilot qualification requirements and any other checks specified by FSB reports. Initial and recurrent checking levels are the same unless otherwise specified by the FSB. In certain instances, it may be possible to satisfactorily accomplish recurrent checking objectives in devices that do not meet initial checking requirements. In such instances, the FSB may recommend certain devices that do not meet initial check requirements for use to administer recurring checks. The POI/Training Center Program Manager, in coordination with the FSB, may require checking in the initial level device when doubt exists regarding pilot competency or program adequacy.

(2) Level A Checking. Level A checking indicates that no check is required at the time of training. A pilot is responsible for knowledge of each related aircraft flown. Difference items should be included as an integral part of subsequent recurring proficiency checks.

(3) Level B Checking. Level B checking indicates that a “task” or “systems” check is required following training. Level B checking typically applies to particular tasks or systems such as FMS, TCAS, or other individual systems or related groups of systems.

(4) Level C Checking. Level C checking requires a device suitable for meeting level C (or higher) difference training requirements following training. The checking is conducted relative to particular maneuvers or systems determined by the FSB. An example of level C checking: evaluation of a sequence of maneuvers demonstrating a pilot’s ability to use a FGCS or FMS. An acceptable scenario would include each relevant phase of flight that uses the FGCS or FMS.

(5) Level D Checking. Level D checking requires a check for one or more related aircraft following training. The check covers the particular maneuvers, systems, or devices determined by the FSB. Level D checks are performed using scenarios representing a real-time

flight environment and devices permitted for level D difference training. A full proficiency check is typically conducted on the base aircraft, and a partial proficiency check on the related aircraft, covering all pertinent differences.

(6) Level E Checking. Unless specified, level E checking requires that a full proficiency check be conducted in a level C or D FFS. As with other levels, when level E checking is assigned, suitable credit or constraints may be applied for knowledge, skills, and/or abilities related to other pertinent related aircraft. Credits or constraints are specified for the subjects, procedures, or maneuvers shown in FSB reports and are applied through the ODR table.

NOTE: Assignment of level E checking requirements alone does not result in determining a separate type rating. Only the assignment of level E training requirements may result in a separate type rating determination.

f. Competency Regarding Abnormal/Non-Normal/Emergency Procedures. Competency for non-normal maneuvers or procedures is generally addressed by checking requirements; however, particular abnormal/non-normal/emergency maneuvers or procedures may not be mandatory for checking or training. In this situation, it may be necessary to periodically practice or demonstrate those maneuvers or procedures even though it is not necessary to complete them during each check. In such instances, the FSB may specify a currency requirement for training or checking applicable to abnormal/non-normal/emergency maneuvers or procedures that are to be performed. This is to ensure that extended periods of time do not elapse in a series of repeated training and checking events in which significant maneuvers or procedures may never be accomplished. When an abnormal/non-normal/emergency maneuver or procedure is not mandatory and is not accomplished during each proficiency training or proficiency check, but is still important to occasionally practice or demonstrate, the FSB may establish a currency requirement. When determined by the FSB, these currency requirements identify each abnormal/non-normal/emergency maneuver or procedure and an applicable time period or any other necessary/appropriate constraints.

g. Difference Level Summary. Difference levels are summarized in Figure 2 below for training and checking. Complete descriptions of difference levels for training and checking are given above.

FIGURE 2. DIFFERENCE LEVEL TABLE

DIFFERENCE LEVEL	TRAINING	CHECKING
A	Self-instruction	None
B	Aided instruction	Task or system check
C	Systems devices	Check using device
D	Maneuver devices*	Check using level 6 or higher FSTD
E	Level C or D FFS or aircraft#	Proficiency check using level C or D FFS or aircraft

* = FFS or aircraft may be used to accomplish specific maneuvers.
# = A new type rating is normally assigned.

h. OE, Operating Cycles, and Consolidation of Knowledge and Skills. Credits towards part 121 requirements for OE, operating cycles, and line operating flight time for consolidation of knowledge and skills *may* be permitted if performed in "designated" related aircraft.

i. Supervised Line Flying (SLF). Experience associated with the introduction of equipment or procedures requiring postqualification skill enhancement during which a pilot occupies a specific pilot position and performs particular assigned duties for that pilot position under the supervision of a check pilot qualified for the operator. One or more of the reasons described below may apply:

(1) Introduction of new systems (e.g., Automatic Dependent Surveillance Broadcast (ADS-B), Runway Area Advisory System (RAAS), etc.).

(2) Introduction of new operations (e.g., oceanic operations, Extended Operations (ETOPS)).

(3) Experience for a particular pilot position (e.g., pilot in command (PIC) or second in command (SIC)).

(4) Special characteristics (e.g., effects of unique airports, mountainous areas, unusual weather, special air traffic control (ATC) procedures, or nonstandard runway surfaces) on this aircraft.

j. Recency of Experience. Credit towards the recency-of-experience requirements of part 121 may be permitted for takeoffs and landings performed in designated related aircraft.

k. Operator Difference Requirements (ODR).

(1) ODR Purpose. If differences exist within an operator's fleet, which affect pilot knowledge, skills, or abilities pertinent to systems or procedures, ODR tables provide a uniform means for operators to comprehensively manage differences and related aircraft differences training programs and provide a basis for FAA approval of mixed fleet flying.

(2) ODR Content. ODRs identify a base aircraft, describe differences between aircraft, and show an operator's methods of compliance with FAA requirements. The FAA approves an operator's initial ODR and each subsequent revision for the following:

(a) Base Aircraft. ODRs identify an aircraft or group of aircraft within an operator's fleet as a base aircraft. The base aircraft serves as a reference for comparison with other related aircraft to describe their differences.

(b) Significance of Differences. Differences are described in summary form and are categorized by differences in design features and maneuvers. Differences are evaluated relative to their effect on either flight characteristics, pilot skills, and/or procedures.

(c) Compliance Methods. ODRs show how each operator's program addresses differences, through description of training and checking methods for each fleet. ODRs describe the specific or unique constraints or credits applicable, and any precautions necessary to address differences between aircraft. ODRs must comply with and may not be less restrictive than FAA MDRs and other FSB recommendations if they are part of the operator's approved training program. Constraints or credits may be applied to all aircraft in a fleet or only to certain aircraft. Constraints or credits may address FSTDs, checking methods, knowledge, skills, procedures, maneuvers, or any other factors that apply to or are necessary for safe operations. Training and checking compliance methods are proposed and revised by each operator consistent with Differences Tables found in FSB reports.

(3) Standard ODR Format. ODRs are depicted in tables in summarized form. If necessary, any explanation of details about differences, constraints, and credits, precautions or compliance methods are included in attachments or appendices to ODR tables or are cross-referenced to other operator documents. Figure 3 shows the general format for ODR tables, including examples of design and maneuver differences. The far left column lists design or maneuver differences that are pertinent. The "Remarks" column summarizes specific areas or items of difference. The "Flight Characteristics" and "Procedural Change" columns identify what (if any) difference effects are noted. The "Compliance Methods" section of the table notes the particular operator's approved means of compliance with FAA MDR recommendations. The following abbreviations apply:

- ACFT — Aircraft.
- AFDS — Auto Flight Display System.
- AV — Audiovisual Presentation.
- CBT — Computer-Based Training.
- EFIS — Electronic Flight Instrument System.
- EICAS — Engine Indicating and Crew Alerting System.
- FSTD — Flight Simulation Training Device.
- FLT CHAR — Flight Characteristics.
- FMC — Flight Management Computer.
- FMS — Flight Management System.
- PROC CHNG — Procedural Changes.
- SU — Stand-Up Instruction (traditional classroom instruction).

FIGURE 3-1. DESIGN OPERATOR DIFFERENCE REQUIREMENTS TABLE EXAMPLE

DESIGN OPERATOR DIFFERENCE REQUIREMENTS TABLE					
FROM BASE AIRCRAFT: 737-200 ADVANCED TO RELATED AIRCRAFT: 737-300 APPROVED BY (POI): _____				**COMPLIANCE METHOD**	
				TRAINING	**CHECKING**
DESIGN FEATURE	**REMARKS**	**FLT CHAR**	**PROC CHNG**		
AIRPLANE CONFIGURATION	- BODY EXTENSION 104” - WING TIP EXTENSION 14” - DORSAL FIN - w/STC ST01219SE, BLENDED WINGLET	YES	NO	B AV/ SU/ CBT	
PANEL LAYOUT	- ADDITION OF FMC/AFDS/AT/IRS ETC.	NO	NO	B AV/ SU/ CBT	
WEIGHTS	- GROWTH RELATED CHANGES	NO	NO	B AV/ SU/ CBT	

FIGURE 3-2. MANEUVER OPERATOR DIFFERENCE REQUIREMENTS TABLE EXAMPLE

MANEUVER OPERATOR DIFFERENCE REQUIREMENTS TABLE					
FROM BASE AIRCRAFT: 737-200 ADVANCED TO RELATED AIRCRAFT: 737-300 APPROVED BY (POI): _____				**COMPLIANCE METHOD**	
MANEUVER	**REMARKS**	**FLT CHAR**	**PROC CHNG**	**TRAINING**	**CHECKING**
- OPTIONAL USE OF AFDS, AND A/T (ALSO AN OPTION FOR -200 AFCS AIRPLANES) - OPTIONAL USE OF FMCS	- OPTIONAL USE OF AFDS, AND A/T (ALSO AN OPTION FOR -200 AFCS AIRPLANES) - OPTIONAL USE OF FMCS	NO	SEE APP	C FMS/ AT	C* + OE
NON-NORMAL MANEUVERS	NORMAL TAKEOFF, CLIMB, CRUISE, DESCENT, INSTRUMENT APPROACHES, LANDING	NO	SEE APP	FMS/ AT	C*

(4) ODR Approval, Distribution, and Availability. ODRs are approved for each fleet by an operator's FAA POI in accordance with FSB report recommendations. ODRs must be prepared, reviewed, approved, and then used to govern training before start of operations. The operator retains approved ODRs with a duplicate copy as part of FAA CHDO records.

(5) ODR Revision. ODR tables are revised by operators and reapproved by the FAA when fleet characteristics change or when compliance methods change. Fleet characteristic changes include redesignation of base aircraft, modification of aircraft, addition of aircraft, change of aircraft, or phaseout of aircraft. Changes in compliance methods refer to introduction of new or different training methods, contracting for use of different FSTDs, revision of checking methods, or other such changes. Revisions to ODRs are also prepared, reviewed, and approved before operating.

NOTE: Paragraph 6 describes the development, approval, and application of ODR tables to individual operators' programs. Paragraph 7 describes FAA review and approval of programs by POIs.

5. FORMULATION OF FSB REPORTS, MDRs, AND DETERMINATION OF TYPE RATINGS.

a. Formulation Process Overview. The process for FAA formulation and revision of MDR requirements is shown in Figure 4. The process determines which information is required for an aircraft. It includes a proposal for requirements, tests, and evaluations of the proposed requirements. It then finalizes, applies, and implements the FSB recommendations. Applicants propose MDRs, examples of ODRs, and any other FSB recommendations that are necessary. Proposals for requirements are based on design objectives, analysis, evaluation of in-service experience, other programs that have been proved acceptable to the FAA, or other methods. Setting of requirements is based on an objective set of tests and standards, analysis of results, and FAA judgments considering in-service experience. The applicant and the FAA prepare and conduct standardized tests. The applicant provides test support, and the FSB conducts the evaluation. The FSB, in conjunction with the applicant, evaluates the results, and the FAA formulates proposed minimum requirements. The FSB sets final recommendations by specifying MDRs and other FSB recommendations. An FSB report that describes findings can be found on FSIMS under Publications. The formulation and application process of FSB recommendations starts at the time a new aircraft is proposed to the FAA and continues throughout the fleet life of that aircraft. For aircraft already in service, the process may be initiated when significant modifications are proposed, a new piece of equipment (e.g., a HUD) requiring operational evaluation is introduced and requested by operators, or when mixed fleet flying takes place. The FAA addresses periodic revisions of requirements when necessary, and revisions are initiated by the FAA and applicants as needed.

b. Proposals for MDRs, Example ODRs, and Special Requirements.

(1) When Proposals are Necessary. The FAA usually determines when proposals are necessary and advises the applicant what information is needed, in conjunction with aircraft type certification or supplemental certification programs. Necessary information may include MDRs for related aircraft or other elements of the FSB reports. The applicant considers existing MDRs and existing or proposed ODRs.

(2) Proposal Formulation. An operator, manufacturer, or an organization that modifies aircraft proposes a new design or modification. The applicant will then do the following:

(a) Formulate necessary information for training, checking, and currency for the aircraft in proposals for MDRs and example ODRs.

(b) Prepare example ODR tables for candidate aircraft to support development of a proposed MDR. These examples represent proposals for programs for those specific aircraft and configurations that the FAA could approve.

(c) Identify related aircraft for the proposed MDR table.

(d) Formulate any necessary tests to assess difference levels and associated training, checking, and currency requirements for incorporation in the MDR table.

(e) Identify interpretations of possible test results. The FAA and the applicant will then reach an agreement on specific tests, devices, and schedules to be used for the test program.

(f) Submit proposals for the following items to the FAA, as necessary:

- MDRs;
- Example ODRs;
- Tests and criteria to be used; and
- Other supporting information associated with training, checking, or currency programs.

c. Difference Level Tests. A sequence of five standard tests, described in Appendix 3, is used to set MDRs, minimum acceptable training programs, and other FSB recommendations and define type rating requirements. One or more of these tests is applied, depending on the difference level sought and the success of any previous tests used in identifying MDRs. Only those tests needed are used to establish minimum requirements. The outcome of these tests, and any resulting difference levels that apply, establish minimum requirements for training, checking, currency, and type ratings. The FAA will establish an additional type rating if it is determined during this testing that the assignment of a level E difference training is required.

NOTE: One additional test, the T6 test, can be used to establish CTLC between related aircraft, when not previously demonstrated in a T2 test.

(1) Steps in the Testing Process. The typical steps of the testing process are as follows:

(a) The applicant develops representative training programs, differences and/or related aircraft differences programs, and necessary supporting information, as needed.

(b) The applicant identifies proposed MDRs and example ODRs.

(c) The applicant proposes and the FAA determines which tests and criteria apply.

(d) The applicant proposes and the FAA determines which aircraft, simulation devices, or analyses are needed to support testing.

(e) The applicant makes a proposal to the FAA, and agreement is reached on test procedures, schedules, and specific interpretation of possible results.

(f) Tests are conducted and results evaluated.

(g) The FSB draft minimum requirements are formulated.

NOTE: If the candidate aircraft is anticipated to have no greater than level A or B differences with the base aircraft, the FSB may elect to directly apply a T1 test for equivalency.

(2) Test Purpose and Application. A summary of the purpose and application of each of the six difference tests is shown in Figure 5.

(3) Test Relationships and Applications. This process is followed whenever a new aircraft is proposed, when significant changes are proposed, or when revisions to existing requirements are needed as a result of requests for change or in-service experience. The test process relationships, the sequence of conducting tests when more than one test is needed, and application of test outcomes are shown in Figure 6. The start of the process is shown at the top of Figure 6.

(a) When a new aircraft is certified and is not compared with an existing aircraft, the aircraft is evaluated using the T5 test to determine the effectiveness of the manufacturer training and evaluation plan. A type rating is determined as a result of the evaluation.

(b) When two aircraft with the same TC are compared, a T1 or T2/T3 test is used to determine the level of differences between the two aircraft. The result can be the assignment of a same type rating if no greater than level D training differences exist or the assignment of a different type rating if level E training differences exist.

(c) When two aircraft with different TCs are compared, a T2/T3 test is used to determine the level of differences between the two aircraft. An example of this is a determination of B, C, D, or E training differences between the two aircraft.

(4) Test Failures and Retesting. Generally, failures do not have paths back to lower levels. T3 test failure at level C can lead to subsequent passage at C or D after modification of the system, operational procedures, or training and retesting. Similarly, failure at level D can subsequently lead to either D or E after modification of the system, operational procedures, or training and retesting, but not C. Failure at level E can only lead to retesting with increased programs, improved programs, or improved devices, since there is no higher level. T5 test failure paths do not lead back to level C or level D. However, subsequent new programs do not preclude making a proposal at a lower difference level if technology changes, aircraft redesign takes place, training methods significantly change, or device characteristics and effectiveness change.

(5) Type Rating Tests. Aircraft seeking a same type rating or type rating in common will follow the path in Figure 6 from the top right “START” of Figure 6 through T1 or T2 and T3 tests, resulting in the assignment of level A, B, C, or D differences.

(6) Currency Tests. T4 currency tests are not shown in Figure 6 because they are necessary only when the applicant seeks relief from system, procedural, and maneuver currency requirements set by the FSB.

(7) Detailed Test Specifications. A detailed specification for the evaluation process and tests to establish difference levels is described in Appendix 3.

d. FSB Assessments and Proposal Formulation. The FSB assesses the applicant’s proposals, test results, analysis, and any other relevant factors to formulate a draft FSB report, which includes MDRs and other pertinent training, checking, and currency requirements. The FSB either validates the applicant’s proposed MDRs, training programs, and other

information, or generates alternate requirements, which may include more stringent requirements, additional training, additional testing, etc.

FIGURE 4. MASTER REQUIREMENTS FORMULATION

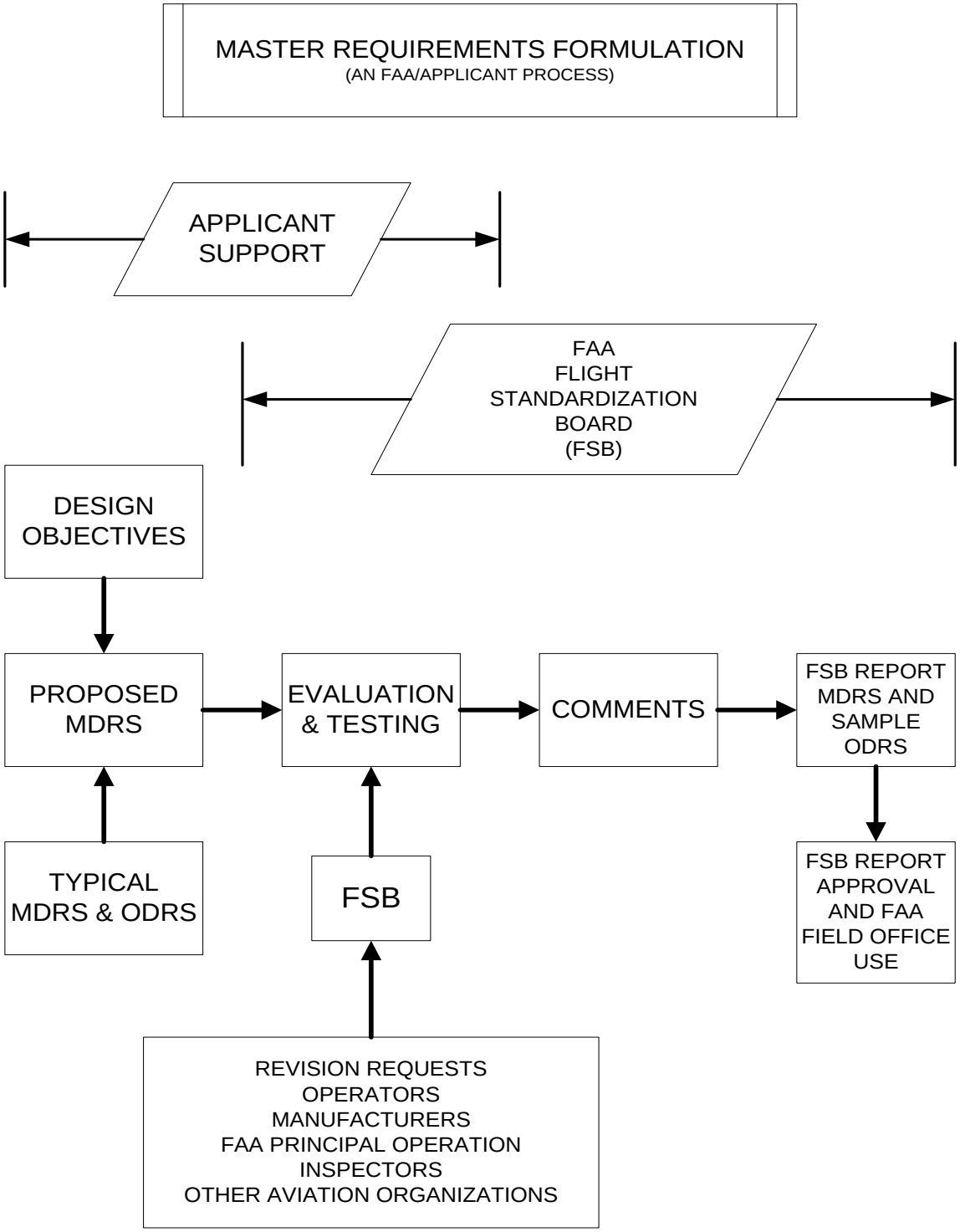
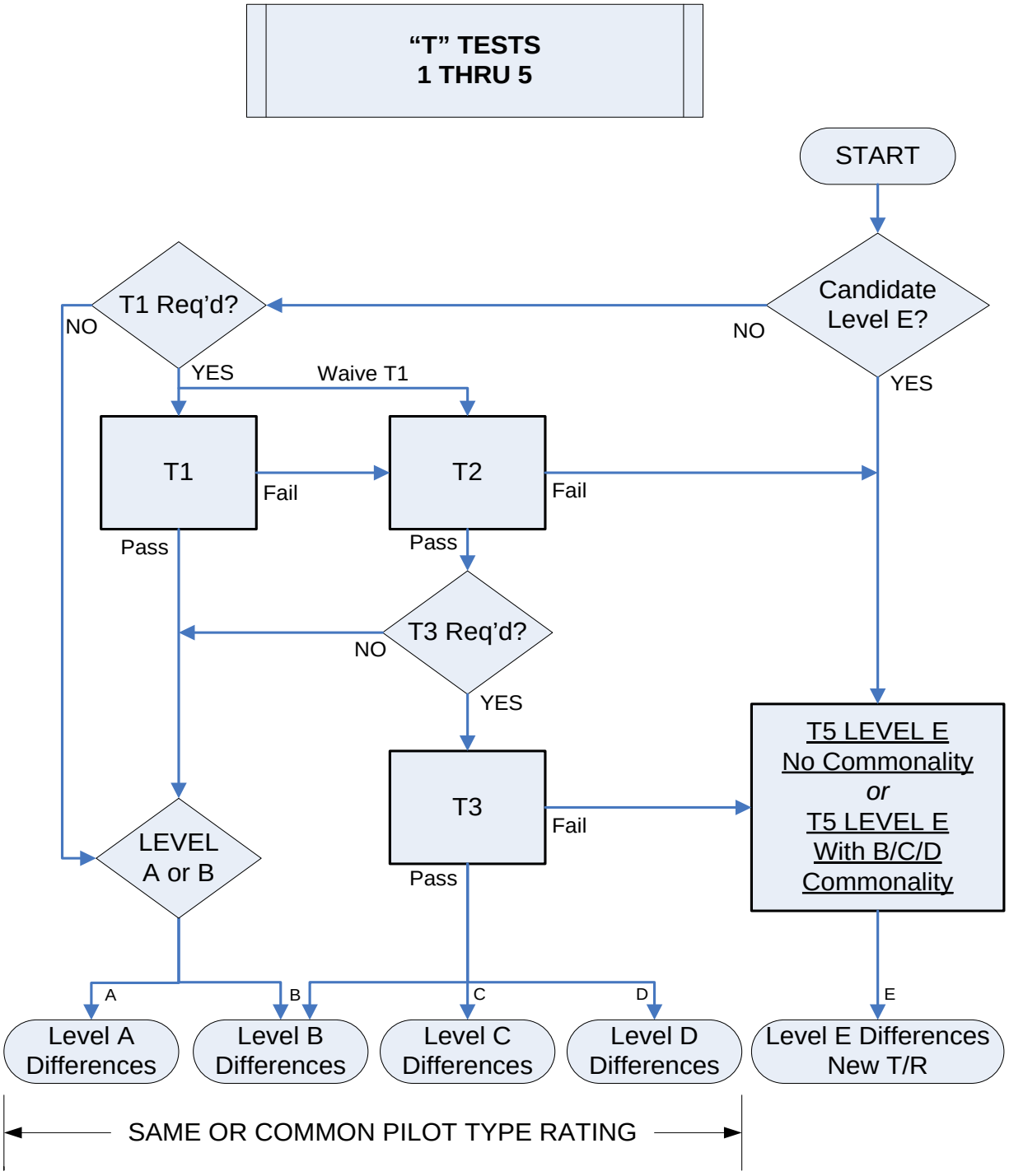


FIGURE 5. TEST DEFINITIONS

	TEST PURPOSE	APPLICATION
T1	Establishes functional equivalence	Sets levels A/B
T2	Handling qualities comparison	Pass permits T3, and A/B/C/D; failure sets level E and requires T5
T3	Evaluate differences and sets training/checking requirements	Pass sets levels A/B/C/D; failure sets level E and requires T5
T4	Revises currency requirements	Used to adjust FSB recommendations—if needed
T5	Sets training/checking for new or "E" ACFT	Sets level E
T6	Evaluation for CTLC	Sets recency-of-experience requirements
Note: Expanded descriptions are contained in Appendix 3.		

FIGURE 6. "T" TESTS 1 THRU 5



e. Comments Solicited. The FSB proposal is circulated with interested parties representing the manufacturer, operators, and other pertinent FAA organizations, such as engineering, flight test, pilots' associations, and other aviation representatives for comment, relevant information, and recommendations.

f. FSB Final Determinations and Findings.

(1) FSB Determinations. Any comments submitted to the FAA are reconciled, and final FSB determinations are made. Specification of MDRs, example ODRs, acceptable training programs, and other FSB recommendations are completed. Any necessary pilot checking or currency recommendations are identified. Determination of any necessary type rating(s) is made.

(2) Basis for FSB Judgments. FSB judgments are based on review of the applicant's supporting documentation, proposed ODR tables, test results, and any other pertinent information, such as FAA policies, in-service experience, and results of other similar FSB evaluations. Specifically, FSB report recommendations are based on the following:

(a) Appropriate Data, Evaluation, or Tests. Testing may include aircraft demonstration, simulation tests, device testing, or analysis.

(b) Direct Experience. The industry may have substantial experience with successful operational programs, which can be useful in the assignment of minimum difference level requirements. This experience may include particular training devices, training/checking/currency requirements, and mixed fleet flying.

(c) Indirect Experience. Applicable experience with foreign operators, military programs, or other programs that can establish the suitability of training, checking, or currency standards may be permitted as a means for FSBs to set differences levels.

(d) Applicant and Industry. FSB recommendations are set following solicitation and review of comments.

(3) FSTD Characteristics. Minimum characteristics for FSTDs for training, checking, or currency are noted using 14 CFR part 60 FSTD definitions. When standard criteria for FSTDs are not appropriate for an aircraft, the FSB identifies suitable criteria to be applied and coordinates with the FAA National Simulator Program (NSP). Standard FSTDs applicable to each difference level are shown in Figure 7.

FIGURE 7. STANDARD METHOD AND FLIGHT SIMULATION TRAINING DEVICE

Difference Level	Difference Level Definition	Methods	FSTD
A	Self-instruction	Bulletins Manual revisions Handout material	----------
B	Aided instruction	Slides/video tapes Stand-up instruction CBT	----------
C	System devices	----------	Level 4 or higher FSTD
D	Maneuver devices	----------	Level 6 or higher FSTD
E	Level C or D FFS or aircraft	----------	Level C or D FFS or aircraft

g. FSB Report Preparation Distribution and FAA Application.

(1) Report Preparation and Approval. After MDRs are finalized, the FSB report is prepared and approved. Sufficient background or explanatory material is provided in the report to permit FAA personnel to apply FSB recommendations. The following are elements of an FSB report:

(a) Record of Revisions;

(b) Introduction;

(c) Highlights of Change;

(d) Background;

(e) Acronyms;

(f) Definitions;

(g) Pilot Type Rating;

(h) Related Aircraft;

(i) Pilot Training;

(j) Pilot Checking;

(k) Pilot Currency;

(l) Operational Suitability;

(m) Miscellaneous;

(n) Appendix 1, Differences Legends;

(o) Appendix 2, MDR Table; and

(p) Appendix 3, Differences Tables.

(2) FSB Report Distribution. The FSB report is posted on FSIMS under Publications for implementation in approval of particular operators' programs. The FAA technical requirements described in FSB reports are primarily intended for the operators' use, to develop programs that will be approved by the FAA.

(3) FSB Report Implementation. FSB recommendations and guidance are provided to FAA field offices through FSB reports for each aircraft. These reports are recommendations to FAA offices to identify acceptable criteria for modifying flightcrew member training and qualification programs under the applicable CFR. FSB recommendations set acceptable standards by which FAA inspectors approve, review, correct, or limit individual operators' programs. The FSB report is the basis for approval of modifications of training, checking, and currency programs approved by the FAA.

h. FSB Report Revision.

(1) General FSB Revision Process. A general revision process is established to update determinations and findings contained in FSB reports. Revisions may be needed annually for active fleets with numerous change requests. Revisions may be needed infrequently for aircraft not undergoing significant change.

(2) Revisions for New Aircraft. When an applicant proposes to develop or add a series of a TC'd aircraft, MDRs and other FSB recommendations are revised to address that series. If an applicant initiates this action, the procedures noted in paragraph 5 regarding initial determination of minimum training, checking, currency, and type rating requirements are followed. If an operator proposes to add an aircraft that is not covered within an existing FSB report (e.g., a foreign-manufactured aircraft), POIs should consult with the pertinent AEG. An FSB will determine the best method of addressing the development of the necessary FSB report. This is particularly important for older aircraft fleets in which differences may be significant, but manufacturer support is no longer available; as well as when aircraft that have been used only by foreign operators are imported into the United States.

(3) Revision for Aircraft Modified by Operators. When an aircraft is to be modified by an operator, the POI determines if the change affects MDRs, Differences Tables, or other FSB report recommendations. The criteria for this assessment includes whether or not the difference affects pilot knowledge, skills, or abilities pertinent to flight safety. If a change meets the criteria, the operator should supply the POI with a difference description, an analysis of the effects of the

difference, and a proposed training program for the difference. The POI evaluates the proposal and if it is acceptable, seeks concurrence from AFS-200. AFS-200 will advise the applicable AEG/FSB. The AEG/FSB may concur with the POI's analysis or propose other action. If FSB action is proposed and accepted by AFS-200, the AEG will initiate that action through the FSB chairman. The FSB may require that additional information or analysis be provided or that the entire test process or parts thereof be applied. The AEG may authorize the POI to approve assignment of the difference level. Changes to the MDRs will be made through the normal FSB revision process.

6. OPERATOR'S APPLICATION OF FSB RECOMMENDATIONS, PREPARATION, USE, AND REVISION OF ODRs.

a. General.

(1) Process Overview. FSB reports contain MDRs and other recommendations that are applied by FAA offices in approving operators' flightcrew member training and qualification programs when operating mixed fleets. MDRs are applied through a particular method that identifies specific ODRs and compliance methods. This is necessary so that regardless of which aircraft is flown, uniform training, checking, and currency standards are met within the constraints of the applicable CFR. Paragraph 6 describes operator application of MDRs and other FSB recommendations for training, checking, and currency. This is done through operator preparation and FAA approval of ODRs for each operator. This AC and FSB reports comprehensively address differences and related aircraft differences training, checking, and currency for each aircraft when aircraft are used in mixed fleet flying. ODRs are used to identify credits or constraints between related aircraft. The overall process for operator application of MDRs and development, approval, use, and revision of ODRs is shown in Figure 8.

(2) Availability and Use of FSB Information. FSB recommendations are made available to operators through FAA CHDOs, applicants, and industry trade associations; and posted on FSIMS under Publications or through other sources. When preparing training programs for specific fleets, individual operators apply the requirements of the applicable FSB report.

b. Application of MDRs and Preparation and Use of ODRs.

(1) Need for ODRs. When operating a mixed fleet, operators prepare the necessary ODR table proposals to describe their particular fleet and show compliance methods. This is done to assess effects of differences, plan compliance methods, and obtain POI approval for that operator's specific program. ODR tables must be prepared and approved by the FAA for each fleet in which FSB recommendations are established.

(2) Operator Responsibilities. The operator's responsibilities include:

(a) Specification of a base aircraft.

(b) Identification of differences between the aircraft within a mixed fleet.

(c) Preparation of proposed ODR tables.

(d) Assessment and description of the effects of the differences on training, checking, and currency.

(e) Proposal of training, checking, and currency methods consistent with MDRs, FSB recommendations, and authorized deviations.

(f) Presentation of proposed ODR tables with necessary supporting information to the FAA POI for approval.

(g) Revision of ODR tables when aircraft are introduced, modified, or phased out; devices change; or MDRs change.

(3) Use of Standard ODR Format. A common format for ODR tables is used to facilitate preparation, review, use, and comparison with MDRs, and ensure consistency of application and approval by POIs. The common format is used in all cases where ODR tables are required, except when only a few minor differences exist and level A applies. In this event, letters between an operator and FAA containing the necessary information and approval may suffice if acceptable to the POI.

(4) Minimum Threshold for ODR Preparation. Within a mixed fleet, a minimum threshold for preparation of ODR tables occurs when there are differences that potentially affect knowledge, skills, or abilities necessary for flight safety. Differences not related to this criterion need not be addressed in ODR tables.

(5) ODR Description and Examples. ODRs are described in paragraph 4. An example of several pages from an ODR table is shown in Figure 3. Figure 3 shows the application of ODRs to address differences and compliance methods. The “Remarks” column depicts differences and the “Flight Characteristics” and “Procedural Change” columns address effects of differences.

c. Selecting Base Aircraft. An operator chooses a base aircraft from one of the aircraft operated. Base aircraft are defined in Appendix 1. Additional information regarding base aircraft selection is in paragraph 7.

d. Identification of Differences and the Analysis of Effects of Those Differences. Differences must be described between base aircraft and other related aircraft. Differences may also be described from any related aircraft to each other related aircraft. As long as a complete and clear relationship can be drawn from the base aircraft to each other related aircraft, and all MDR requirements are met from the base aircraft to each other related aircraft, there is no need to describe each possible combination of aircraft. This permits a comprehensive identification of differences that exist in the fleet, determines the effects of those differences, and shows compliance methods. Differences are generally organized to follow an operations manual or flight manual to facilitate use and review, and should be categorized by design and maneuvers. Effects of differences are stated in terms of effects on flight characteristics and procedures. Procedures include normal, non-normal, alternate, emergency, and recall procedures, as applicable. Since complete descriptions may be too lengthy for direct incorporation in ODR tables, appendices or references to other operators’ documents may be used to describe differences or effects. Some differences or effects may be repeated in the analysis. For example,

an FMS difference may be noted in both a navigation design section and maneuver section associated with preflight setup. The objective is to ensure each difference that pertains to pilot training or checking is identified and addressed.

e. Identification of Compliance Methods. Once differences and difference effects are described, methods of comprehensively addressing each difference (compliance methods) are shown. With the difference descriptions, redundancy may occur. The same training or checking compliance item shown for one item may also be associated with and credited for other items. The objective for description of compliance methods is to show that each difference is addressed in some appropriate way, to show that the method and level chosen is consistent with the FSB MDRs and Differences Tables.

f. When Proposed ODR Compliance Methods Do Not Meet MDRs. If proposed ODR compliance methods do not satisfy MDRs, Differences Tables, or other FSB report constraints, the following alternatives exist:

(1) Differences may be reduced or eliminated by modification of aircraft, systems, or procedures.

(2) Other training methods or devices that fully comply with MDRs, Differences Tables, and other FSB recommendations may be acquired, leased, or otherwise applied.

(3) Pilot assignments may be separated for a fleet so that mixed flying of related aircraft does not occur.

(4) MDR or Differences Tables change proposals may be requested through FAA POIs to the FSB. If FSB-authorized changes to the MDRs or Differences Tables are made, the operator may then apply the revised criteria.

g. Application, Review, and Approval. Paragraph 7 describes the FAA review and approval process. The process is summarized here to facilitate ODR table preparation. An operator submits the proposed ODR tables and necessary supporting information to the POI to apply for differences and/or related aircraft differences program approval. The supporting information may include any appendices to the ODR tables necessary for evaluation of the proposal, a transition plan if needed, and a proposed schedule for implementation. POIs may also require review of such pertinent and additional information as copies of bulletins, manuals, or other training materials, before they approve proposed ODRs. If devices are proposed that are not approved by the POI or evaluated by the NSP, a review and approval of those training devices may be necessary before ODR approval. Sufficient lead time must be provided to the FAA for review. Lead time depends on such factors as the complexity of program, proposed difference levels, number of related aircraft, other operator precedents already set, and FAA experience with the proposed aircraft, training devices, and methods. Many noncontroversial level A changes can be reviewed and approved in a few days. Complex programs with many related aircraft can require months for review and approval. It is the operator’s responsibility to consult with the POI to ensure that sufficient lead time is provided to review initial submissions or changes. At least 60 days notice is acceptable for most programs. After the operator submits the program proposal, POIs compare the proposed ODR with the FSB report

recommendations including the MDRs and Differences Tables. POIs consult pertinent FAA policy directives (orders, notices, Safety Alerts for Operators (SAFO), etc.) for interpretations or guidance in accomplishing the review. If ODRs are consistent with authorized deviations and FAA policies and within the constraints of the MDRs and Differences Tables, the POI will approve the operator's ODR tables and its proposed differences and/or related aircraft differences program. When approved by the FAA, ODRs establish the basis for training, checking, and currency programs for a given fleet for that operator.

h. Transition Period for ODR Implementation. In certain instances, a transitional period, agreed upon by the POI with FSB concurrence, may be necessary to permit operators to continue operations under previously approved programs until they are able to comply with POI-approved FSB recommendations. This is necessary when these recommendations are initially set or revised and they require lead time for program preparation, device acquisition, or to revise previously approved programs.

i. ODR Revision. ODR revisions are initiated when changes occur in an operator's fleet relating to differences, difference effects, or compliance methods. ODR revisions are appropriate when such changes affect pilot knowledge, skills, or abilities relevant to flight safety. Examples of program changes or factors that may require ODR revision include:

(1) Addition or deletion of aircraft in a fleet;

(2) Modification of base aircraft or related aircraft in a fleet;

(3) Change of base aircraft;

(4) Discontinuation of use, addition of new or modification of training devices referenced by ODRs;

(5) Revision of training methods with a resulting change in compliance levels;

(6) Changes in effects of differences such as revised procedures, performance, or flight characteristics;

(7) FAA revision of MDRs, Differences Tables, or other FSB recommendations;

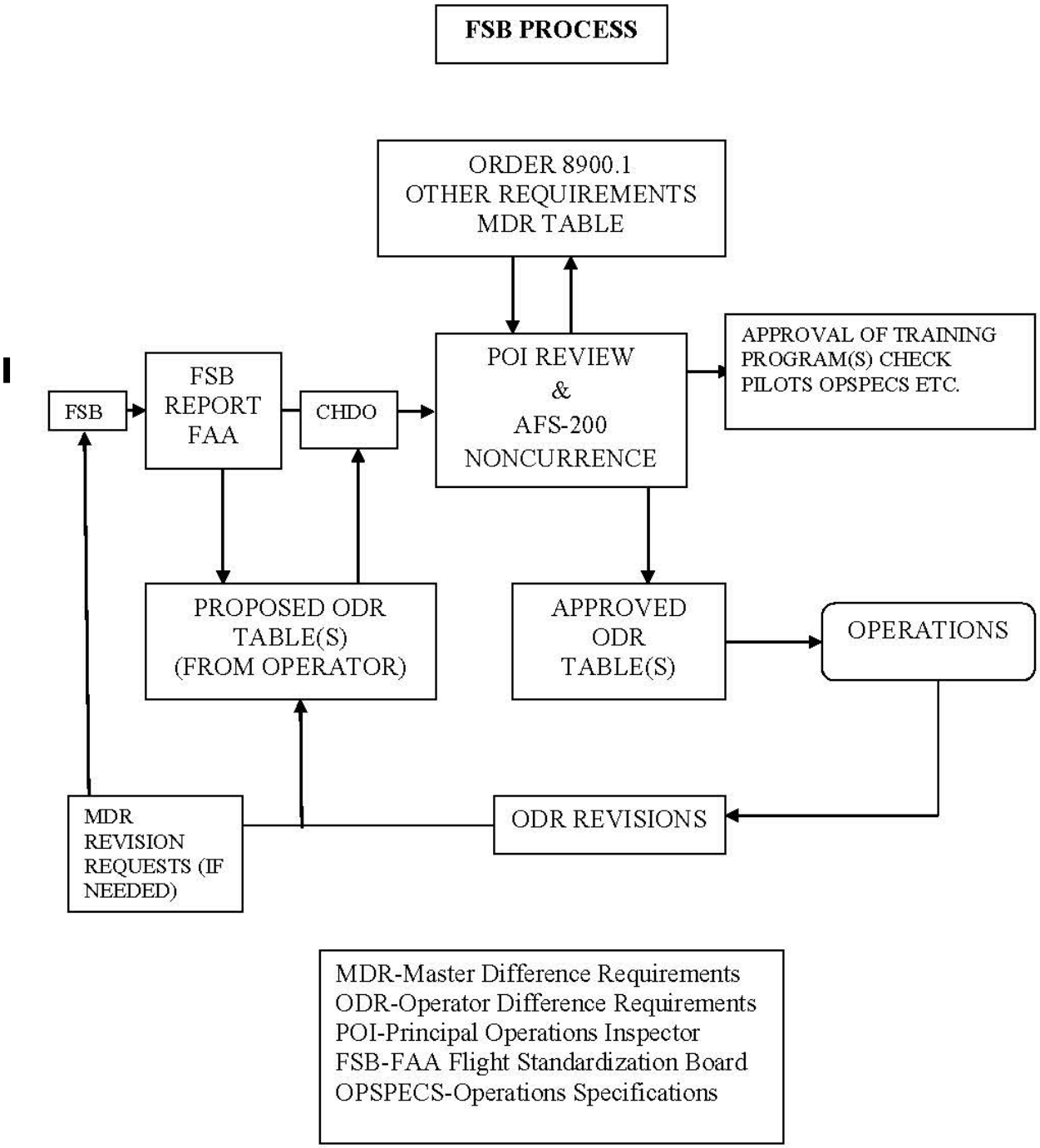
(8) Adverse in-service experience or training and checking experience that dictates inadequacy of ODRs, MDRs, or other FSB recommendations;

(9) FAA surveillance results, enforcement actions, or failure of an operator to comply with provisions of their approved ODRs; and

(10) Other factors as determined by the POI.

NOTE: Revisions to ODRs are approved using the same procedures as for initial ODRs approval.

FIGURE 8. FLIGHT STANDARDIZATION BOARD PROCESS



7. FAA REVIEW AND APPROVAL OF OPERATOR PROGRAMS.

a. General. The FAA has the responsibility for review, approval, and continuing surveillance of individual operator programs consistent with this AC and FSB recommendations. Within a CHDO or Flight Standards District Office (FSDO), POIs have the responsibility for program review and approval.

b. Operator Application of ODRs.

(1) Operators Using Related Aircraft in Mixed Fleet Flying. If FSB recommendations are published, operators operating aircraft in mixed fleet flying in accordance with the applicable CFR may apply recommendations of this AC and the FSB report.

(2) Threshold Requiring ODR Preparation. Even though an operator has different configurations of aircraft used in mixed fleet flying, there is some threshold below which ODR tables and POI approval is not required. The threshold requiring AC and ODR application occurs when differences in related aircraft affect pilot knowledge, skills, and/or abilities pertinent to flight safety. If systems, controls, indications, procedures, or maneuvers are different and these differences have an effect that significantly relates to what the pilots needs to know or do for safe mixed fleet flight operation, then an operator should prepare ODR tables and must seek FAA approval. Conversely, ODR tables would not need to be prepared in situations that do not affect flight safety. In such instances, ODR tables are not needed, even though pilots routinely operate several related aircraft. A minimum threshold is set to preclude unnecessary administrative assessment of mixed fleet flying, which has no safety implications. If changes to the fleet do not affect pilot knowledge, skills, or abilities affecting flight safety, then such changes need not be considered in addressing FSB recommendations or this AC.

(3) FAA Review of ODR Proposals. After preparation, the carrier submits proposed ODR tables and supporting information to the CHDO and POI for review and approval. POIs evaluate the following:

(a) The operator has made an appropriate identification of a base aircraft.

(b) Operators have comprehensively identified differences in the particular fleet. This includes appropriate ODR table comparisons between the base aircraft and each related aircraft.

(c) The operator's assessment of the effects of differences on flight characteristics and procedures for the base aircraft and each related aircraft are suitable and valid.

(d) The compliance methods listed are consistent with the requirements of the MDR tables, footnotes, Differences Tables, other pertinent FSB report recommendations, the applicable CFR, authorized deviations, and associated advisory materials.

(e) ODR provisions adequately address any "subtle differences" between related aircraft that have a possibility of inducing potentially serious pilot errors.

(f) Training materials, methods, devices, and FSTDs proposed are acceptable, approved by the NSP if necessary, or if FSB recommendations are applied, the ODR tables meet FSB constraints.

(g) Aviation safety inspectors (ASI) and aircrew program designees (APD) are prepared to apply FSB report checking standards.

(h) Implementation plans are adequate and consistent with FSB recommendations and other FAA policy.

(i) Other factors determined necessary by the POI are considered and any requirements met.

(4) Differences Tables and MDRs. The POI uses the Differences Tables and the MDRs provided in the FSB report as a basis for evaluating the suitability of a particular operator's proposed ODR table. The MDR always remains the primary basis for comparison. The AEG should be consulted in the absence of conclusive guidance in making such judgments. Guidance for evaluation of specific system or maneuver items may be found by comparison of the proposal with the Difference Table shown in the FSB report. The operator may use devices, techniques, or methods of an equal or higher difference level. Critical methods should be at least at the level specified by the FSB on the MDRs and shown in the Differences Tables. Actual ODR tables proposed by the operator may show a variety of compliance methods to satisfy a particular item, ranging from level A through the level required by the MDRs. For example, if the MDR requirement is a minimum of level C, the operator may propose to use a combination of level A bulletins, level B audiovisual presentations, and level C training devices to satisfy pertinent items. However, at least level C should be shown for critical items. The operator may choose to satisfy level C with level D or level E methods.

(5) ODR Review Example. The following is an example of the process for review of a specific item on a proposed ODR table. For each proposed ODR item, both the FSB Differences Table and MDRs are consulted and compared with the operator's proposal. If the MDRs specify that level C devices are needed for training and checking between the base aircraft and a related aircraft and the Differences Table shows applicable level C design differences or maneuvers, then the POI should ensure that the proposed ODR table submitted also shows at least level C for those pertinent design or maneuver differences.

c. Base and Other Aircraft Identification.

(1) Selecting the Base Aircraft. Base aircraft are defined in Appendix 1. In general, base aircraft are used as reference for comparison of differences that affect, or could affect, pilot knowledge, skills, or abilities pertinent to flight safety. A base aircraft should typically be the aircraft that the operator trains to first, the aircraft that the operator has the largest number of, the aircraft most pilots fly frequently, or the aircraft that represents a configuration that the operator eventually will have as a standard. Another aircraft may be selected as a base aircraft when the previous base aircraft is being phased out, converted to a new configuration, or other such factors. A base aircraft may be reassigned at the discretion of the operator with FAA concurrence. A base aircraft is identified by make, type, and series or other distinguishing classifications. Classification should distinguish pertinent differences in configuration, handling characteristics, performance, procedures, limitations, controls, instruments, indicators, systems, installed equipment, options, or modifications.

(2) Identifying Related Aircraft. A related aircraft is an aircraft or a group of aircraft with the same characteristics that have pertinent differences from a base aircraft. Pertinent differences are those that require different or additional pilot knowledge, skills, and/or abilities that affect flight safety. Differences considered pertinent are those relating to configuration, handling characteristics, performance, procedures, limitations, controls, instruments, indicators, systems, installed equipment, options, or modifications. Related aircraft can exist between

different types or series or within a type or series. When identified in FSB reports, any aircraft included in a MDR table is considered a related aircraft. Like base aircraft, operators identify related aircraft by one of the following:

- Type/series;
- FAA registration "N number;"
- Operator tail number; or
- Any other classification that can uniquely distinguish pertinent differences between each related aircraft group and a base aircraft.

(3) Accounting for Each Related Aircraft. The important factor in base and related aircraft identification and ODR table preparation is that regardless of the combination used, there should be direct and complete traceability of both differences and compliance methods. There must be a clear description showing the adequacy of compliance methods to ensure proper training, checking, and currency to safely operate each aircraft assigned.

d. Approval of ODRs. Following review and determination that an operator's program addresses the FSB recommendations, the POI approves that particular program by signing ODRs. ODR tables are approved for each applicable related aircraft. Signature of ODRs or revisions, together with other relevant documents such as training programs and operations specifications (OpSpecs), constitute approval by the POI of that operator's differences and/or related aircraft differences training, checking, and currency program requirements. ODR tables are used for most programs. In instances where aircraft have only a few minor differences at level A, approval may take the form of a letter including necessary information in lieu of using tables.

e. FSB Revision of MDRs, Differences Tables, or Other FSB Recommendations. When requested, the FSB reviews an operator's proposals and if necessary, modifies MDRs, Differences Tables, and other FSB recommendations. Major changes in the MDR table may require review by the full FSB. The FSB may consider minor changes or interpretations on an ad hoc basis between FSB meetings for that aircraft. For some requests changes can be made based on existing or the supplied information. Complex cases may require testing to be conducted by the applicant before the MDR table is changed. Should the MDRs and/or Differences Tables be updated to accommodate a change request, the proposed ODR can be approved within the new MDRs and/or Differences Tables.

f. Proving Tests. When a related aircraft is introduced by an applicant, the requirements for proving tests may be effected. FAA Order 8900.1 describes policies for FAA approval of proving tests.

g. Line-Oriented Flight Training (LOFT) or SLF. When operators have LOFT or SLF programs and additional related aircraft are approved, the POI should review those LOFT or SLF programs to ensure applicability to each related aircraft. SLF in the aircraft, or in some instances FFS (as determined by the FSB), may be necessary in accordance with recommendations of the FSB report and with the approval of the POI.

h. OE. As described in this AC and FSB reports, OE is consistent with definitions and requirements of the applicable CFR.

i. Limitations on the Total Number of Related Aircraft. When mixed fleet flying involves pilots operating more than a base aircraft and a single additional related aircraft, additional constraints limiting the total number of aircraft may apply. When more than two related aircraft are flown, POIs should specifically ensure that subtle or compounded differences between the various related aircraft do not result in confusion of procedures, maneuvers, or limitations. ODRs proposed for the overall combination of aircraft to be flown should be examined to ensure the following:

(1) That multiple differences do not result in confusion of requirements or an excessive level of complexity for pilots to adjust to or retain important differences information;

(2) That subtle variations in difference information are not mistakenly applied and lead to unsafe conditions; and

(3) That the amount of difference information is not excessive, not applied to the wrong aircraft, or not forgotten.

j. Aircraft That Do Not Have an FSB Report. When an FSB report is not prepared for a given TC'd aircraft, or when MDRs, Differences Tables, or other recommendations are not shown, programs are approved in accordance with the applicable CFR, Order 8900.1, and other pertinent inspector guidance material.

8. APPLICATION OF FSB REQUIREMENTS.

a. General. FAA pilot certification inspectors and Designated Pilot Examiners (DPE) should be familiar with FSB recommendations regarding the proper administration of any necessary checks or evaluations for aircraft covered by the FSB report.

b. Checks Regarding Complex Systems.

(1) Checking is required for differences associated with systems that are determined to be at or greater than level B.

(2) Complex systems checks include hands-on operation and ensure demonstrated procedural proficiency in each applicable mode or function. Specific items and flight phases to be checked are specified (e.g., initialization, takeoff, departure, cruise, arrival, approach, and pertinent non-normals).

NOTE: The FSB may recommend additional training beyond that which is otherwise required by 14 CFR to qualify in each TC'd aircraft.

9. FSTD APPROVAL.

a. NSP Representation to the FSB. An NSP member may serve as an advisor to the FSB or as a member of the FSB, to address designation of and approval processes for FSTDs.

b. Coordination of NSP Criteria with the FSB. NSP development of criteria for FSTDs and approval test guides for new aircraft are coordinated with the FSB. This ensures compatibility of FSB/NSP requirements and effective use of resources for development of approval test guides and determination of FSB recommendations.

NOTE: FSTDs are qualified for use in accordance with part 60.

10. REVIEW AND APPROVAL. FSB reports are approved as designated by the Office of the Director (AFS-1). In the event that revision of an FSB report is necessary, the FSB is provided with necessary policy guidance to implement applicable changes.

11. APPEAL OF FAA DECISIONS. When there is disagreement with recommendations of an FSB report, that disagreement may be expressed to the FSB chairman for the pertinent TC'd aircraft. If an issue cannot be resolved, the issue may then be addressed to AFS-200. Additional information, data, or analysis may be provided to support differing views regarding the FSB recommendations in question.

APPENDIX 3. RATING AND LEVEL TESTS—PLANNING AND APPLICATION

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APPENDIX 3. RATING AND LEVEL TESTS—PLANNING AND APPLICATION

1. PREPARATION.

a. The type rating, difference level definition, and test process are initiated when an applicant presents an aircraft for type certification. If the applicant presents a candidate aircraft to the Flight Standardization Board (FSB) as a new aircraft type certification with no anticipated application for type rating credit for similarities with aircraft previously type certificated (TC), then the FSB analyzes the training program requirements using test T5. The results of T5 will determine a separate type rating and the minimum required training, checking, and currency standards as applicable to that TC'd aircraft. If the applicant presents an aircraft seeking pilot training, checking, or currency credit, based on similarities with an aircraft previously TC'd, a series of possible tests (T1/T2/T3) are developed and used to determine its level of difference with the base aircraft of comparison. The results of these tests will determine the minimum required training, checking, and currency standards as applicable to the candidate aircraft. T6 comparisons may permit common takeoff and landing credit (CTLC) between different TC'd aircraft. In Appendix 2, the details of these situations provide further amplification.

b. To begin the evaluation process for related aircraft, the applicant identifies the base aircraft and the candidate aircraft. The aircraft are then assigned to logical aircraft groups to be described in Master Difference Requirements (MDR) tables and the FSB report.

c. The applicant identifies major differences pertinent to the aircraft and makes comparisons with the proposed candidate aircraft. A differences document (i.e., an appropriate sample Operator Difference Requirements (ODR) table) summarizes the identified differences. Since combinations of related aircraft may be numerous and only typical differences are needed at this stage for test definition, the applicant may select representative ODRs for preparation.

d. Based on the above analysis (including preliminary flight test results or flight simulation estimates, if available), the applicant proposes difference levels to be specified in each cell of the MDR table for the various aircraft combinations.

e. The applicant proposes applicable elements of the test process (T1 through T5 and T6 for CTLC) and a plan for validation of the intended difference levels. Specific aircraft, times, devices, etc., are identified to conduct the required tests for the candidate aircraft. Included in the proposal are any necessary interpretations of expected results using established standards. Any special, unique, or additional definitions of successful outcomes are also identified.

f. The scope of T1 through T6 is keyed to basic visual flight rules (VFR) and instrument flight rules (IFR) operations in the National Airspace System (NAS).

g. A Federal Aviation Administration (FAA)/applicant agreement is reached on the grouping of aircraft, proposed tests, test plans, schedules, subjects, and interpretation of possible outcomes.

h. Test subject qualifications are addressed at the time of test specification when a test agreement is reached with the applicant. Test subjects for all tests except T6 are drawn from the FAA. Subject selection considers the factors such as the following:

(1) Background skills of test subject (previously qualified aircraft);

(2) General flight experience and currency;

(3) Test requirements such as location, short notice access, and skills needed for subjects;

(4) Technical areas, qualifications, or experience that subjects should not have to avoid test prejudice;

(5) Eventual FAA geographic or operator related distribution requirements for aviation safety inspectors (ASI), aircrew program managers (APM), and principal operations inspector (POI) personnel; and

(6) Other special experience as needed for a particular program.

i. During preparation for testing and evaluation of results, appropriate Aircraft Certification Flight Test Branch coordination is accomplished so that flight characteristic issues and, in particular, special flight characteristics can be suitably identified and addressed.

NOTE: Tests T1 and T2 must be conducted in the candidate aircraft for the determination of training, checking, and currency requirements. A full flight simulator (FFS) may be used for FSB-selected T-tests that involve partial task evaluation of systems or components that do not directly relate to aircraft handling qualities or core pilot skills. These types of tests would normally require only a training device with no visual or motion capabilities. The FSB chairman may elect to use a FFS before its qualification by the National Simulator Program (NSP).

2. TYPE RATING DETERMINATION THROUGH ANALYSIS—LEVEL A OR B TRAINING ONLY.

a. Typically, with the introduction of a new aircraft, or when training credit is sought in a comparison of a base and candidate aircraft, the T1 through T5 testing process determines type rating. Not all changes or modifications to an aircraft or on occasion, the certification of a related aircraft may require flight-testing to assess their impact upon type rating. Type rating determination through analysis may be considered if the changes do not influence aircraft handling, introduce no significant change to systems operation or pilot procedures, and can be addressed at level A or B training.

b. The analysis process can be used if the aircraft handling has not changed significantly. In most cases, it should be obvious that the change will not affect aircraft handling, but if additional data is needed to make the determination, the information can be obtained from the assigned FAA Aircraft Certification Service (AIR) or through the applicant's flight test data. Following is a list of typical changes evaluated through the analysis process:

(1) Maximum operating weights (revised aircraft Type Certificate Data Sheet (TCDS)).

(2) An engine type or thrust change that does not require significant design changes to aircraft flight controls.

(3) Maximum passenger capacity (revised aircraft TCDS).

(4) Avionics upgrades (Supplemental Type Certificate (STC) or manufacturer production line upgrade).

(5) Proven Electronic Flight Bag (EFB) installation (STC or manufacturer production line upgrade).

(6) Passenger to cargo conversions or freighter variation of passenger aircraft.

c. When the analysis process is completed, it is recorded as a revision to the training courseware and to the existing FSB report for the base and/or candidate aircraft.

3. FUNCTIONAL EQUIVALENCE—LEVEL A OR B TEST 1 (T1).

a. Test Purpose. The T1 test is conducted to determine if training level A or B is appropriate between the base and candidate aircraft.

NOTE: If the applicant communicates that the training and/or checking requirements for the candidate aircraft may exceed level B, the T1 test can be waived and the evaluation process then moves directly to the T2 test. By waiving the T1, the applicant acknowledges that differences exist between the base and candidate aircraft, and may demand that training and/or checking requirements up to but not exceeding level D are applied.

b. Test Subjects. Test subjects are designated FAA FSB members, trained, experienced, and current on the base aircraft with no training for the candidate aircraft. The applicant may provide proficiency training in the base aircraft to the designated FSB members before testing begins.

c. Test Process. Applicants initiate the test process when they propose that the minimum training and checking requirements for the base and candidate aircraft are no greater than level B differences. T1 is typically conducted using one group of test subjects. Subjects will initially be given a “no jeopardy” flight check for their base aircraft to calibrate performance before taking the pertinent flight check in the candidate aircraft being evaluated. The flight check undertaken in the candidate aircraft will address the differences between the base aircraft and candidate aircraft. The test may be administered or observed by more than one FSB member to ensure consistency and uniformity of test procedures and common understanding of subject performance and outcomes.

d. Safety Pilot. A “safety pilot,” serving as pilot in command (PIC) in the aircraft and functioning as pilot monitoring in either seat, will intervene to prevent damage to the aircraft or to limit maneuvers that endanger safety of flight.

e. Successful Test. FSB members decide the outcome of the T1 test consistent with previously agreed upon criteria. The FSB determines the areas of training required and specifies necessary devices or training limitations. If the T1 test is passed, the pertinent aircraft pairs are assigned to level A or level B training differences. Successful completion of T1 results in the designation of a type rating that is either the "same" as, or is "in common" with the base aircraft.

f. Failure of Test. If the T1 test is failed and retesting is not considered, level A or B cannot be assigned. This generally requires completion of T2 and T3. If requesting training credit, the applicant may ask for and receive credit for those items passed in T1. T1 retesting may be considered at the discretion of the FSB.

4. HANDLING QUALITIES COMPARISON BETWEEN AIRCRAFT—TEST 2 (T2).

a. Test Purpose. The T2 test compares handling qualities between the base and candidate aircraft. At the discretion of the FSB chairman, the T2 test may be completed through analysis, without requiring an aircraft flight. Determining if the analysis process can be used requires verification that the aircraft handling has not changed significantly as described in the "test process." In most cases, it should be obvious that the change will not affect aircraft handling, but if the determination requires additional data, the information is obtained from the assigned FAA Aircraft Certification Office (ACO) or through the applicant's flight test data. With FAA agreement, elements of T2 may be incorporated within the T3 test to verify that an advanced FFS or aircraft training is not needed to address handling qualities.

> **NOTE: If T2 is conducted on an aircraft that is expected to require a separate type rating with CTLC, credit will be validated by using the T6 process.**

b. Test Subjects. Test subjects are designated FAA FSB members who are trained, experienced, and current on the base aircraft with no training for the candidate aircraft. Training to proficiency may be provided in the base aircraft to the designated FSB members by the applicant before the start of testing.

c. Test Process. The applicant initiates the test process when they analyze available flight or simulation test data, and aircraft design or system differences, and determine that handling similarities exist between the base and candidate aircraft. From this determination applicants make their T2 proposal. Before the test, representatives of the FSB review the T2 test profile to ensure that critical handling quality aspects of the candidate aircraft are examined. The flight evaluation consists of relevant parts of a proficiency check as determined by the FSB chairman. T2 consists of a comparison between selected pilot qualification flight check maneuvers (normal and non-normal) administered first in the base aircraft (using either the actual aircraft or a level C or D FFS), then in the candidate aircraft. Although T2 testing should always be accomplished in the candidate aircraft, some portions that significantly affect aircraft safety, such as flight control failures, may be conducted in a FFS suitable for the test. Subject pilots are evaluated on performance of required maneuvers consistent with standards set by the CFR and an assessment of the degree of difficulty in performing maneuvers in the candidate aircraft compared to the base aircraft. The test may be administered or observed by more than one FSB

member to ensure consistency and uniformity of test procedures and common understanding of subject performance and outcomes.

d. Safety Pilot. The safety pilot serving as PIC in the aircraft and functioning as pilot monitoring in either seat will intervene to prevent damage to the aircraft or to limit maneuvers which endanger safety of flight. The safety pilot can only assist the subject pilot in areas unrelated to the handling qualities determination. For example, the safety pilot can remove impediments to progression of the test but cannot fly, coach, or train the subject on any aspect of the test related to handling, vision cues, or motion cues. The safety pilot may not actuate primary flight controls during the evaluation, or instruct, lead, or coach test subjects in any manner. The safety pilot may:

(1) Perform all routine pilot monitoring duties.

(2) Set up or adjust systems including those normally operated by the pilot flying in accordance with pretest agreements.

(3) Address or resolve procedural impediments.

(4) Manage and satisfy checklists.

(5) Make normal callouts.

e. Successful Test. The FSB members decide T2 test outcome consistent with previously agreed upon criteria. Acceptable pilot performance in completion of designated maneuvers, without training, establishes that the candidate and base aircraft are sufficiently alike in handling characteristics to permit assignment of level B, C, or D. The test process can then advance to the T3 test.

f. Failure of Test. Failure of T2 means that major handling differences exist during critical phases of flight or that numerous less critical differences were identified that warrant training in an FFS or aircraft. Accordingly, level E differences will be assigned and the FAA will issue a separate type rating. With a T2 failure, the next step in the testing process is T5 to validate level E requirements and the proposed training course. Failure of the T2 does not necessarily mean that the base and candidate aircraft do not share a high degree of system and/or handling commonality. The applicant may elect to use the data collected during the T2 process to justify approval of a shortened type rating course for pilots that are trained on the base aircraft and are transitioning to the candidate.

5. SYSTEM DIFFERENCES TEST AND VALIDATION OF TRAINING AND CHECKING—TEST 3 (T3).

a. Test Purpose. The T3 test is used to evaluate the proposed differences and/or related aircraft differences training, checking, and training devices at level B, C, or D.

b. Test Subjects. Test subjects are designated FAA FSB members, trained, experienced, and current on the base aircraft and have completed the applicant's proposed differences or related aircraft differences training in the candidate aircraft. Training to proficiency in the base aircraft may be provided to the designated FSB members by the applicant before the start of testing.

c. Test Process. T3 is a system difference test and a validation of training and checking. It is used when the equivalent handling test (T2) is successfully completed or when T2 is being incorporated as part of T3. T3 is administered in two phases following differences or related aircraft differences training of a pilot in the candidate aircraft.

(1) First Phase. The successful completion of a pilot qualification flight check to assess pilot knowledge, skills, and abilities pertinent to operation of the aircraft being tested. If a full check is proposed, the tests are similar to those used for T1 as described in paragraph 2 above. If a partial check is used, the process is similar, but the FSB determines the test items based on the applicant's proposals. The first phase will include either a proficiency check as defined by the applicable CFR part, partial proficiency check, or individual aircraft system operation check administered to pilots in the FFS or candidate aircraft. The check is administered assuming currency in the base aircraft and completion of the proposed training in the candidate aircraft.

(2) Second Phase. Line-oriented flying (LOF) follows completion of the flight check. The LOF phase of the test is used to validate the training and checking proposed, fully assess particular difference areas, examine implications of mixed fleet flying, assess special circumstances such as minimum equipment list (MEL) effects, and identify the effects of pilot errors potentially related to the differences. The test is done in a real line flight environment that includes typical weather, routes, airports, air traffic control (ATC), and other factors that are characteristic of those in which that aircraft will be operated. LOF tests may be conducted in test aircraft, FFS, or with a combination of these in conjunction with function and reliability aircraft type certification tests. The LOF portion of the test may be used to evaluate complex issues or issues that cannot be fully detailed in a brief flight check, since a check only samples pilot knowledge and skills in a limited and highly structured environment. LOF is an integral part of T3 and must be successfully completed before "initial" assignment of difference levels. In developing and selecting scenarios for evaluation, consider the following:

- Likelihood of occurrence,
- Possible consequences, or
- The timeliness of pilot discovery and correction.

d. Successful Test. The FSB members decide the outcome of the T3 consistent with previously agreed upon criteria and completion of LOF with appropriate pilot performance. Passing T3 leads to setting respective difference levels and validates differences and/or related aircraft differences training and checking at level B, C, or D between related aircraft.

e. Failure of Test. Failure of T3 occurs with either failure of the check, agreed criteria, or unsatisfactory performance during the LOF portion of the test. In certain failure cases, T3 can lead to assignment of level E and a separate type rating. When a T3 failure is due to deficiencies in the proposed training program, at the discretion of the FSB, T3 may be repeated using

different test subjects (pilots) following revision of the training program addressing the deficiencies. The following are examples that may lead to the assignment of level E differences:

(1) T3 experience or difficulties that show the need for assignment of training levels approaching typical initial/transition levels.

(2) T3 pilot performance that indicates that devices or methods associated with level D are not adequate to achieve training or checking objectives.

(3) Repeated failures of attempts to pass T3 test at level D training differences. In the case of retesting, new subjects may be required at the discretion of the FSB chairman.

NOTE: Repeated failure of test at level D differences by one or more subject's (pilot) inadequate performance, that is not an individual subject's failure due to subpar or atypical personal performance as determined by the FSB, may lead to assignment of level E differences.

6. CURRENCY VALIDATION—TEST 4 (T4).

a. Test Purpose. The T4 test is a currency test that can be used when an applicant seeks relief from existing FSB currency recommendations. In the context of this AC, currency addresses system procedural and maneuvering differences between related aircraft. T4 does not include takeoff and landing recency of experience.

b. Test Subjects. Designated FAA FSB members.

c. Test Process. If an applicant desires a change in the currency recommendations, a T4 test may be conducted. This test may be done before or after the aircraft enters into service. In the event the test cannot be done before entry into service, the FSB established limits apply. Criteria that may be used by the FSB to set differences for currency for initial FSB determinations include the following examples:

(1) Complex flight critical systems affecting control or navigation.

(2) Critical non-normal maneuvers differing between related aircraft (e.g., V1 engine failure, emergency descent, etc.), requiring one acceptable demonstration/training or checking event (typically 6 months but demonstration period may also vary by pilot position).

(3) Secondary systems (e.g., Oxygen or auxiliary power unit (APU)).

d. Successful Test. The FSB members decide the outcome of T4 consistent with previously agreed upon criteria. A successful test validates that the proposed less restrictive currency recommendations are accepted as a means of compliance with applicable rules, recommendations of this AC, and/or currency recommendations and provide an equivalent level of safety (ELOS).

e. Failure of Test. Failure indicates that the proposed less restrictive currency recommendations do not provide an ELOS. At the discretion of the FSB, retesting may be appropriate.

7. INITIAL OR TRANSITION TRAINING/CHECKING PROGRAM VALIDATION—TEST 5 (T5).

a. Test Purpose. T5 test validates the applicant's training course(s) at level E (new type rating). It is appropriate when:

- A full initial or transition training/checking program requires validation;
- An applicant seeks training credits between two aircraft with different type ratings (a typical goal under shortened training programs); or
- T2 or T3 are failed.

b. Test Subjects. Designated FAA FSB members.

c. Test Process. There are two methods to accomplish the T5 test process:

(1) Full Initial or Transition Training/Checking Program Validation. This method is used when an applicant has developed an aircraft and seeks a new type rating without any credit for commonality with any related aircraft. The applicant develops a training program to qualify and check pilots in the candidate aircraft at level E differences. Subjects are trained, given flight proficiency checks, and complete LOF in a process similar to that described in paragraph 5.

(2) Shortened Transition Training/Checking Program Validation. This method is used when an applicant has developed an aircraft and seeks a new type rating and credit for commonality with related aircraft. The applicant conducts a handling qualities evaluation based on the applicant's proposed ODR tables (similar to T2), followed by training and checking program validation (similar to T3). Subjects are trained, given flight proficiency checks, and complete LOF in a process similar to that described in paragraph 5.

> **NOTE: When an aircraft is assigned level E differences because of a failure of T3 test at level D differences, credit for successfully passing individual elements of the T3 test may be used as justification for not duplicating those elements in the T5 test.**

d. Successful Test. The FSB members decide the T5 outcome consistent with previously agreed upon criteria. A successful outcome of T5 validates the proposed training and checking programs.

e. Failure of Test. Failing T5 indicates the proposed training or checking programs require modification. A retest by mutual agreement between the FSB and applicant would normally be required.

8. COMMON TAKEOFF AND LANDING CREDIT (CTLC)—TEST 6 (T6).

a. Test Purpose. Applicants use T6 when they seek credit between related aircraft toward the takeoff and landing recency-of-experience requirements of the applicable CFR.

b. Test Subjects. The test should consist of a sufficient number of pilots not trained or qualified in the candidate aircraft. These subjects will be drawn from the manufacturer, industry, and the FAA that the FSB determines will represent a statistically relevant cross-section of operational pilots. The participants' experience levels, type ratings, and airplane currency should reflect the proficiency difference levels needed to validate testing assumptions.

c. Test Process. Test subjects are first provided refresher training in the base aircraft to establish a baseline of proficiency. This training may be accomplished in an approved C or D FFS. The subject is then tested in the candidate aircraft, without any training in it, accomplishing a minimum of three takeoffs and landings without use of the autopilot. It may not be practical to conduct some tests in an aircraft. An FFS may be used to conduct these tests. Test subjects should be evaluated on their ability to fly the aircraft manually through takeoff, initial climb, and approach and landing (including the establishment of final landing configuration). The applicant should consider the effects on the takeoff and landing maneuvers for the following factors when designing the T6 test:

(1) Aircraft weights.

(2) Aircraft center of gravity.

(3) Takeoff and landing crosswinds.

d. Successful Test. The FSB members decide the outcome of T6 consistent with the FAA practical test standards (PTS) by demonstrating that an ELOS can be maintained when full or partial credit for takeoffs and landings is given between the related aircraft.

e. Failure of Test. The test subjects' performance relative to the FAA PTS demonstrates an ELOS cannot be maintained when either full or partial credit for takeoffs and landings is given between the related aircraft.

Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by contacting the Air Transportation Division (AFS-200), or the Flight Standards Directives Management Officer at 9-AWA-AFS-140-Directives@faa.gov.

Subject: AC 120-53B CHG 1, Guidance for Conducting and Use of Flight Standardization Board Evaluations

Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

_____

_____

☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

_____

_____

☐ Other comments:

_____

_____

☐ I would like to discuss the above. Please contact me.

Submitted by: _____ Date: _____