U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Flight Standardization Board Evaluations

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This advisory circular (AC) provides guidance to those persons applying for a Flight Standardization Board (FSB) to have new or modified aircraft types and models evaluated for the purpose of determining minimum flightcrew training, checking, and currency recommendations; determining and establishing pilot type ratings; developing recommended aircraft type-specific training; and determining the scope of differences training and related aircraft differences training. This AC applies to aircraft manufacturers, type certificate (TC) holders, and aircraft modifiers seeking to use the FSB process.

Use of this AC enhances the safety of flight operations by providing a standard method of relating pilot training and qualification requirements to fleet characteristics, operating concepts, and pilot assignments; providing a consistent standard for determining necessary training resources or devices; encouraging aircraft manufacturers to design with the goal of developing common characteristics between related aircraft; and providing a recommended framework for application of suitable credits or constraints to address new technology and future safety enhancements.

This revision reformats the AC and replaces the appendices with chapters; adds new and revised definitions and acronyms; clarifies Aircraft Evaluation Division (AED) responsibilities; incorporates human factors (HF) considerations; revises references; clarifies pilot training, qualification, and type rating evaluation; updates rating and level tests planning and proposals; and removes operator Differences Tables (DT) and related principal inspector responsibilities.

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CHAPTER 1. GENERAL

1.1 Purpose of This Advisory Circular (AC). This AC describes standard systems, processes, and tests used by the Flight Standardization Board (FSB), managed by the Federal Aviation Administration's (FAA) Aircraft Evaluation Division (AED), to evaluate aircraft to determine minimum pilot training, checking, and currency; to determine type rating designations; to recommend aircraft type-specific training, and to establish minimum requirements for differences training and related aircraft differences training. It further provides guidance to applicants seeking FSB review.

1.1.1 When to Use This AC. This AC describes FSB evaluation of the following:

1.1.1.1 Newly Manufactured Aircraft, Modified Aircraft or Aircraft Not Previously Evaluated. It provides procedures for evaluating new or modified aircraft types and models or an aircraft with unique flight or handling characteristics to determine the appropriate pilot type rating[1] and recommend pilot training, checking, and currency for the applicable type rating.[2]

1.1.1.2 Systems or Equipment, Separately or as Part of an Aircraft/System Combination. It provides procedures for evaluating new and novel aircraft/systems, amended aircraft/systems, or Supplemental Type Certificates (STC) in accordance with FAA Order 8110.4, Type Certification, FAA Order 8110.48, How to Establish the Certification Basis for Changed Aeronautical Products, and FAA Order 8900.1, Volume 3, Chapter 19, Flightcrew Member Training and Qualification Programs, as applicable.

1.1.1.3 Differences and Related Aircraft Differences Training and Qualification Between Aircraft or Equipment. It describes procedures to determine the scope of differences in training and qualification between aircraft with the same type certificate (TC). It further describes an acceptable means for determining related aircraft differences training and qualification in Title 14 of the Code of Federal Regulations (14 CFR) part 121 between aircraft with different TCs that have been designated by the Administrator as related. Both of these processes result in an FSB Report (FSBR) that becomes the basis for the approval of training and qualification for pilots serving in operations in 14 CFR parts 91 subpart K (part 91K), 121, and 135.[3]

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[1] Title 14 of the Code of Federal Regulations (14 CFR) § 61.31(a) requires a person to hold a type rating to act as pilot in command (PIC) of the following aircraft: (1) large aircraft (except lighter-than-air), (2) turbojet-powered airplanes, (3) powered-lift, and (4) other aircraft specified by the Administrator through the type certificate (TC) procedures. The FSB is the mechanism the Administrator uses to make a type rating designation.

[2] Title 14 CFR §§ 61.63(d) and 61.157(b) contain the training requirements for a type rating. The Airman Certification Standards (ACS) or practical test standards (PTS) establish the required tasks and maneuvers for the practical test for a type rating. The FSB Report (FSBR) recommends the training necessary to satisfy 14 CFR §§ 61.63(d) and 61.157(b) and is used by training providers to obtain training program approval.

[3] Refer to 14 CFR §§ 91.1097(b), 121.418, and 135.341(b).

1.1.2 Safety Enhancement Through Use of This AC. Use of this AC enhances safety by:

1.1.2.1 Providing a standard method of assessing applicant proposals.

1.1.2.2 Directly relating pilot training and qualification to fleet characteristics, operating concepts, and pilot assignments.

1.1.2.3 Permitting better industry planning and management by outlining what training resources or devices are needed and what alternatives are possible.

1.1.2.4 Providing efficiencies in developing training between aircraft types with similar design and flight handling characteristics.

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

1.1.3 General.

Note: This is a guidance document. Its content is not legally binding in its own right and will not be relied upon by the Department as a separate basis for affirmative enforcement action or other administrative penalty. Conformity with the guidance document is voluntary only. Nonconformity will not affect rights and obligations under existing statutes and regulations.

1.1.3.1 The terms "must" and "will" in this AC indicate a mandatory requirement established by regulation that is to be followed when using the guidance in this AC. The term "should" is used in this AC to indicate a recommendation and not a requirement when using the guidance in this AC.

1.1.3.2 This AC describes a means to apply for operational evaluation of new or modified aircraft types by the FAA. This AC further explains how the Administrator exercises discretion under the regulations to evaluate aircraft to determine aircraft operational suitability, determine and recommend pilot type rating designations, recommend training for a type rating, and establish pilot training and qualification requirements for differences and related aircraft differences. If you use the means described in this AC, you should follow it in all important respects. While this is nonbinding guidance, you still must comply with the applicable regulations.

1.1.3.3 Since this AC represents an accepted means of compliance, an applicant seeking an alternative to any requirement or recommendation within this AC may need to discuss other means of compliance with the responsible AED branch in order to achieve compliance with applicable regulations for pilot training and qualification.

1.1.4 Summary of Revision. This revision incorporates multiple Air Carrier Training Aviation Rulemaking Committee (ACT ARC) recommendations[4] and is responsive to the applicable portions of sections 105, 115, 119, 124, and 128 of Public Law 116-260, Consolidated Appropriations Act, 2021, Division V, Aircraft Certification, Safety, and Accountability (ACSAA). It reformats the AC, moves the former appendices to the body of the AC, and reorders the chapters for more logical flow between technical data and process descriptions. The audience has been clarified to include aircraft to be operated under other than 14 CFR part 121. It adds emphasis to operational suitability for new or derivative aircraft and establishes flight criteria for FSB operational suitability assessments. It describes the use of non-FAA pilots and clarifies pilot training and rating determination in the FSB. This AC also (1) amends the FSB process for pilot training and checking and differences level tests and planning and proposals; (2) expands previously approved Master Differences Requirements (MDR); (3) clarifies nuances on T-Test discussions; and (4) revises T-Test subject descriptions and experience prerequisites. In response to ACSAA section 124(b), this revision incorporates human factors (HF) considerations in the FSB process. Additionally, definitions have been added or revised, including clarification of related aircraft terminology and operational use. The description of AED FSB responsibilities has been expanded and a new feedback form for the FSBR has been added. All figures have been updated, and the Simulator Differences Table (DT) has been removed. Finally, the AC has been retitled to reflect its content and purpose more accurately.

1.2 Audience. The primary audience for this AC includes aircraft manufacturers, TC holders, and aircraft modifiers who design, test, and certificate under 14 CFR and are seeking to use the FSB process managed by the FAA AED to determine pilot training and qualifications for new or modified aircraft types and models. The original version of this AC was for aircraft intended for operation by an air carrier under 14 CFR part 121. While some provisions such as the term "related aircraft" are defined and applicable only under 14 CFR part 121 regulations, training and qualification provisions also extend to variations of aircraft operated under 14 CFR parts other than part 121. Original Equipment Manufacturers (OEM), TC holders, and modifiers of aircraft to be operated under 14 CFR parts other than part 121 may also request an evaluation from the AED. The secondary audience for this AC includes air carriers, operators, and training providers who use FSB recommendations to develop training, checking, and currency programs, manuals, checklists, and training curricula.

1.3 Where You Can Find This AC. You can find this AC on the FAA's website at https://www.faa.gov/regulations_policies/advisory_circulars and the Dynamic Regulatory System (DRS) at https://drs.faa.gov.

1.4 What This AC Cancels. AC 120-53B, Guidance for Conducting and Use of Flight Standardization Board Evaluations, dated November 5, 2013, is canceled.

[4] The ACT ARC recommendations can be obtained at https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs200/afs280/act_arc.

1.5 Related 14 CFR Parts.

1.5.1 Aircraft Certification and Airworthiness:

- Part 21, Certification Procedures for Products and Articles.
- Part 23, Airworthiness Standards: Normal Category Airplanes.
- Part 25, Airworthiness Standards: Transport Category Airplanes.
- Part 27, Airworthiness Standards: Normal Category Rotorcraft.
- Part 29, Airworthiness Standards: Transport Category Rotorcraft.

1.5.2 Training and Simulation:

- Part 60, Flight Simulation Training Device Initial and Continuing Qualification and Use.
- Part 61, Certification: Pilots, Flight Instructors, and Ground Instructors.
- Part 141, Pilot Schools.
- Part 142, Training Centers.

1.5.3 Air Carriers and Air Operators:

- Part 91, General Operating and Flight Rules.
- Part 91 Subpart K, Fractional Ownership Operations.
- Part 121, Operating Requirements: Domestic, Flag, and Supplemental Operations.
- Part 125, Certification and Operations: Aircraft Having a Seating Capacity of 20 or More Passengers or a Maximum Payload Capacity of 6,000 Pounds or More; and Rules Governing Persons On Board Such Aircraft.
- Part 129, Operations: Foreign Air Carriers and Foreign Operators of U.S.-Registered Aircraft Engaged in Common Carriage.
- Part 133, Rotorcraft External-Load Operations.
- Part 135, Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons On Board Such Aircraft.
- Part 137, Agricultural Aircraft Operations.

1.5.4 Other:

- Part 1, Definitions and Abbreviations.
- Part 97, Standard Instrument Procedures.
- Part 117, Flight and Duty Limitations and Rest Requirements: Flightcrew Members.

1.6 Definitions. The terms in this AC are defined for use exclusively in this AC.

1.6.1 Air Carrier. Refer to 14 CFR § 1.1.

1.6.2 Aircraft Evaluation Division (AED) Summary Report. A report developed by the AED which provides a record of the operational evaluations conducted in accordance with the Type Inspection Authorization (TIA) or Letter of Authorization (LOA) to provide a record of the aircraft configuration presented for the evaluation.

1.6.3 Applicant. For the purposes of this AC, an applicant is an aircraft OEM, modifier, TC holder, or any person who can provide the means to justify the request (e.g., an aircraft and/or device necessary to perform the test).

1.6.4 Base Aircraft. The first aircraft of a type or model, or an aircraft identified by the applicant, to use to compare differences with the candidate aircraft.

1.6.5 Candidate Aircraft. The aircraft that will be subjected to the FSB evaluation process outlined in this AC.

1.6.6 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 pilot flightcrew member certification, it will be considered a practical test and must be administered by the FAA or a designated examiner. Failure of checks conducted during an FSB evaluation will not constitute negative consequences to the participating airman's pilot certificate.

1.6.6.1 Types of Checks.

1.6.6.1.1 Full Proficiency Check (FPC). An FPC is a knowledge and skill assessment in accordance with 14 CFR part 61 and the appropriate Airman Certification Standards (ACS)/practical test standards (PTS).

1.6.6.1.2 Partial Proficiency Check (PPC). A PPC is conducted on a variation of the aircraft covering all pertinent differences.

1.6.6.1.3 Systems Check. An oral or written check conducted on a variation of the aircraft covering all pertinent differences.

1.6.7 Common Takeoff and Landing Credit (CTLC). CTLC is a proposal/process that identifies 14 CFR part 121 recency-of-experience credit between related aircraft (same make) with different TCs that can be demonstrated to have an equivalent level of safety during takeoff and initial climb, and approach and landing, including the establishment of final landing configuration. Refer to 14 CFR § 121.434(a)(4).

1.6.8 Compliance Checklist. A worksheet used to determine the applicable operational requirements of 14 CFR and whether the aircraft meets them to operate in the National Airspace System (NAS). (See Chapter 2, Figure 2-1, Sample Flight Standardization Board Compliance Checklist with Examples.)

1.6.9 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.

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

1.6.11 Device. See the definition for "Flight Simulation Training Device (FSTD)" below.

1.6.12 Differences Levels. For the purpose of an FSB, training and checking differences levels are determined by training and checking methods that satisfy difference requirements between related aircraft or aircraft variations. A range of five differences levels in order of increasing rigor are identified as A through E. See Chapter 3, paragraph 3.2.3 for an explanation of differences levels.

1.6.13 Differences Tables (DT). Tables within the FSBR that describe the differences between the base and candidate aircraft and the minimum levels of training an operator (under 14 CFR part 91K, 121, or 135) may use to conduct differences training and checking of crewmembers. These tables have been validated by the FSB; if not, the table will state "not evaluated" (see Chapter 3, Figure 3-3, Differences Tables—Design, and Figure 3-4, Differences Tables—Maneuvers). DTs are determined by the FAA as a product of a successful FSB evaluation.

1.6.14 Differences Training. The training required for crewmembers who have qualified and served on a particular type aircraft, when the Administrator finds differences training is necessary before a crewmember serves in the same capacity on a particular variation of that aircraft (refer to 14 CFR §§ 91.1063(d)(4), 121.400(c)(5),[5] and 135.321(b)(4)).

1.6.15 Evaluation Plan. A proposal submitted for validation by the applicant and accepted by the AED to outline FSB operational activities, including determining minimum flightcrew training, checking, and currency recommendations; determining pilot type rating; recommending aircraft type-specific training; and determining the scope of differences training, as applicable.

1.6.16 Flight Characteristics. The aerodynamic or performance characteristics perceivable by a pilot relating to the natural response of an aircraft to system inputs (e.g., primary flight control surfaces, various types of landing gear, effects of external accessories, etc.), as affected by changes in configuration and/or flightpath parameters (e.g., lift or drag devices, pitch/yaw/roll inputs, power settings, airspeed change, etc.).

1.6.17 Flight Simulation Training Device (FSTD). Per 14 CFR § 1.1, a full flight simulator (FFS) or a flight training device (FTD).

[5] Under 14 CFR § 121.418(a), differences training must consist of the same training as required for initial training on the type of aircraft unless the Administrator finds that subjects, maneuvers, or procedures are not necessary.

1.6.18 Flight Standardization Board (FSB). A group of FAA personnel responsible for evaluating aircraft to: determine the appropriate type rating required; recommend the appropriate training for a type rating; determine minimum flightcrew training, checking, and currency recommendations; and establish the minimums for differences and related aircraft differences training and checking. The board members are selected by the FSB Chair and may include representatives from the Office of Safety Standards (OSS), the Aircraft Certification Service (AIR), or Flight Standards (FS) Operations inspectors.

1.6.19 FSB Chair. The person appointed by the AED manager of the appropriate AED branch responsible for conducting the FSB and Flight Operations Evaluation Board (FOEB) for an aircraft fleet. The FSB Chair is usually an AED Operations inspector assigned to the aircraft certification project. A Co-chair may serve as alternate FSB Chair. This term is synonymous with the outdated terms "Chairperson" or "Chairman" used in other contexts.

1.6.20 FSB Members. Individuals identified by the FSB Chair based on size, scope, and specific requirements necessary to complete the evaluation, which may include Operations inspectors, FAA test subjects, OSS representative(s), and Technical Advisors.

1.6.21 FSB Report (FSBR). An FSBR is a published report written by FSB members, identifying the recommended training, checking, and currency for a type rating, and minimum training required for differences between the base, candidate, and related aircraft, if applicable.

1.6.22 Flight Training Device (FTD). Per 14 CFR § 1.1, a replica of aircraft instruments, equipment, panels, and controls in an open flight deck area or an enclosed aircraft cockpit replica. It includes the equipment and computer programs necessary to represent aircraft (or set of aircraft) operations in ground and flight conditions having the full range of capabilities of the systems installed in the device as described in 14 CFR part 60 and the Qualification Performance Standards (QPS) for a specific FTD qualification level.

1.6.23 Full Flight Simulator (FFS). Per 14 CFR § 1.1, a replica of a specific type; or make, model, and series (M/M/S) aircraft cockpit. It includes the assemblage of equipment and computer programs necessary to represent aircraft operations in ground and flight conditions, a visual system providing an out-of-the-cockpit view, a system that provides cues at least equivalent to those of a three-degree-of-freedom motion system, and has the full range of capabilities of the systems installed in the device as described in 14 CFR part 60 and the QPS for a specific FFS qualification level, Level A, B, C, or D.

1.6.24 Function and Reliability (F&R) Flight Testing. The flight tests conducted by AIR after the applicant shows compliance with the applicable type certification regulations and requirements. For more details regarding F&R testing, refer to 14 CFR §§ 21.35 and 21.39, and Order 8110.4, Subparagraph 2-6w, Function and Reliability (F&R) Flight Testing.

1.6.25 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., the ailerons, elevator, rudder, spoilers, cyclic, collective, etc.).

1.6.26 Handling Qualities. The qualities or characteristics of an aircraft that govern the ease and precision with which a pilot is able to perform the tasks required of an aircraft role.[6] This includes handling characteristics and flight characteristics.

1.6.27 Human Factors (HF). HF is a multidisciplinary field that generates and compiles information about human capabilities and limitations, and applies it to design, development, and evaluation of equipment, systems, facilities, procedures, jobs, environments, staffing, organizations, and personnel management for safe, efficient, and effective human performance (refer to FAA Order 9550.8, Human Factors Policy).

1.6.28 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 (MFF), assesses special circumstances such as the Master Minimum Equipment List (MMEL) effects, and evaluates the effects of pilot errors potentially associated with the differences.

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

1.6.30 Mixed Fleet Flying (MFF). MFF 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 differences levels between related aircraft.

1.6.31 Operational Evaluation. A process to determine pilot type rating, recommend training for a type rating and unique or special airman training (e.g., specific flight characteristics or handling qualities such as a no-flap landing or the addition of new technology), and establish the minimum requirements differences and related aircraft differences training.

1.6.32 Operational Suitability. The extent to which an aircraft or system is acceptable for its intended operations, meets the applicable regulatory requirements, and can be operated safely in the NAS.

1.6.33 Operator. An air carrier or air operator conducting operations under 14 CFR part 91K, 121, 125, 129, 133, 135, or 137. The FSBR designates 14 CFR applicability for its recommendations.

1.6.34 Operator Differences 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

[6] Cooper, G.E. and Harper, R.P., "The Use of Pilot Rating in the Evaluation of Aircraft Handling Qualities," NASA TN D-5153. April 1969.

related aircraft differences training programs and provide a basis for FAA approval of MFF.

1.6.35 Production Equivalent Aircraft or FFS. A new or candidate aircraft (or FFS) as determined by the FAA National Simulator Program (NSP), which represents the TC M/M/S aircraft to be operated in the NAS at the completion of the FSB and TC project, in accordance with Order 8110.4, Chapter 2, Type Certification Process.

1.6.36 Qualification. In the context of an operator, the process by which a flight crewmember completes an operator's FAA-approved program, including all training, testing, and checking requirements, for the aircraft type and duty position.

1.6.37 Related Aircraft. Title 14 CFR § 121.400(c)(10) defines "related aircraft" as "any two or more aircraft of the same make with either the same or different type certificates that have been demonstrated and determined by the Administrator to have commonality to the extent that credit between those aircraft may be applied for flightcrew member training, checking, recent experience, operating experience, operating cycles, and line operating flight time for consolidation of knowledge and skills." Related aircraft differences training defined in 14 CFR § 121.400(c)(11) applies when used as part of a 14 CFR part 121 training and qualification program.

1.6.38 Safety Pilot. For the purposes of the FSB, the pilot serving as pilot in command (PIC) as applicable based on aircraft design and AED risk management whose primary role is to intervene to prevent damage to the aircraft or to limit maneuvers which endanger the flight.

1.6.39 Seat-Dependent Tasks. Maneuvers or procedures using controls that are accessible or operable from only one flightcrew member seat.

1.6.40 Special Emphasis Area. Training unique to the aircraft, based on a system, procedure, or maneuver, which requires additional highlighting during training. It may also require additional training time or a specialized FSTD or training equipment.

1.6.41 Specific Flight Characteristics. A maneuver or procedure with unique handling or performance characteristics that the FSB has determined the pilot must be trained in and checked for competency or proficiency as referenced in FAA-S-ACS-11, Airline Transport Pilot and Type Rating for Airplane Airman Certification Standards; FAA-S-8081-20, Airline Transport Pilot and Aircraft Type Rating Practical Test Standards for Rotorcraft Category Helicopter Rating; FAA-S-ACS-17, Airline Transport Pilot and Type Rating for Powered-Lift Category Airman Certification Standards; and/or 14 CFR part 121 appendix F.

1.6.42 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 (e.g., new systems, new operations, experience for a particular pilot position, or special characteristics).

1.6.43 Technical Advisors. Provide technical assistance to the FSB and may include FAA Academy flight instructors, AIR engineers, flight test pilots (FTP), HF specialists, and representatives from OSS.

1.6.44 Test Subjects. FSB test subjects are pilots selected by the FSB to take the applicant's proposed aircraft training and undergo T-Test evaluation to determine the effectiveness of the training.

1.6.45 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 14 CFR part. 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., XX-747-400), if applicable.

1.6.45.1 Common Type Rating. "Common type rating" is a term used in certain FSBRs for 14 CFR part 121 air carriers to describe a relationship between type ratings for aircraft of the same make 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 qualities) and T3 (core pilot skills with no greater than Level D training differences).

1.6.45.2 Same Type Rating. 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.

1.7 Related Reading Material (current editions).

1. FAA Order 8110.4, Type Certification.
2. FAA Order 8110.48, How to Establish the Certification Basis for Changed Aeronautical Products.
3. FAA Order 8110.112, Standardized Procedures for Usage of Issue Papers and Development of Equivalent Levels of Safety Memorandums.
4. FAA Order 8430.21, Flight Standards Division, Aircraft Certification Division, and Aircraft Evaluation Group Responsibilities.
5. FAA Order 8900.1, Flight Standards Information Management System.
6. FAA Order 9550.8, Human Factors Policy.
7. AC 00-74, Avionics Human Factors Considerations for Design and Evaluation.
8. AC 21-40, Guide for Obtaining a Supplemental Type Certificate.
9. AC 21.101-1, Establishing the Certification Basis of Changed Aeronautical Products.
10. AC 25.1309-1, System Design and Analysis.

11. AC 120-35, Flightcrew Member Line-Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, Line Operational Evaluation.
12. AC 120-51, Crew Resource Management Training.
13. ACS, as applicable (available at https://www.faa.gov/training_testing/testing/acs):
    - FAA-S-ACS-6, Private Pilot – Airplane Airman Certification Standards.
    - FAA-S-ACS-7, Commercial Pilot – Airplane Airman Certification Standards.
    - FAA-S-ACS-8, Instrument Rating – Airman Certification Standards.
    - FAA-S-ACS-10, Remote Pilot – Small Unmanned Aircraft Systems Airman Certification Standards.
    - FAA-S-ACS-11, Airline Transport Pilot and Type Rating for Airplane Airman Certification Standards.
    - FAA-S-ACS-12, Commercial Pilot – Military Competence Airman Certification Standards.
    - FAA-S-ACS-17, Airline Transport Pilot and Type Rating for Powered-Lift Category Airman Certification Standards.

1.8 Background. The AED was established to meet FAA's operations responsibilities during the type certification process. The AED is comprised of Operations inspectors, Airworthiness inspectors, and HF specialists who work directly with aircraft certification personnel to contribute an operational perspective to engineering activities. The AED advises manufacturers of applicable operational and maintenance requirements during the design and certification process, evaluates continuing airworthiness requirements of newly certificated or modified aircraft and parts, and addresses FS considerations during type certification. The AED manages the FSB, which establishes type ratings, recommends training for a type rating, and establishes minimum training, checking, and currency for differences and related aircraft differences training, when requested or required by rule. FSB responsibilities encompass the processes linked to aircraft certification contained in Order 8110.4, Order 8110.48, and Order 8900.1, Volume 19, Aircraft Evaluation Division.

1.9 Discussion. When requested by industry or required by regulation,[7] the AED, through the conduct of an FSB, undertakes analyses of new and related aircraft and their associated systems, for the purpose of providing recommendations for a pilot type rating, pilot training and qualification, and determination of operational suitability, based on the operational parts of 14 CFR under which the aircraft or system(s) will operate. These recommendations are documented in FSBRs for each specific or related aircraft and may be used by an operator to develop its training and qualification proposals. FSB activities include, but are not limited to:

[7] Refer to 14 CFR §§ 61.31(a), 61.63(d), 61.157(b), 91.1097(b), 121.418, and 135.341(b).

1. Participation in compliance and TIA testing to evaluate the operational suitability of an aircraft and its systems,
2. Review of Aircraft Flight Manuals (AFM) and revisions,
3. Establishment of type rating requirements,
4. Participation in crew complement determinations,
5. Participation in emergency evacuation demonstrations,
6. Determination of the acceptability of flightcrew sleeping quarters and flight deck observer seats,
7. Establishment of any unique or special training requirements,
8. Participation in F&R testing,
9. Serving as a member of the Type Certification Board (TCB),
10. Determination of the operational suitability of the aircraft, and
11. Creation and closure of issue papers linked to aircraft certification.

CHAPTER 2. T-TESTS USED TO EVALUATE TYPE RATINGS AND PILOT TRAINING, CHECKING, AND CURRENCY

2.1 Preparation. An FSB is typically initiated following an application for a type certificate (TC) or change to a TC (amended TC or Supplemental Type Certificate (STC)) and notification of a certification project from the Aircraft Certification Service (AIR). Alternatively, the applicant may notify the Aircraft Evaluation Division (AED) directly to request an FSB.

2.1.1 Flight Standards (FS) and AIR Activity Overlap. FSB activities may be performed concurrently with Function and Reliability (F&R) testing upon mutual agreement between the applicant, AIR, and the AED. However, it is important for all parties concerned to understand the risk of not being able to incorporate all the findings discovered in F&R into the FSB evaluated aircraft report. AED operational suitability evaluations for new or modified aircraft should be carried out during certification testing to the maximum extent possible without compromising safety. It is preferred that F&R occurs prior to the FSB, but if conducted concurrently with the FSB in accordance with FAA Order 8110.4, Type Certification, then the applicant should recognize and accept the following risks:

- The FSB may not be able to evaluate the final Aircraft Flight Manual (AFM).
- The FSB may need to be paused and rescheduled for later if significant F&R failures occur or are noted during parallel certification activities.
- The FSB tasks may need to be repeated in the event of an F&R test failure(s).

2.1.2 FSB Activity Request Process. The type rating, differences 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 FSB as a new aircraft type certification with no anticipated application for type rating credit for similarities with aircraft previously type certificated, then the FSB analyzes the training proposal requirements using the Initial Type Rating Training/Checking or Transition Training/Checking Validation—Test 5 (T5). The results of T5 will determine a separate type rating and the recommended training, checking, and currency for that type rating. If the applicant presents an aircraft seeking pilot training, checking, or currency credit, based on similarities with an aircraft previously type certificated, a series of possible tests including the Type Rating Determination Through Analysis—Level A or B Training Only, Functional Equivalence—Level A or B Test 1 (T1), Handling Qualities Comparison Between Aircraft—Test 2 (T2), and System Differences Test and Validation of Training and Checking—Test 3 (T3) are developed and used to determine its level of difference with the base aircraft of comparison (see Chapter 3, FSB Evaluation and Development of Report Recommendations, paragraphs 3.2.4 and 3.2.5). The results of these tests will determine the recommended training, checking, and currency standards applicable to the candidate aircraft. Currency Validation—Test 4 (T4) is used when an applicant seeks an alternate schedule from existing FSB currency recommendations. Common Takeoff and Landing Credit (CTLC)—Test 6 (T6) may permit credit for certain operations between

different type-certificated aircraft under 14 CFR part 121. Chapter 3 provides more detailed guidance.

2.1.3 Evaluation of Aircraft Differences. To begin the evaluation process for determining aircraft differences, the applicant identifies the base aircraft and the candidate aircraft. The main differences are identified in the Differences Tables (DT), and, if applicable, the aircraft are then assigned to aircraft groups to be described in Master Differences Requirements (MDR) tables and the FSB Report (FSBR).

2.1.4 Identification of Differences. The applicant identifies aircraft differences with impact on the minimum flightcrew training, checking, and currency recommendations and makes comparisons with the proposed candidate aircraft. A preliminary DT summarizes the identified differences. Since combinations of related aircraft may be numerous, only typical differences are needed at this stage for test definition. Based on the analysis (including preliminary flight test results or flight simulation estimates, if available), the applicant proposes initial or differences levels to eventually be specified in the DT and, if applicable, in the MDR table for the various aircraft combinations.

2.1.5 Proposed Elements of Test Process. The applicant proposes applicable elements of the test process (T1 through T5 and T6 for CTLC) in an evaluation plan. The applicant proposes specific aircraft, times, flight simulation training devices (FSTD), etc., to conduct the required tests for the candidate aircraft as applicable to the T-Test process. The AED evaluation of operational suitability should be limited to flights necessary for the completion of pilot type rating training and qualification determinations. The FSB Chair, along with the applicant, quantifies required number of flights, sorties, specific test points, and/or maneuvers prior to the operational evaluation. The applicant should include in its proposal any interpretations of expected results using established standards, and any operational evaluation tasks necessary to determine 14 CFR compliance for the pilot to operate in the National Airspace System (NAS). If the FAA operational suitability assessment could not be completed during the type rating, the applicant may propose alternative ways to allow the FSB to validate aircraft or aircraft systems and equipment suitability. One method of demonstrating that the aircraft complies with all applicable 14 CFR regulations for the intended operating 14 CFR part(s) is through the use of a Compliance Checklist. See Figure 2-1 for an example. The applicant should also identify any special, unique, or additional definitions of successful outcomes.

Figure 2-1. Sample Flight Standardization Board Compliance Checklist With Examples

14 CFR Reference	Requirement	Equipment	FSB Remarks
§ 61.4(a)(1) and (2)	(a) Each flight simulator used for training must be qualified and approved for— (1) The training, testing, and checking for which it is used; and (2) Each particular maneuver, procedure, or crewmember function performed.	Deicing.	Production equivalent aircraft did not have a deice option for FSB validation, so the National Simulator Program (NSP) will need to conduct a separate evaluation.
§ 61.45(b)(1)(i)	(b) Required equipment (other than controls). [...] (i) The equipment for each area of operation required for the practical test.	Cockpit voice recorder (CVR).	AFM was missing a prestart checklist item for crew prior to flight.
§ 91.205(d)(2)	(d) Instrument flight rules. [...] (2) Navigation equipment suitable for the route to be flown.	Flight management system (FMS).	Very high frequency omni-directional range (VOR) and automatic direction finder (ADF) are not included in prep and check, therefore, an additional flight is required for (full flight simulator (FFS) to aircraft) validation.
…			

2.1.6 Test Scope. The scope of T1 through T6 is keyed to basic visual flight rules (VFR) and/or instrument flight rules (IFR) operations in the NAS.

2.1.7 Application Acceptance. An FAA/applicant agreement is reached on the grouping of aircraft, proposed tests, evaluation plans, schedules, test subjects' expected qualifications, and interpretation of possible outcomes. The FSB Chair will provide feedback to the applicant on its proposal. If the applicant makes any changes to what has already been agreed upon, the applicant will be required to obtain a new acceptance from the FSB Chair prior to conducting an evaluation.

2.1.8 Test Subject Selection. Test subjects are trained, experienced, and current on the base aircraft, if applicable, with no training for the candidate aircraft. The FSB selects FAA

employees to be test subjects. The FSB may also select non-FAA industry pilots to participate as test subjects. In those cases, the applicant would identify the industry pilots and submit them for FSB acceptance. Non-FAA test subjects participating in testing would not be FSB members. Industry pilot participation is subject to applicable legal requirements and restrictions.

Note: Test subjects may include the 14 CFR part 142 Training Center Program Manager (TCPM) or Fleet Training Program Manager (FTPM), if applicable, at the discretion of the FSB Chair.

2.1.8.1 Test Subject Qualifications. Test subject qualifications are addressed at the time of test specification when a test agreement is reached with the applicant. The FSB selects test subjects for all T-Tests, which include FAA employees and may also include industry pilots. FSB test subjects for projects involving operational evaluations of transport airplanes with 30 or more passenger seats, or all-cargo or combi derivatives of such an airplane, include pilots of varying levels of experience from air carriers and foreign air carriers that are expected to operate the airplane. Subject selection considers 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) and aircrew program managers; and
6. Other special experience as needed for a particular proposal, or deemed necessary by regulations.

2.1.8.2 Number of Test Subjects. The number of test subjects for a T-Test will be determined by mutual agreement between the FAA and the applicant with consideration for the scope of the project (e.g., evaluation of a new, derivative, or modified aircraft; evaluation of operational capability; evaluation of credits based on aircraft commonalities; etc.) as well as the type of evaluation being conducted (e.g., T2, T3, T5, etc.).

2.1.9 Coordination with AIR for Flight Testing. During preparation for testing and evaluation of results, the FSB Chair coordinates with the appropriate Flight Test and Human Factors Branch (AIR-710) section so that flight characteristic issues, and, in particular, specific handling qualities can be suitably identified and addressed.

Note: Tests T1 and T2 are conducted in the candidate aircraft or FFS[8] for the determination of training, checking, and currency requirements. An alternate FSTD 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.

2.1.10 Safety Pilot. For the purposes of the FSB, the safety pilot will be provided by and represent the applicant as the pilot in command (PIC), as applicable, based on aircraft design and AED risk management. The safety pilot can only assist the subject pilot in areas unrelated to the handling qualities determination. 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.

2.2 Type Rating Determination Through Analysis—Level A or B Training Only.

2.2.1 Analysis Process. Typically, with the introduction of a new aircraft, or when training credit is sought in 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 the certification of a related aircraft 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.

2.2.2 Changes Evaluated Through the Analysis Process. The analysis process can be used if the aircraft modifications do not affect its handling or flight characteristics[9] as determined by the FSB Chair. Application of a type rating through analysis should be proposed through the applicable AIR or AED branch, as appropriate. 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 AIR branch or through the applicant's flight test data. The following is a list of typical changes evaluated through the analysis process:

[8] T-Tests in an FFS without a validation in the aircraft is at the discretion of the FSB based on the FFS fidelity (realistic indications) and approval from the NSP or attestation that the device is representative of a production equivalent of the aircraft and accepted by the FAA.

[9] Title 14 CFR § 1.1: "Type: (1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a specific make and basic model of aircraft, including modifications thereto that do not change its handling or flight characteristics. Examples include: DC–7, 1049, and F–27[.]"

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

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

2.2.2.3 Maximum passenger capacity (revised aircraft TCDS).

2.2.2.4 Minor avionics upgrades (through STC or manufacturer production line upgrade).

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

2.2.2.6 Passenger to cargo conversions or freighter variations of passenger aircraft.

2.2.3 Completion Activities. When the analysis process is completed, outcomes may be documented as a revision to the existing FSBR for the base and/or candidate aircraft, in an AED Summary Report, or in an Operational Suitability Report.

2.2.4 Evaluation by Analysis. An applicant may submit an alternate evaluation plan and propose the criteria for how the FAA may conduct the evaluation by analysis to produce an equivalent level of safety to the current T-Test process found in this AC.

2.3 Functional Equivalence—Level A or B Test 1 (T1).

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

Note 1: If the applicant communicates that the training and/or checking requirements for the candidate aircraft are expected to stay within the Level A or B threshold but includes a T2 test in its proposal, the T1 and T2 tests may be combined by mutual agreement between the applicant and the FSB.

Note 2: 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 understands that training and/or checking requirements up to but not exceeding Level D will apply.

2.3.2 T1 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 flight check for their base aircraft (in an aircraft or appropriate FFS) to calibrate performance before taking the pertinent flight check in the candidate

aircraft or FFS.[10] 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.

2.3.3 T1 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.

2.3.4 T1 Failure of Test. If the T1 test fails and retesting is not considered, Level A or B training and checking differences 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.

2.4 Handling Qualities Comparison Between Aircraft—Test 2 (T2).

2.4.1 T2 Test Purpose. The T2 test compares handling qualities between the base and candidate aircraft or FFS[11] and establishes whether changes in the number and magnitude of systems, procedures, and pilot interactions with aircraft flight controls for two aircraft can be reasonably designated to be the same type rating, or designated as related aircraft. At the discretion of the FSB Chair, the T2 test may be completed through analysis without requiring an aircraft or FFS flight. Determining if the analysis process can be used typically requires verification that the aircrew 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 AIR branch or through the applicant's flight test data (e.g., simulation data, flight test data, or subject matter expert (SME) feedback). With FAA agreement, elements of T2 may be incorporated within the T3 test to verify that an 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.

2.4.2 T2 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 or FFS.[12] From this

[10] T-Tests in an FFS without a validation in the aircraft is at the discretion of the FSB based on the FFS fidelity (realistic indications) and approval from the NSP or attestation that the device is representative of a production equivalent of the aircraft and accepted by the FAA.
[11] T-Tests in an FFS without a validation in the aircraft is at the discretion of the FSB based on the FFS fidelity (realistic indications) and approval from the NSP or attestation that the device is representative of a production equivalent of the aircraft and accepted by the FAA.
[12] T-Tests in an FFS without a validation in the aircraft is at the discretion of the FSB based on the FFS fidelity (realistic indications) and approval from the NSP or attestation that the device is representative of a production equivalent of the aircraft and accepted by the FAA.

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 are examined. The flight evaluation consists of relevant parts of a proficiency check as determined by the FSB Chair. 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 an FFS), then in the candidate aircraft or FFS.[13] Although T2 testing should be accomplished in the candidate aircraft, an FFS may be used for the test. Test subjects are evaluated on performance of required maneuvers consistent with standards set by the applicable 14 CFR part 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, at the discretion of the FSB Chair, to ensure consistency and uniformity of test procedures and common understanding of subject performance and outcomes.

2.4.3 T2 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 qualities to permit assignment of Level B, C, or D differences. The test process can then advance to the T3 test.

2.4.4 T2 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 pilot certificate aircraft type designation. 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.

2.5 System Differences Test and Validation of Training and Checking—Test 3 (T3).

2.5.1 T3 Test Purpose. The T3 test is used to evaluate the proposed differences and/or related aircraft differences training and checking, in devices or aircraft, as appropriate.

2.5.2 T3 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 test subject in the candidate aircraft or FFS.[14]

[13] T-Tests in an FFS without a validation in the aircraft is at the discretion of the FSB based on the FFS fidelity (realistic indications) and approval from the NSP or attestation that the device is representative of a production equivalent of the aircraft and accepted by the FAA.

[14] T-Tests in an FFS without a validation in the aircraft is at the discretion of the FSB based on the FFS fidelity (realistic indications) and approval from the NSP or attestation that the device is representative of a production equivalent of the aircraft and accepted by the FAA.

Note: With the FAA's agreement, elements of T2 may be incorporated within the T3 test, except when the T2 test is completed through analysis without requiring an aircraft or FFS flight (per paragraph 2.4.1 above).

2.5.2.1 **First Phase.** After test subjects receive the applicant's proposed training, they take 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 2.3 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 full proficiency check (FPC) as defined by the applicable 14 CFR part, partial proficiency check (PPC) or systems check administered to pilots in the FFS or candidate aircraft.

2.5.2.2 **Second Phase.** Line-oriented flying (LOF) follows completion of the proficiency check. The LOF phase of the test is used to validate the training and checking proposed, fully assess particular difference areas, examine the number and magnitude of systems, procedures, and pilot interactions with aircraft flight controls relative to implementing Mixed Fleet Flying (MFF), assess special circumstances such as Master Minimum Equipment List (MMEL) 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 F&R aircraft type certification tests. Since a check only samples pilot knowledge and skills in a limited and highly structured environment, 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.

Note: LOF is an integral part of T3 and must be successfully completed before the initial assignment of differences levels. In developing and selecting scenarios for evaluation during LOF, consider the likelihood of failure occurrence, possible consequences, or the timeliness of pilot discovery and correction.

2.5.3 T3 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 differences levels and validates differences and/or related aircraft differences training and checking at Level B, C, or D differences between related aircraft.

2.5.4 T3 Failure of Test. Failure of T3 occurs with either failure of the check against agreed criteria or unsatisfactory performance during the LOF portion of the test. When a T3 failure is due to deficiencies in the proposed training proposal, T3 may be repeated using different test subjects following revision of the training proposal addressing the deficiencies by mutual agreement between the FSB and the applicant. In certain failure

cases, T3 can lead to assignment of Level E and a separate type rating. The following are examples that may lead to the assignment of Level E differences:

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

2.5.4.2 T3 pilot performance that indicates an aircraft or FFS (T2 elements when combined), or methods associated with Level D, are not adequate to achieve training or checking objectives.

2.5.4.3 Repeated failures of attempts to pass T3 test at Level D training differences.

Note: Repeated failure of a test at Level D differences by one or more test subjects' inadequate performance, which is not attributed to 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.

2.6 Currency Validation—Test 4 (T4).

2.6.1 T4 Test Purpose. If technology, regulations, or policy has changed since the current issuance of the FSBR, an applicant or any person who can provide the means to justify the request (e.g., an aircraft and/or device necessary to perform the test) may petition for reconsideration of the original currency recommendations. An example circumstance for a T4 test is if a simulator has been approved for the aircraft since the FSBR was issued. In the context of this AC, currency addresses system procedural and maneuvering differences between aircraft. T4 does not include takeoff and landing recency of experience.

2.6.2 T4 Test Process. If an applicant desires a change in the FSBR 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:

2.6.2.1 Complex flight critical systems affecting control or navigation.

2.6.2.2 Critical non-normal maneuvers differing between related aircraft (e.g., 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).

2.6.2.3 Secondary systems (e.g., oxygen or auxiliary power unit).

2.6.3 T4 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.

2.6.4 T4 Failure of Test. Failure indicates that the proposed less-restrictive currency recommendations do not provide an equivalent level of safety to the FSB currency recommendations in the most recent approved FSBR. At the discretion of the FSB, retesting may be appropriate.

2.7 Initial Type Rating Training/Checking or Transition Training/Checking Validation—Test 5 (T5).

2.7.1 T5 Test Purpose. For the T5 test, the FSB uses a training proposal submitted by the applicant to evaluate and recommend a pilot type rating, training and checking requirements, and special emphasis areas for new aircraft types or for transition training between aircraft with different type ratings. The goal of the T5 test is to provide recommendations critical to the development of effective pilot training programs and curricula for aircraft that have not been previously evaluated. A T5 test is appropriate when:

- An applicant presents a candidate aircraft as a new aircraft type certification with no anticipated application for type rating credit for similarities with aircraft previously type certificated;
- An applicant seeks an evaluation of commonality between two aircraft with different type ratings to apply credit between those aircraft in transition training programs; or
- T2 or T3 are failed.

2.7.2 T5 Test Process. There are two methods to accomplish the T5 test process depending on the proposal being evaluated:

2.7.2.1 Initial Type Rating Training/Checking Proposal. This method is used when an applicant seeks a new type rating without any credit for commonality with any related aircraft. The applicant develops an evaluation plan to qualify and check pilots for the candidate aircraft at Level E differences. Test subjects are trained, given FPCs, and complete LOF, if applicable, in a process similar to T3 LOF, as described in paragraph 2.5.2.2 above. An FFS may be used for training, but an aircraft is required for the type rating test.

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.

2.7.2.2 Transition Training/Checking Proposal. This method is used when an applicant seeks a new type rating and credit for commonality with related aircraft. The applicant conducts a handling qualities evaluation based on the applicant's evaluation plan (similar to T2), followed by training and checking proposal validation (similar to T3). Test subjects are then trained, given an FPC, and then complete a LOF, if applicable, in a process similar to T3.

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. A T5 does not automatically combine 14 CFR part 142 training program approval, unless a 14 CFR part 142 inspector is on the FSB conducting a concurrent evaluation.

2.7.3 T5 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. Upon completion of the FSB, checking commences for the applicant, based on the Letter of Authorization (LOA) issued by the FAA. When completed, the FAA will draft an FSBR, which will be published in the Dynamic Regulatory System (DRS).

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

2.8 Common Takeoff and Landing Credit (CTLC)—Test 6 (T6).

2.8.1 T6 Test Purpose. Applicants use T6 when they seek credit between related aircraft toward the takeoff and landing recency-of-experience requirements of the applicable 14 CFR part.

Note: The T6 test is used for aircraft that were not previously tested during the initial aircraft evaluation for type rating designation.

2.8.2 T6 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 FFS.[15] The test 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. 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:

- Aircraft weights.
- Aircraft center of gravity.
- Takeoff and landing crosswinds.

2.8.3 T6 Successful Test. The FSB members decide the outcome of T6 consistent with the FAA test standards (i.e., Airman Certification Standards (ACS) or practical test standards

[15] T-Tests in an FFS without a validation in the aircraft is at the discretion of the FSB based on the FFS fidelity (realistic indications) and approval from the NSP or attestation that the device is representative of a production equivalent of the aircraft and accepted by the FAA.

(PTS)) by demonstrating that an equivalent level of safety can be maintained when full or partial credit for takeoffs and landings is given between the related aircraft.

2.8.4 T6 Failure of Test. The test subjects' performance relative to the FAA ACS/PTS demonstrates an equivalent level of safety cannot be maintained when either full or partial credit for takeoffs and landings is given between the related aircraft.

CHAPTER 3. FSB EVALUATION AND DEVELOPMENT OF REPORT RECOMMENDATIONS

3.1 Introduction. This chapter describes the FSB process for establishing minimum differences and related aircraft differences training, checking, and currency requirements for pilot training and qualifications in 14 CFR parts 91 subpart K (part 91K), 121, and 135; and describes a comprehensive process for recommending aircraft-specific pilot training and qualification and for establishing pilot type ratings in accordance with 14 CFR § 61.31. It applies to aviation industry groups, aircraft operators, and training providers using published evaluation data to develop training programs and curricula. The process is particularly suited to addressing transition, differences, and related aircraft differences training programs and Mixed Fleet Flying (MFF). The process aids in ensuring that pilots attain and maintain the knowledge, skills, and abilities needed to operate assigned aircraft safely. Related aircraft differences training may be approved for 14 CFR part 121 air carriers in accordance with 14 CFR § 121.418(b) and (c); and for 14 CFR part 91K program managers and 14 CFR part 135 operators that are required, or have elected, to comply with the applicable sections of 14 CFR part 121 subparts N and O, as described in 14 CFR §§ 91.1063(b) and 135.3(b) and (c), respectively.

3.1.1 Candidate Aircraft. The applicant may request an evaluation of a candidate aircraft it considers could be successfully demonstrated as compared to a base aircraft under the evaluation process defined within this AC. This determination should be independent of the operating rules under which the related aircraft is likely to be operated.

3.1.2 Designation of Related Aircraft for 14 CFR Part 121 Operations. Certain aircraft of the same make 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, operating cycles, or line operating flight time for consolidation of knowledge and skills. In order to use these training and qualification efficiencies in that operation, the operator must obtain a related aircraft designation from the Administrator in accordance with 14 CFR § 121.400(c) (refer to FAA Order 8900.1, Volume 3, Chapter 19, Section 12, Safety Assurance System: Related Aircraft Designations, Training, and Deviations—Part 121). The process for related aircraft designation and deviation approval is as follows:

3.1.2.1 The operator 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 for the designation. This designation should be based on FAA analysis published in the applicable FSB Report (FSBR).

3.1.2.2 A request for a deviation provided in 14 CFR §§ 121.434, 121.439, and 121.441 must be sent to the Air Transportation Division through its responsible Flight Standards office. The Air Transportation Division will consider the deviation on the basis of guidance from the Aircraft Evaluation Division (AED) and its FSBRs and will provide a memo of concurrence or nonconcurrence to the responsible Flight Standards office.

3.1.3 Master Differences Requirements (MDR) Formulation by the FAA. The FAA's FSB formulates MDRs to address differences between related aircraft. These MDRs are presented in the appropriate FSBR. See paragraph 3.2.2.

3.1.4 Specification of Constraints or Credits. The program permits the specification of constraints or permissible credits. Constraints or credits may relate to knowledge, skills, abilities, a flight simulation training device (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.

3.1.5 Recognition of Unique Operator Characteristics. The program recognizes the unique characteristics of individual operators while achieving uniformity in application of FAA safety standards. FAA MDRs determine uniform bounds to tailor an 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 aircraft flown, pilot assignment policies, training methods and devices, and other factors that relate to the application of the FAA MDRs. Accordingly, the program preserves operator flexibility while standardizing the FAA's role in review, approval, and monitoring of training, checking, currency, and MFF programs, as applicable.

3.1.6 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.

3.1.7 Same Type Rating or Related Aircraft. When determining if two aircraft can reasonably be designated as related aircraft, or if a new variation of that aircraft can be considered the same type rating, the candidate aircraft must have a commonality of handling qualities and flight characteristics with the base aircraft. However, there are other factors to consider when ensuring aircraft are safely operated in this manner that should also be considered during an FSB evaluation, such as the number and magnitude of systems, procedures, pilot interactions with aircraft flight controls, design, or other aircraft differences which either individually or in aggregate may result in training or checking requirements that exceed Level D. When performing T1 through T4 evaluations, it is imperative to select an appropriate base aircraft that allows for a comprehensive evaluation to consider both the most significant differences and the aggregate changes made to the aircraft make, model, and series (M/M/S) over its design lifecycle.

3.1.7.1 **Design Application for a Derivative Aircraft (same TC).** Applicants should develop and produce data that supports assessments of any effects of the design modifications on operational data within the scope of the FSB (pilot type rating, pilot training, and operational suitability). The list should include any applicant-developed information concerning:

- Design attributes that might impact the operational data;
- Applicant determinations of level of impact, and data used to make those determinations; and
- Applicant determination data (if any) for attributes found to have no impact.

3.1.8 Relationship to Other FAA Policies. Although this AC, and the FSB recommendations in some instances, address particular types of operations, specific aircraft systems (e.g., use of flight guidance control systems (FGCS) for Category II/III instrument approaches, long-range navigation, etc.), or human factor (HF) considerations and assessments, other Flight Standards (FS) procedures-centric ACs provide more detailed discussion of these subjects. This AC and FSB recommendations address such issues only to the extent necessary to ensure that crewmembers are qualified to operate pertinent systems or equipment as part of initial or continuing qualification.

3.2 Concepts.

3.2.1 Pilot Training and Qualification Process.

3.2.1.1 Purpose. This paragraph describes an integrated FAA/applicant/operator process to determine, apply, and meet appropriate requirements on a continuing basis for pilot training and qualification.

3.2.1.2 Overview. The process applies the MDR in a way that tailors a particular aircraft to any applicant/operator's unique situation or fleet. The FAA approves unique operator and fleet requirements for each operator based on the MDR, if applicable. The FSB determines the MDR based on objective criteria and tests, with the applicant's/operator's (usually an aircraft manufacturer) support for analysis and testing. FSBRs describe the MDR, which expresses the minimum acceptable differences levels between the base and candidate 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 differences 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 MFF 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.

3.2.2 MDRs.

3.2.2.1 MDR Applicability. MDRs are those requirements applicable to training and qualification that pertain to differences between aircraft that have been designated as related by the Administrator and aircraft variations within the same type. MDRs specify the minimum acceptable differences levels between

aircraft that may be approved for operators. A suitable 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. Differences levels between the base aircraft and candidate 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. MDRs are specified in terms of training and checking differences levels as shown on an MDR table.

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

3.2.2.3 MDR Formulation, Description, and Revision. MDRs are formulated by the FAA FSB for related aircraft. MDRs are originally specified when an aircraft is first type certificated. 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 FSBR 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.

3.2.2.4 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.

3.2.2.5 The MDR Table. The MDR table contains the minimum levels of training and checking, derived from the highest level in the training and checking differences required when used in 14 CFR part 91K, 121, or 135 ODRs. Examples of MDRs for the make and model (M/M) are shown in Figure 3-1, Master Differences Requirements Table. The 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 MDR table identifies the minimum difference training and checking requirements applicable to MFF. 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 differences levels that correspond to the pertinent column and row, and special requirements in footnotes, if applicable.

3.2.2.6 Use of Higher or Lower Differences Levels. Operators 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 3-1. Master Differences Requirements Table

These are the minimum levels of training and checking required, derived from the highest level in the Differences Tables (DT). Differences levels are arranged as training/checking.

To Related Aircraft ↓	From Base Aircraft →	[XXX]	[YYY]	[ZZZ]
[XXX]		[Not Applicable]	[B/A]	[Not Evaluated]
[YYY]		[A/B]	[Not Applicable]	[B/C]
[ZZZ]		[C/B]	[C/B]	[Not Applicable]

- *Footnotes and/or other limitations may be inserted here.*
- *Not applicable if related aircraft have not been identified.*
- *The related aircraft rows should only list aircraft which are part of the Type Certificate Data Sheet (TCDS) shown on the FSBR cover page; this includes variations or modifications that may or may not be listed on the TCDS or on the FSBR cover page. See examples in Figure 3-2 below.*
- *MDRs previously determined and approved by the FAA between related aircraft of a single make (same Original Equipment Manufacturer (OEM)) may be contained in a single FSBR if doing so would provide MFF clarity for users.*

Figure 3-2. MDR Table Example for Make/Model [XXX] on FSBR Cover Page

To Related Aircraft ↓	From Base Aircraft →	[WWW]	[XXX]	[YYY]	[ZZZ]
[XXX]		C/C	Not Applicable	D/C	Not Evaluated

3.2.2.7 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.

3.2.2.8 More Than One Related Aircraft. When an operator assigns a pilot to more than one related aircraft of the same TC (e.g., M/M/S next generation), or more than one aircraft with different TCs (e.g., M/M) designated as related, each pertinent requirement of the MDR table applies.

3.2.2.9 Special Requirements.

3.2.2.9.1 MDR Footnotes. Footnotes can be used to credit, constrain, or set alternate levels when special situations apply. Use of footnotes permits accommodation for differences of 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 automatic flight control system, flight management system (FMS), or navigation system, 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 FSBR.

3.2.2.9.2 Other Limitations. Other limitations may occasionally be identified within a differences level (e.g., C*). The asterisk following the differences 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.

3.2.2.10 MDRs for Aircraft with the Same or Different TC. A single FSBR and MDR table may apply to aircraft that are assigned the same TC with the same type rating (e.g., M/M and next generation). A single FSBR and MDR table may also apply to different type-certificated aircraft (e.g., M/M). 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 type-certificated aircraft still applies (e.g., M/M). Minimum acceptable differences levels are assigned based on standard tests described in Chapter 2, T-Tests Used to Evaluate Type Ratings and Pilot Training, Checking, and Currency.

3.2.3 Differences Levels.

3.2.3.1 **General Description.** Differences levels specify FAA requirements proportionate to and corresponding with increasing differences between related aircraft or variations of aircraft. Figure 3-7, Training Differences Legend, and Figure 3-8, Checking Differences Legend, show the training and checking differences legends, respectively, for five differences levels used for ODR table development, in order of increasing requirements, identified as A through E, are each specified for training and checking. MDRs are specified in terms of differences levels. Differences 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 MFF where credit is sought should apply differences levels and address all MFF requirements to ensure compliance with FAA requirements necessary to ensure safe operations.

3.2.3.2 **Differences Tables (DT).** DTs, as shown in Figure 3-3, Differences Tables—Design, and Figure 3-4, Differences Tables—Maneuvers, show examples of design and maneuvers, respectively, for which there is a difference. If no changes exist from the base aircraft to the candidate aircraft for a specific design item or maneuver, then a design or maneuver would not be included, and the term "not applicable" would be entered.

3.2.3.3 **Basis for Levels.** Differences 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 differences levels are not assigned; nor are they applicable to pilot training and qualification. When Differences Levels A through E apply, each differences 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.

3.2.3.4 **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 B for checking (e.g., C/B).

3.2.3.5 **Evaluation for Determination of Aircraft Type Ratings.**

3.2.3.5.1 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.

3.2.3.5.2 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.

3.2.3.5.3 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 Flight Vision System (EFVS), or Synthetic Vision System (SVS) may require Level E training without requiring a new type rating.

3.2.4 Training Differences Levels.

3.2.4.1 **Level A Training.** Indicates 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:

3.2.4.1.1 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). 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).

3.2.4.1.2 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).

3.2.4.2 **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 instruction, or standup lectures. Situations not covered under Level A training may require Level B training (or higher levels) if certain tests described in later paragraphs fail.

3.2.4.3 **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 Procedures Trainers (CPT), ground flight simulation, partial task trainers (PTT), an FMS or Traffic Alert and Collision Avoidance System (TCAS), or a Level 4 or 5 flight training device (FTD).

3.2.4.4 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 phenomena such as low visibility, Category III instrument landing system operations, or windshear may or may not be incorporated. Where simplified or generic characteristics of an aircraft type are used in devices to satisfy Differences Level D training, 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.

3.2.4.5 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). Only the assignment of Level E training requirements may result in a separate type rating determination. As with other levels, when Level E training is assigned, suitable credit or constraints may be applied for knowledge, skills, and/or abilities associated with other pertinent related aircraft. Credits or constraints are specified for the subjects, procedures, or maneuvers shown in FSBRs.

Note: Training differences levels specified by the FSB represent minimum requirements. Operators may use a device associated with a higher differences 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 an FFS as a system trainer if a dedicated part task FMS training device is not available.

3.2.5 Checking Differences Levels.

3.2.5.1 **Initial and Recurrent Checking.** Related aircraft differences checking addresses any pertinent pilot qualification requirements and any other checks specified by FSBRs. 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 (TCPM), in coordination with the FSB, may require checking in the initial level device when doubt exists regarding pilot competency or program adequacy.

3.2.5.2 **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.

3.2.5.3 **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 an FMS, TCAS, or other individual systems or related groups of systems.

3.2.5.4 **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 would be an evaluation of a sequence of maneuvers demonstrating a pilot's ability to use an FGCS or FMS. An acceptable scenario would include each relevant phase of flight that uses the FGCS or FMS.

3.2.5.5 **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 (FPC) is typically conducted on the base aircraft, and a partial proficiency check (PPC) on the related aircraft, covering all pertinent differences.

3.2.5.6 **Level E Checking.** Unless specified, requires an FPC in a Level C or D FFS, or aircraft. 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 FSBRs.

3.2.6 Checking on Related Aircraft. The pilot who is receiving a type rating on the basis of being related should be current and qualified in the base aircraft at the time of the check. The pilot 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 differences levels. This check is not an FPC, 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).

3.2.7 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 currency recommendations 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. If available, equivalency of malfunction documentation based on aircraft system malfunctions may be provided to the FSB by the OEM for use in the FSB for evaluation. 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.

3.2.8 Differences Level Summary. Differences levels are determined by the FSB through a series of T-Tests for training and checking (see Figure 3-6, Test Definitions).

3.2.9 Operating Experience, Operating Cycles, and Consolidation of Knowledge and Skills. Credits towards 14 CFR part 121 requirements for operating experience, operating cycles, and line operating flight time for consolidation of knowledge and skills may be permitted if performed in "designated" related aircraft.

3.2.10 Supervised Line Flying (SLF). FSB recommendations may also include postqualification enhancement of specific skills that require SLF. These recommendations are annotated in the FSBR as applicable. Among other reasons, one or more of the reasons described below may apply:

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

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

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

3.2.10.4 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.

3.2.11 Recency of Experience. Credit towards the recency-of-experience requirements of 14 CFR part 121 may be permitted for takeoffs and landings performed in designated related aircraft.[16]

3.2.12 Operator Differences Requirements (ODR).

3.2.12.1 **ODR Purpose.** ODRs and tables are developed by an operator in accordance with Order 8900.1, Volume 3, Chapter 19, Flightcrew Member Training and Qualification Programs. Applicant-produced ODR tables are available (if produced by the applicant).

[16] Under 14 CFR § 121.434(a)(4)(i), "[t]he Administrator may authorize a deviation from the operating experience, operating cycles, and line operating flight time for consolidation of knowledge and skills required by this section based upon a designation of related aircraft in accordance with § 121.418(b) of this part and a determination that the certificate holder can demonstrate an equivalent level of safety."

Figure 3-3. Differences Tables—Design

This Design Differences Table, from the [base aircraft name] to the [related aircraft name], was proposed by [Manufacturer, Modifier, Training Provider] and validated by the FSB on [date(s)]. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: [YYY] TO RELATED AIRCRAFT: [ZZZ]	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	[Autoflight]	[TOGA Flight Director Command Bars initiate at 12° vs. 8°].	[No]	[No]	[A]	[A]
	[Communications]	[New audio system].	[No]	[Yes]	[B]	[A]
	[Communications]	[Radio tuning accomplished through RFMUs].	[No]	[Yes]	[C]	[A]
	[Indicating/Recording Systems]	[Engine parameters available on either RFMU].	[No]	[Yes]	[C CPT or PTT][17]	[C FTD 5][18]

[17] Example: CPT or PTT is the minimum recommended.
[18] Example: FTD 5 is the minimum recommended.

Figure 3-4. Differences Tables—Maneuvers

This Maneuver Differences Table, from the [base aircraft name] to the [related aircraft name], was proposed by [Manufacturer, Modifier, Training Provider] and validated by the FSB on [date(s)]. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: [YYY] TO RELATED AIRCRAFT: [ZZZ]	MANEUVER	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	[Preflight Inspection]	[Exterior inspection adds tailskid].	[No]	[Yes]	[A]	[A]
	[Normal Takeoff]	[Optional use of autothrottles].	[No]	[Yes]	[C CPT[19]]	[C]
	[Normal Takeoff]	[Flap 1 not certified for takeoff].	[No]	[No]	[A]	[A]
	[Non-Normal]	[Optional autopilot saturation alert].	[No]	[Yes]	[B]	[B]
	[All Phases of Flight]	[Addition of variable position speedbrake].	[Yes]	[Yes]	[D]	[D]

[19] Example: CPT is the minimum recommended.

3.3 Formulation of FSBRs, MDRs, and Determination of Type Ratings.

3.3.1 Process Overview. The FSB issues its final recommendations in the FSBR. An example of an FSBR that describes findings can be found in the Dynamic Regulatory System (DRS) under "Aircraft Evaluation Division (AED) Guidance Documents including MMELs"—"Flight Standardization Board Reports (FSBR)." The formulation and 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 MFF takes place. The FAA addresses periodic revisions of requirements when necessary, and revisions are initiated by the FAA and applicants as needed.

3.3.2 Formulation of MDRs. The process for FAA formulation and revision of MDRs is shown in Figure 3-5, Master Differences Requirements Formulation. 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, 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 for differences and related aircraft differences training and checking.

3.3.3 Proposals for MDRs and Special Requirements.

3.3.3.1 When Proposals for MDRs and Special Requirements 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 HF analyses of training requirements, procedures or individual and aggregate system changes, MDRs for related aircraft, or other elements of the FSBRs.

3.3.3.2 Proposal Formulation. An applicant who modifies an aircraft and proposes a new design or modification will then do the following:

1. Formulate necessary information for training, checking, and currency for the aircraft in proposals for MDRs.
2. Identify related aircraft for the proposed MDR table.

3. Formulate any necessary tests to assess differences levels and associated training, checking, and currency requirements for incorporation in the MDR table.
4. 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.
5. Submit proposals for the following items to the FAA, as necessary:
   - MDRs;
   - Tests and criteria to be used;
   - Other supporting information associated with training, checking, or currency programs; and
   - HF-related information, as applicable, or required by regulations.

3.3.4 Differences Level Tests. A sequence of five standard tests, described in Chapter 2, is used to set MDRs, minimum acceptable training proposals, and other FSB recommendations and define type rating requirements. One or more of these tests is applied, depending on the differences 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 differences 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 Common Takeoff and Landing Credit (CTLC) between related aircraft, when not previously demonstrated in a T2 test.

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

1. The applicant develops representative training proposals, differences and/or related aircraft differences proposals, and necessary supporting information, as needed.
2. The applicant identifies proposed MDRs.
3. The applicant proposes and the FAA determines which tests and criteria apply.
4. The applicant proposes and the FAA determines which aircraft, simulation devices, or analyses are needed to support testing.
5. The applicant makes a proposal to the FAA, and agreement is reached on test procedures, schedules, and specific interpretation of possible results.
6. Tests are conducted and results evaluated.
7. 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.

3.3.4.2 Test Purpose and Proposal. A summary of the purpose and proposal of each of the six difference tests are shown in Figure 3-6.

3.3.4.3 Test Relationships and Proposals. 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 the application of test outcomes are shown in Figure 3-9, "T" Tests T1 Through T5. The start of the process is shown at the top of Figure 3-9.

3.3.4.3.1 When a new aircraft is certificated 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.

3.3.4.3.2 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.

3.3.4.3.3 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 Level B, C, D, or E training differences between the two aircraft.

3.3.4.4 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 Level C or D after modification of the system, operational procedures, or training and retesting. Similarly, failure at Level D can subsequently lead to either Level D or E after modification of the system, operational procedures, or training and retesting, but not Level C. Failure at Level E can only lead to retesting with increased proposals, improved proposals, 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 proposals do not preclude making a proposal at a lower differences level if technology changes, aircraft redesign takes place, training methods significantly change, or device characteristics and effectiveness change.

3.3.4.5 Type Rating Tests. Aircraft seeking a same type rating or type rating in common will follow the path in Figure 3-9 from the top right "START" of

Figure 3-9 through T1 or T2 and T3 tests, resulting in the assignment of Level A, B, C, or D differences.

3.3.4.6 Currency Tests. T4 currency tests are not shown in Figure 3-9 because they are necessary only when the applicant seeks relief from system, procedural, and maneuver currency requirements set by the FSB.

3.3.4.7 Detailed Test Specifications. The FSB develops a detailed specification describing the maneuvers to be conducted during the evaluation process and tests to establish differences levels. These documents are commonly called AED Flight Test Plans or Test Definition Sheets.

3.3.5 FSB Assessments and Proposal Formulation. The FSB assesses the applicant's proposals, test results, analysis, and any other relevant factors to formulate a draft FSBR, which includes MDRs and other pertinent training, checking, and currency requirements. The FSB either validates the applicant's proposed MDRs, training proposals, and other information, or generates alternate requirements, which may include more stringent requirements, additional training, additional testing, etc. The applicant should consider HFs regarding their proposal for type rating; specifically the number, magnitude, or type of systems, procedures, or pilot interactions with aircraft flight controls or differences with respect to the base aircraft.

3.3.6 Training Related to Pilot Interventions. Each aircraft manufacturer should provide the FAA with the information or findings necessary for the flightcrew to be trained on flight deck systems, along with any technical basis, justification, or rationale for the information and findings for the FSB to evaluate flightcrew training in an operational context, to include recommendations for special emphasis areas. This information should include the following:

3.3.6.1 For all aircraft, include information necessary to meet assumptions made during certification for failure conditions where the applicant takes credit for pilot interventions that result in a severity downgrade from catastrophic to hazardous, or hazardous to major, in response to a system or sub-system failure that has not been previously proven or studied through historic operational data.

3.3.6.2 For transport category airplanes certificated under 14 CFR part 25, include safety critical information on failure conditions or erroneous operation of components or systems that could result in a hazardous or catastrophic severity outcome, including any design and operational details, intended functions, failure modes, and mode annunciations of any system that, without being commanded by the flightcrew, commands the operation of any safety-critical function or feature required for control of an airplane during flight or that otherwise change the flight path or airspeed of the airplane. Such systems include autopilot and autothrottle systems, or any system where adverse handling quality fails to meet the requirements of applicable regulations without the addition of a software system to augment the flight

controls of the airplane to produce compliant handling qualities. Disclosure of safety-critical information is applied in accordance with Title 49 of the United States Code (49 U.S.C.) § 44704(e)(1) and 14 CFR parts 21 and 25, and is consistent with applicable international agreements. If necessary, the AED will coordinate with the Aircraft Certification Service (AIR) to obtain information applicable to the FSB.

3.3.6.3 For transport category airplanes designed for operation by an air carrier or foreign air carrier type-certificated with a passenger seating capacity of 30 or more, or an all-cargo or combi derivative of such an airplane, include the rationale and supporting information underlying pilot response assumptions regarding individual errors, malfunctions, or failures and the time necessary for pilots to respond to the malfunction before the effects worsen. The rationale and supporting information should cover errors, malfunctions, or failures from safety assessments for hazards classified "Major" or higher that are in response to a system or sub-system failure that has not been previously proven or studied through historic operational data.[20]

[20] Aircraft Certification, Safety, and Accountability Act (ACSAA), Public Law 116-260 (Dec. 27, 2020), section 115.

Figure 3-5. Master Differences Requirements Formulation

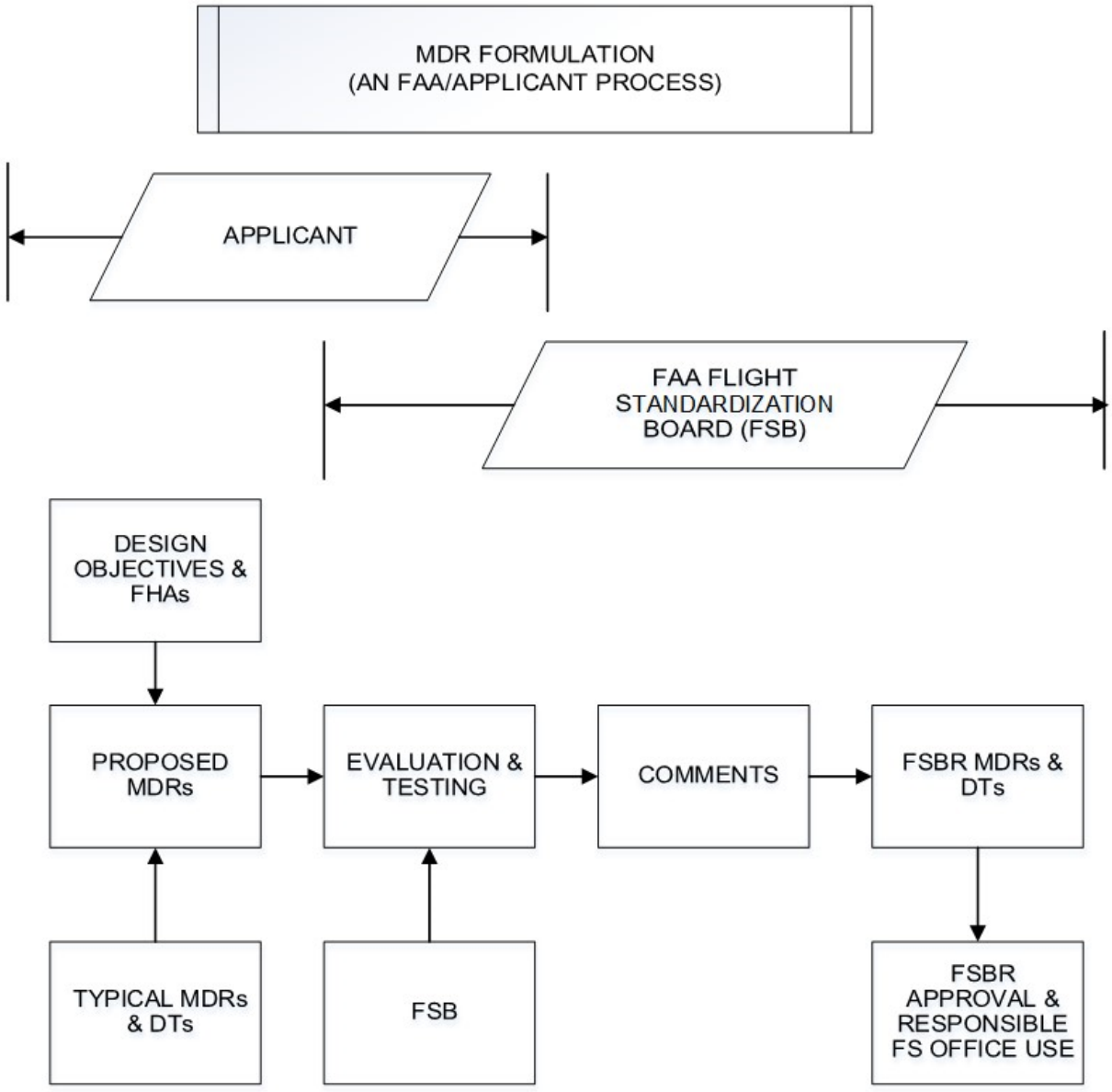


Figure 3-6. Test Definitions

T-Test (#)	Test Purpose	Process
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	Evaluates 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" aircraft	Sets Level E
T6	Evaluation for Common Takeoff and Landing Credit (CTLC)	Sets recency-of-experience requirements

Note: Expanded descriptions are contained in Chapter 2.

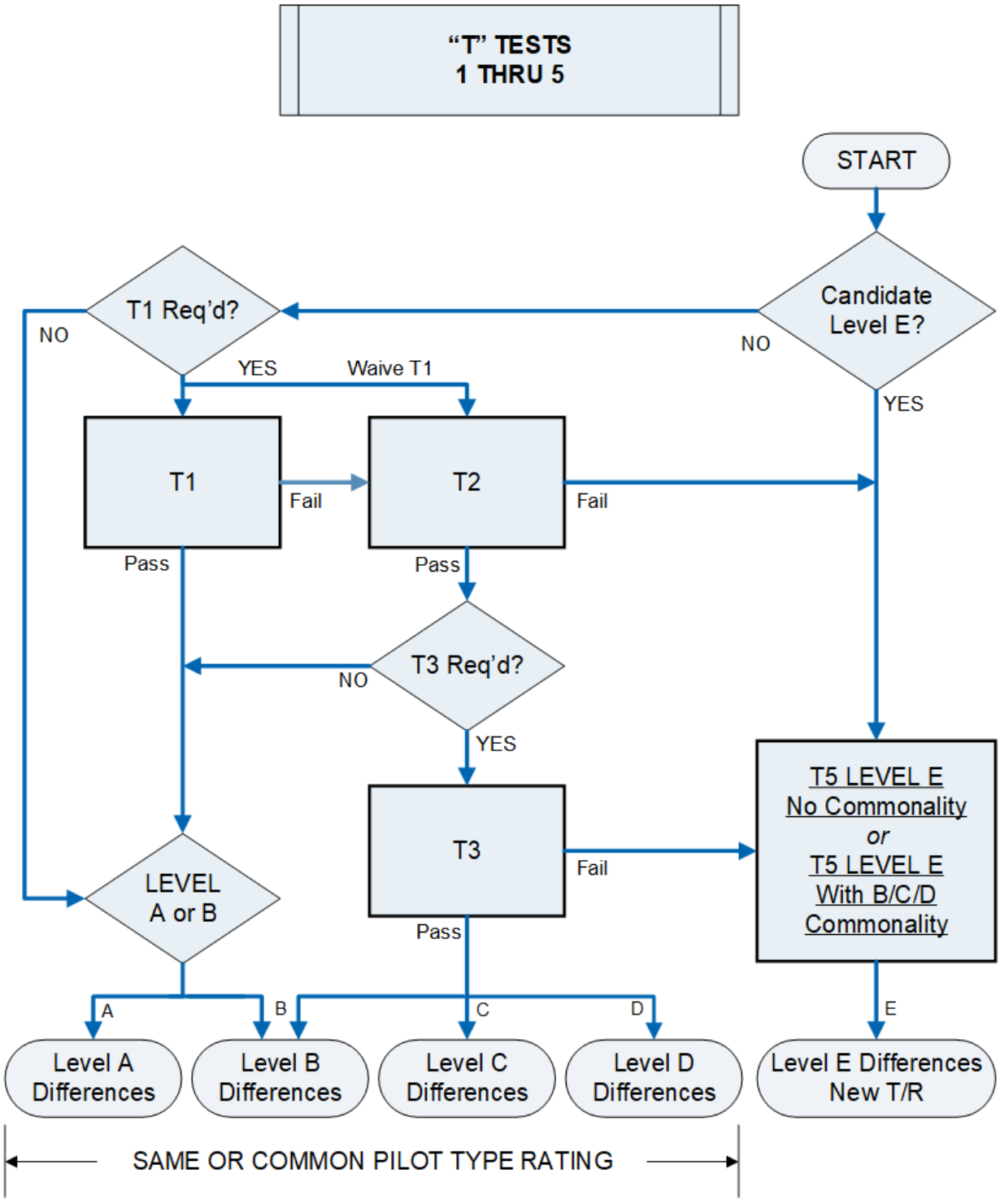
Figure 3-7. Training Differences Legend

Differences Level	Type	Training Method Examples	Conditions
A	Self-Instruction	• Operating manual revision (handout). • Flightcrew operating bulletin (handout).	• Crew has already demonstrated understanding on base aircraft (e.g., updated version of engine). • Minor or no procedural changes required. • No safety impact if information is not reviewed or is forgotten (e.g., different engine vibration damping mount). • Once called to attention of crew, the difference is self-evident.
B	Aided Instruction	• Audiovisual presentation. • Tutorial computer-based instruction. • Standup instruction.	• Systems are functionally similar. • Crew understanding required. • Issues need emphasis. • Standard methods of presentation required.
C	Systems Devices	• Interactive (full-task) computer-based instruction. • Cockpit Procedures Trainers (CPT). • Partial task trainers (PTT). • Level 4 or 5 flight training device (FTD 4-5).	• Training can only be accomplished through systems training devices. • Training objectives focus on mastering individual systems, procedures, or tasks versus highly integrated flight operations or “real-time” operations. • Training devices are required to ensure attainment or retention of crew skills to accomplish more complex tasks usually related to aircraft systems.
D	Maneuvers Devices	• Level 6 or 7 flight training device (FTD 6-7). • Level A or B full flight simulator (FFS A-B).	• Training can only be accomplished in flight maneuver devices in a real-time environment. • Training requires mastery of interrelated skills versus individual skills. • Motion, visual, control-loading, and specific environmental conditions may be required.
E	Level C/D FFS or Aircraft	• Level C or D full flight simulator (FFS C-D). • Aircraft (ACFT).	• Motion, visual, control-loading, audio, and specific environmental conditions are required. • Significant full-task differences that require a high-fidelity environment. • Usually correlates with significant differences in handling qualities.

Figure 3-8. Checking Differences Legend

Differences Level	Checking Method Examples	Conditions
A	None.	None.
B	• Oral or written exam. • Tutorial computer-based instruction self-test.	Individual systems or related groups of systems.
C	• Interactive (full-task) computer-based instruction. • Cockpit Procedures Trainers (CPT). • Partial task trainers (PTT). • Level 4 or 5 flight training device (FTD 4-5).	• Checking can only be accomplished using systems devices. • Checking objectives focus on mastering individual systems, procedures, or tasks.
D	• Level 6 or 7 flight training device (FTD 6-7). • Level A or B full flight simulator (FFS A-B).	• Checking can only be accomplished in flight maneuver devices in a real-time environment. • Checking requires mastery of interrelated skills versus individual skills. • Motion, visual, control-loading, and specific environmental conditions may be required.
E	• Level C or D full flight simulator (FFS C-D). • Aircraft (ACFT).	Significant full-task differences that require a high-fidelity environment.

Figure 3-9. "T" Tests T1 Through T5



3.3.7 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.

3.3.8 FSB Final Determinations and Findings.

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

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

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

3.3.8.2.2 Direct Experience. The industry may have substantial experience with successful operational proposals, which can be useful in the assignment of minimum differences level requirements. This experience may include particular training devices, training/checking/currency requirements, and MFF.

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

3.3.8.2.4 Applicant and Industry. FSB recommendations are set following solicitation and review of comments.

3.3.8.3 **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 differences level are shown in Figure 3-10 below.

Figure 3-10. Standard Method and Flight Simulation Training Device (FSTD)

Differences Level	Differences Level Definition	Method	FSTD
A	Self-Instruction	• Bulletins • Manual revisions • Handout material	—
B	Aided Instruction	• Presentations • Videos • Standup instruction • CBT	—
C	Systems Devices	—	Level 4 or higher FSTD
D	Maneuvers Devices	—	Level 6 or higher FSTD
E	Level C or D FFS	—	Level C or D FFS or aircraft

3.3.9 FSBR Preparation Distribution and FAA Proposal.

3.3.9.1 Report Preparation and Approval. After MDRs are finalized, the FSBR 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 FSBR:

1. Record of Revisions;
2. Introduction;
3. Highlights of Change;
4. Background;
5. Acronyms;
6. Definitions;
7. Pilot Type Rating;
8. Related Aircraft;
9. Pilot Training;
10. Pilot Checking;
11. Pilot Currency;
12. Operational Suitability;
13. Miscellaneous;

14. Appendix 1, Differences Legends;

15. Appendix 2, Master Differences Requirements (MDR) Table; and

16. Appendix 3, Differences Tables.

3.3.9.2 FSBR Distribution. FSBRs are posted in DRS at https://drs.faa.gov under "Aircraft Evaluation Division (AED) Guidance Documents including MMELs"—"Flight Standardization Board Reports (FSBR)." The FAA technical requirements described in FSBRs are primarily intended for the operators' use to develop programs for FAA review and approval.

3.3.9.3 FSBR Implementation. FSB recommendations inform the establishment of pilot type ratings under 14 CFR § 61.31. Guidance on the use of FSB recommendations is provided to the Office of Air Carrier Safety Assurance (ACSA) and the Office of General Aviation Safety Assurance (GASA) in Order 8900.1. FSBRs contain recommendations for acceptable criteria for flightcrew member training, checking, and currency programs under 14 CFR § 91.1079, § 121.403, or § 135.327; differences training under 14 CFR § 91.1063, § 121.418, or § 135.321; and training program curricula under 14 CFR § 142.39. Air carriers and operators under 14 CFR parts 91K, 121, and 135 incorporate FSBR recommendations into their training, checking, and currency programs, manuals, and checklists for review and approval or acceptance by their POIs. Title 14 CFR part 142 training centers and other training providers incorporate FSB recommendations into their training center curricula for FAA approval. FSB recommendations set acceptable standards for aircraft by which FAA inspectors review and approve individual air carrier and operator programs and training curricula.

3.3.10 FSBR Revision.

3.3.10.1 General FSBR Revision Process. A general revision process is established to update determinations and findings contained in FSBRs. Revisions occur as necessary for active fleets with numerous change requests. Revisions may be needed infrequently for aircraft not undergoing significant change.

3.3.10.2 Revisions for New Aircraft. When an applicant proposes to develop or add a series of a type-certificated aircraft, MDRs and other FSB recommendations are revised to address that series. If an applicant initiates this action, the procedures 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 FSBR (e.g., a foreign-manufactured aircraft), POIs should consult with the pertinent AED branch. An FSB will determine the best method of addressing the development of the necessary FSBR. 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.

3.3.10.3 Revision for Aircraft Modified by Operators. When an aircraft is to be modified by an operator, the POI determines if the change affects MDRs, DTs, or other FSBR recommendations. The criteria for this assessment include 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 the Air Transportation Division. The Air Transportation Division will advise the AED/FSB. The AED/FSB may concur with the POI's analysis or propose other action. If FSB action is proposed and accepted by the Air Transportation Division, the AED will initiate that action through the FSB Chair. The FSB may require that additional information or analysis be provided or that the entire test process or parts thereof be applied. The AED may authorize the POI to approve assignment of the differences level. Changes to the MDRs will be made through the normal FSB revision process.

3.4 FSBR Requirements.

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

3.4.2 Checks Regarding Complex Systems.

3.4.2.1 Checking is required for differences associated with systems that are determined to be at or greater than Level B.

3.4.2.2 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 type-certificated aircraft.

3.5 FSTD Approval.

3.5.1 NSP Representation to the FSB. An NSP member may serve as a Technical Advisor to the FSB if invited, or as a member at the discretion of the FSB Chair, to address designation of and approval processes for FSTDs.

Note: The FSB Chair may elect to use an FFS before its qualification by the NSP, based on the FFS fidelity (realistic indications) and approval from the NSP or attestation that the device is representative of a production equivalent of the aircraft and accepted by the FAA.

3.5.2 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 1: FSTDs are qualified for use in accordance with 14 CFR part 60.

Note 2: The FAA accepts the outcomes of evaluations of FSTDs, as applicable, in accordance with the appropriate authority's Bilateral Aviation Safety Agreement (BASA) Simulator Implementation Procedure (SIP).

3.6 Review and Approval. FSBRs are approved as designated by the Executive Director, Flight Standards Service. In the event that revision of an FSBR is necessary, the FSB is provided with necessary policy guidance to implement applicable changes.

3.7 Appeal of FAA Decisions. When there is disagreement with recommendations of an FSBR, that disagreement may be expressed to the FSB Chair for the pertinent type-certificated aircraft. If an issue cannot be resolved, the issue may then be addressed to the AED. Additional information, data, or analysis may be provided to support differing views regarding the FSB recommendations in question.

APPENDIX A. ADMINISTRATIVE PARAGRAPHS

A.1 Acronyms and Abbreviations.

Term	Definition
14 CFR	Title 14 of the Code of Federal Regulations
AC	Advisory Circular
ACS	Airman Certification Standards
ACSA	Office of Air Carrier Safety Assurance
ACSAA	Aircraft Certification, Safety, and Accountability Act
ACT ARC	Air Carrier Training Aviation Rulemaking Committee
ADF	Automatic Direction Finder
ADS-B	Automatic Dependent Surveillance Broadcast
AED	Aircraft Evaluation Division
AFM	Aircraft Flight Manual
AIR	Aircraft Certification Service
ASI	Aviation Safety Inspector
ATC	Air Traffic Control
BASA	Bilateral Aviation Safety Agreement
CBT	Computer-Based Training
CPT	Cockpit Procedures Trainer
CTLC	Common Takeoff and Landing Credit
CVR	Cockpit Voice Recorder
DPE	Designated Pilot Examiner
DRS	Dynamic Regulatory System
DT	Differences Table
EFB	Electronic Flight Bag
EFVS	Enhanced Flight Vision System
ETOPS	Extended Operations
F&R	Function and Reliability
FAA	Federal Aviation Administration
FLT CHAR	Flight Characteristics
FFS	Full Flight Simulator

Term	Definition
FGCS	Flight Guidance Control System
FHA	Functional Hazard Assessment
FMS	Flight Management System
FOEB	Flight Operations Evaluation Board
FPC	Full Proficiency Check
FS	Flight Standards Service
FSB	Flight Standardization Board
FSBR	Flight Standardization Board Report
FSTD	Flight Simulation Training Device
FTD	Flight Training Device
FTP	Flight Test Pilot
FTPM	Fleet Training Program Manager
GASA	Office of General Aviation Safety Assurance
HF	Human Factor
HUD	Head-Up Display
IFR	Instrument Flight Rules
LOA	Letter of Authorization
LOF	Line-Oriented Flying
MDR	Master Differences Requirements
MFF	Mixed Fleet Flying
M/M	Make/Model
M/M/S	Make, Model, and Series
MMEL	Master Minimum Equipment List
NAS	National Airspace System
NSP	National Simulator Program
ODR	Operator Differences Requirements
OEM	Original Equipment Manufacturer
OSS	Office of Safety Standards
PIC	Pilot in Command
POI	Principal Operations Inspector
PPC	Partial Proficiency Check

Term	Definition
PROC CHNG	Procedures Change
PTS	Practical Test Standards
PTT	Partial Task Trainer
QPS	Qualification Performance Standard
RAAS	Runway Area Advisory System
RFMU	Radio Frequency Management Unit
SIC	Second in Command
SIP	Simulator Implementation Procedure
SLF	Supervised Line Flying
SME	Subject Matter Expert
STC	Supplemental Type Certificate
SVS	Synthetic Vision System
T(#)	Test
TC	Type Certificate
TCAS	Traffic Alert and Collision Avoidance System
TCB	Type Certification Board
TCDS	Type Certificate Data Sheet
TCPM	Training Center Program Manager
TIA	Type Inspection Authorization
VFR	Visual Flight Rules
VOR	Very High Frequency Omni-Directional Range

A.2 FSBR Feedback Form. For your convenience, an FSBR Feedback Form is the next to last page of this AC. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of a particular FSBR for an aircraft M/M or to the general FSBR template on the Feedback Form.

A.3 AC Feedback Form. For your convenience, the AC Feedback Form is the last page of this AC. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this AC on the Feedback Form.

Flight Standardization Board Report (FSBR) Feedback Form

If you find an error in any FSBR, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by contacting the Aircraft Evaluation Division at 9-AVS-AFS-100@faa.gov.

Subject: FSBR [aircraft make/model and date] or General

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 FSBR, 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: _____

Advisory Circular Feedback Form

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 Aircraft Evaluation Division at 9-AVS-AFS-100@faa.gov or the Flight Standards Directives Management Officer at 9-AWA-AFB-120-Directives@faa.gov.

Subject: AC 120-53C, 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: _____