ACT ARC Recommendation 26–2

Creation of Guidance for the Approval of FSTDs and Other Training Devices for Use in Pilot Training

I. Submission

The recommendations below were submitted by the Flight Simulation Training Device Workgroup (FSTD WG) for consideration by the Air Carrier Training Aviation Rulemaking Committee (ACT ARC) Steering Committee at F2F–36, January 21-22, 2026. The ACT ARC Steering Committee adopted the recommendations, and they are submitted to the Federal Aviation Administration (FAA) as ACT ARC 26–2

II. Definitions

The following terms are used as defined below within this recommendation:

Approval/Approving means the actions associated with causing a training and evaluation program to be approved.

Approved refers to the documented status of a training program being deemed acceptable by the FAA under the provisions of Title 14 Code of Federal Regulations (14 CFR) parts 61, 121, 135, 141, or 142, particularly with respect to the authorization for use of devices, equipment, systems, or courseware.

Approved for Intended Use refers to a designation indicating that devices, equipment, systems, or courseware are deemed acceptable by the FAA for the purpose of accomplishing approved activities.

Approving Authority means a person authorized by the Administrator to approve an aircraft flight training program in which the Flight Simulation Training Device (FSTD) will be used, typically an FAA inspector assigned to a Certificate Management Office (CMO) or Flight Standards District Office (FSDO). In 14 CFR part 60 (Part 60), the approving authority is referred to as the Training Program Approval Authority (TPAA).

Capability means the ability of an FSTD to behave in a specific way that represents an aircraft and the environment in which it operates to a specified level of fidelity. An FSTD capability may or may not be associated with its qualification.

Certification means how the FAA manages risk through safety assurance. It provides the FAA confidence that a proposed product or operation will meet FAA safety expectations to protect the public. Certification affirms that FAA requirements have been met.

Courseware means educational materials, software, or hardware designed to support instruction and evaluation.

Device Sponsor means a certificate holder who seeks or maintains FSTD qualification and is responsible for actions as prescribed in Part 60 and the QPS for the appropriate FSTD and qualification level.

FSTD Capability Signature (FCS) means a method of defining an FSTD's capabilities by assigning fidelity levels to various significant features of the FSTD (such as flight model, motion cueing, and flight deck structure). This method has been defined in some international FSTD qualification standards and could replace or provide an alternative to the existing method of assigning fixed FSTD levels.

Negative Training means an activity that could reasonably unintentionally introduce incorrect information, concepts, expectations, or behaviors that could decrease safety.

Qualification/Qualifying means the actions associated with causing an FSTD to be qualified under the Part 60 regulation.

Qualification Performance Standards (QPS), as defined in Part 60, Appendix F, means the collection of procedures and criteria used when conducting objective and subjective tests, to establish Flight Simulation Training Device (FSTD) qualification levels. The QPS are published in the appendices to Part 60, as follows:

- Appendix A, for Airplane Simulators;
- Appendix B, for Airplane Flight Training Devices;
- Appendix C, for Helicopter Simulators;
- Appendix D, for Helicopter Flight Training Devices;
- Appendix E, for Quality Management Systems for Flight Simulation Training Devices; and
- Appendix F, for Definitions and Abbreviations for Flight Simulation Training Devices.

Qualified means the regulatory status of a FSTD as it relates to its design, manufacture, installation, testing, and records. For the purposes of this recommendation, an FSTD is qualified under the provisions of 14 CFR part 60 (Part 60). Qualification of an FSTD is documented by issuance of a Statement of Qualification (SOQ).

Qualifying Authority means the FAA office with responsibility for evaluating and issuing SOQs for FSTDs. Currently, this office is the Training and Simulation Group (AFS-280) in the Flight Standards Service.

III. Statement of the Issue

Regulatory Inconsistency
The regulations governing the qualification and approval for use of FSTDs and other flight training equipment are numerous and located in a variety of parts and subparts of 14 CFR. These regulations do not use consistent terminology and the scope of their applicability is unclear. This has contributed to inconsistent interpretation by regulators, and uncertainty on the part of certificate holders.

- Part 60 provides a framework for the qualification of FSTDs. Specifically, Part 60 provides standards for qualification of full flight simulators (FFS) as Level A, B, C, or D devices, and for qualification of flight training devices (FTD) as Level 4, 5, 6, or 7 devices. The QPSs contained in the appendices to Part 60 specify the standards for qualification at each such level. The qualification of each FSTD is documented by a Statement of Qualification (SOQ) describing its device level and other characteristics.
- 14 CFR part 121 (Part 121) provides for the approval to use FSTDs for flightcrew member training. Part 121 specifies the minimum device qualifications required for various training, checking, and testing tasks.

- 14 CFR part 135 (Part 135) also prescribes requirements for the use of FSTD and other training devices. § 135.159 specifies that aircraft simulators and other training devices may be included in a certificate holder's training program if approved. Part 135 does not refer to Part 60 qualification, but does require that devices be specifically approved for the particular maneuver, procedure, or crewmember function involved, and that aircraft simulators be approved for the type aircraft and, if applicable, the variation within type for which training or checking is being conducted.[1]
- 14 CFR part 142 (Part 142) also addresses qualification and approval of FSTDs. § 142.59 requires that each flight simulator and FTD used for training, testing, and checking (except Advanced Qualification Program (AQP)) be specifically qualified and approved for each maneuver and procedure for the aircraft type simulated, as well as for the curriculum or training course being administered.

Other parts of 14 CFR also address requirements for use of FSTDs and other training devices.[2]

- § 141.41 requires that each FSTD be qualified under Part 60 and approved for the tasks and maneuvers for which it is used.
- § 125.297 requires that flight simulators and FTDs used for training, checking, and testing required under 14 CFR part 125 (Part 125)[3] be used in a training course administered under Part 142 or must satisfy requirements effectively the same as those prescribed by Part 135.
- § 91.1087 requires that aircraft simulators and other training devices used in training required under Subpart K of 14 CFR part 91 (Part 91K) satisfy requirements effectively the same as those prescribed by Part 135.
- § 61.4 prescribes that any flight simulator or FTD used for training, testing, or checking for which an airman receives credit must be qualified and approved for the use in question, each maneuver, procedure, or crewmember function performed, and the representation of category and class aircraft simulated or type and variation within type.[4]

Part 121 offers air carriers and other training providers flexibility and alternatives with respect to the qualification and approval of devices. Specifically—

- § 121.903(b) provides that each air carrier with an approved AQP must comply with the requirements of its AQP and Subpart Y instead of corresponding provisions of

[1] Many certificate holders conducting operations under Part 135 must or may opt to comply with Part 121 training requirements, including approval of training devices. § 135.3(b) requires Part 135 operators conducting commuter operations with airplanes type certificated for two pilots to comply with Subparts N and O of Part 121 instead of Subparts E, G, and H of Part 135. § 135.3(c) affords all other Part 135 certificate holders the option to do so. Additionally, § 121.901 specifies that Part 135 certificate holders required or electing to have an approved training program are eligible to pursue approval of an Advanced Qualification Program (AQP) under Part 121, Subpart Y.

[2] Parts 141, 125, 91, and 61 FSTD requirements are not within the scope of the ACT ARC or this recommendation, They are referenced here because implementation of recommendations calling for revision of Parts 60, 121, 135, or 142 may require a review of other parts of 14 CFR to ensure no conflicts arise as a result of such revisions. See ACT ARC Recommendation 25–4, Review of FAA Regulations and Guidance Material on FSTD Qualification and Usage.

[3] Part 125 applies to operation of transport category aircraft for purposes other than common carriage.

[4] Additionally, § 61.4(c) allows for the Administrator to "approve a device other than a flight simulator or flight training device for specific purposes." This is the foundation for approving Advanced and Basic Aviation Training Devices (AATDs and BATDs) for some pilot certification requirements as defined in AC 61–136B. The approval and use of AATDs and BATDs are not addressed in this recommendation.

14 CFR parts 61, 63, 65, 121, and 135. This affords AQP air carriers the ability to develop alternative methods to provide an equivalent level of safety to that provided by the regulations specified in § 121.903(b). This ability could be used to obtain approval for use of FSTDs and other equipment using standards other than those contained in Part 121, Appendices E, F, and H. Notably, § 121.903(b) does not provide for compliance with an AQP in lieu of compliance with Part 60. (See ACT ARC Recommendation 25–3, Include Part 60 in the List of Regulations Superseded by Compliance with an AQP Under Subpart Y of Part 121.)

Parts 121 and 135 also contemplate approval of devices other than FSTDs qualified under Part 60 for use in training. Specifically—

- § 121.921(b) provides for the approval of training equipment other than FSTDs for use under an AQP. An applicant must identify the device and describe its intended use, and approval is limited to that intended use.
- § 121.408 provides for the approval of training equipment other than FSTDs for use under other than an AQP.
- § 135.335 does not prescribe any required treatment of non-Part 60 devices, but does contemplate the approval of "other training devices".

Other FAA supporting guidance material, such as FAA Order 8900.1, contains additional standards on the use of specific FSTD levels within pilot training programs.

Qualification Versus Approval

The following issues highlight the lack of understanding and clarity regarding distinctions between qualification of a FSTD and training approval:

- FSTD design and qualification professionals and training development professionals operate under separate and unique considerations and environments; as a result, there is little commonality of knowledge between the two groups.
- Insufficient guidance is available to FSTD designers, FSTD sponsors, FSTD operators, and FAA personnel regarding rules, policies, and procedures for the qualification and approval of FSTDs, creating uncertainty about the practical utility of new and advancing FSTD technology.
- Existing FAA guidance related to approving the use of FSTDs often does not align with FAA guidance related to qualifying FSTDs.
- Existing FAA regulations and guidance material do not clearly describe whether or under what circumstances FSTD qualification is required for synthetic devices used in a training program.

Readers are encouraged to refer to Attachment A, which contains an illustrative example of the subtasks involved in the taxi phase, highlighting the challenges that may arise when assessing a proposed use of a device in training. The ACT ARC believes a review of this example will greatly aid in understanding.

The disciplines of simulation engineering and training design have evolved independently, resulting in groups of distinct expertise with little shared understanding of each other's rules, conventions, and considerations. When the ACT ARC formed the FSTD WG, it intentionally included representatives from both disciplines. The FSTD WG also conducted multiple on-site case studies that included interviews with industry and regulator professionals from both disciplines. The FSTD WG consistently identified incomplete understanding by each discipline

about the activities of the other, as well as a lack of knowledge about the rules, expectations, and processes applicable to each group.

FSTD manufacturers and original equipment manufacturers (OEM), FAA simulation inspectors, and industry simulator professionals have developed skills and processes to make ever-improving simulation technology available to users. The FSTD WG identified issues with the current state of the FSTD qualification process and has made other recommendations related to these issues.[5] For the purpose of this Recommendation, the specifics of how a particular FSTD is designed and qualified are not considered. This Recommendation focuses on how a qualified FSTD is used.

The FSTD WG found that FSTD design and qualification is focused on delivering a device with a defined set of capabilities, generally described in terms of their fidelity and memorialized as part of that particular FSTD's documentation (in general, the FSTD's SOQ). Design and qualification are centered around replicating actual aircraft and environmental behaviors and meeting fixed technical standards as defined in the Part 60 QPS. These capabilities are assessed and documented in the Master Qualification Test Guide (MQTG) along with practical assessment of how well the FSTD duplicates reality.

The FSTD WG correspondingly found that users seeking approval to accomplish a curriculum with the help of an FSTD focus on what human behaviors, knowledge, and skills they intend participants to achieve or demonstrate. Strict duplication of reality and conformance to fixed FSTD fidelity levels may or may not be relevant to the goals of curriculum developers for a given training task.

In terms of regulation, the FSTD designer and qualification expert is principally concerned with how the device will be qualified, with the functional output of a qualification level (A-D for FFSs and 4-7 for FTDs).

Conversely, the curriculum developer is principally concerned with the approval of the required documents for their specific program. Certificate holders and training providers operating under different parts and subparts of 14 CFR are required to seek different approvals, but generally any provider intending to meet specific requirements must gain FAA approval of a curriculum listing and describing the intended activity.

The qualification of an FSTD and its approval for use in a curriculum are two distinct processes, with two distinct goals and limitations, managed by two distinct groups with differing expertise, subject to two distinct regulatory frameworks, producing two distinct forms of documentation. The goal of this set of recommendations is not to impact or alter these aspects of either the FSTD qualification or training approval functions, but rather to clarify how they interact and provide a foundation of predictability for the industry as it navigates how to improve aviation safety through advancing technology.

Approving use of a device for training requires a clear definition of the training tasks to be accomplished and a determination that the device is capable of supporting completion of those tasks. Existing guidance does not in all cases provide clear direction to approving authorities on how to define those tasks, and may lead to confusion and incorrect conclusions regarding whether a given training task can be accomplished using a given device.

[5] See ACT ARC Recommendation 26–1, Creation of Guidance for Qualification of FSTDs Under Part 60 Deviation Authority or with Additional Capabilities.

IV. Proposed Recommendations

The ACT ARC recommends the FAA—

1) Create or revise guidance to certificate holders, FAA Principal Operations Inspectors (POI) and Training Center Program Managers (TCPM), and other stakeholders in the training approval and FSTD qualification processes defining criteria for approval or disapproval of the use of devices—
    a. Qualified under Part 60; and
    b. Devices other than FSTDs qualified under the Qualification Performance Standards (QPS) contained in Part 60.
2) Clearly define under what circumstances a device does and does not require qualification under Part 60.
3) Adopt a posture that appropriate technology will be approved for use in training activities regardless of the Part 60 device qualification level unless an applicable regulation specifically prescribes an FSTD qualification requirement.
4) Facilitate cross-training between FAA personnel conducting FSTD qualifications and FAA personnel conducting training approvals.

V. Rationale and Discussion

Proposed Recommendation 1: Create or revise guidance to certificate holders, FAA POIs/TCPMs, and other stakeholders in the training approval and FSTD qualification processes defining criteria for approval or disapproval of the use of devices—

a. Qualified under Part 60; and

b. Devices other than FSTDs qualified under the Qualification Performance Standards (QPS) contained in Part 60.

Guidance - Approval for Use in Training

The ACT ARC recommends that guidance to FAA personnel be created to promote communication and coordination between approving authorities responsible for qualification of FSTDs and Principal Operations Inspectors and Training Center Program Managers responsible for approval of use of training devices. The ACT ARC also recommends a policy of maximum utilization of simulation technology. In other words, where use of simulation technology presents opportunities to enhance training effectiveness, particularly in the areas of crew resource management and threat and error management, the default disposition should be approval for use in training unless a demonstrable reason not to approve exists.

Other Devices

Additional guidance is also needed regarding approval of devices for use in training, particularly approval of non-Part 60 devices under §§ 121.408, 121.921(b), or 135.335. While guidance exists regarding approval of Part 60 qualified FSTDs in training, there is little guidance with respect to devices not subject to Part 60 qualification, particularly devices that replicate aircraft systems or train flight deck functions or responsibilities but fall short of eligibility for qualification as FSTDs. Processes are necessary to allow FAA personnel to make consistent, repeatable determinations regarding requests for approval.

General Application

Factors that should be considered when determining whether to approve a device for training include—

- Whether the device is qualified under part 60;
- The nature of the activity in which the device is to be used—that is, whether the requested approval is for use in training (*i.e.*, exposure, familiarization, or instruction) or in activities demonstrating proficiency (*i.e.*, training to proficiency, validation, evaluation);
- An analysis/comparison of whether the capabilities of the device are appropriate to the specific activity(ies) for which approval is sought;
- Determination of whether the intended activity falls within the intended uses of the device;
- Whether the training program approval supports the device as suitable;
- Whether applicable regulations require the device to be qualified or approved;
- Whether a potential for negative training exists; and
- Whether the approval authority has directly observed the activity(ies) for which approval is sought.

Guidance should include examples of hypothetical approval scenarios. In addition to providing clear guidance on when a request to use a device in training should be granted, guidance should also address when approval should not be granted, such as when use of the device has a potential for negative training, or when there is a rules-based conflict with use of the device.

Guidance should also describe acceptable methods of documenting approvals to use specific devices for activities approved within a curriculum, both for use under an AQP, or under Part 121, Subparts N and O; Part 135; Part 142, Part 141, Part 125, or Part 91K.

Proposed Recommendation 2: Clearly define under what circumstances a device does and does not require qualification under part 60.

Guidance to FAA approving authorities on evaluating applications for deviation should address how to determine whether qualification of a device under Part 60 is required, taking into consideration the device characteristics and the intended training activity. Factors that should be considered when determining if a device requires Part 60 qualification include—

- Whether the user intends to use the device to satisfy a specific regulatory requirement, such as training to proficiency or completion of a task required for certification;
- The similarity of the device in question to devices that have been qualified in the past; and
- Whether direct regulatory oversight is required to guarantee safe operating practices.

Guidance to FAA approving authorities should also include information and clearly defined processes on how to evaluate applications for deviation or requests to qualify additional capabilities. The guidance and processes should include or address—

- Evaluation of justifications supplied by sponsors;
- A special conditions process to accommodate evaluation of technologies and devices to which the Part 60 QPS is inapplicable;

- A system for publication of grants of deviation or qualification with additional capabilities, to provide notice and visibility to other sponsors/potential sponsors and FAA approving authorities. While more formalized publications on the Federal Register could be considered, the ACT ARC believes grants of deviation and/or additional FSTD capabilities qualifications should be published in a similar manner to how FSB reports are published as draft documents on the FAA Aviation Safety organization website;[6, 7] and
- With respect to qualification of additional capabilities, the ACT ARC recommends revision of NSP Forms T001A and T025 to include additional capabilities outside the Part 60 QPS tables to standardize documentation of relief.

As described in this Recommendation, applicable regulations under 14 CFR require the use of a qualified FSTD for certain activities. Absent a specific and applicable regulatory requirement to use a qualified device, operators may gain approval to use non-qualified devices for required activities.

Additionally, operators should not be required to seek qualification of a device simply because the device could, in principle, achieve a qualification. The requirement for qualification is dependent on the intended use.

The following paragraphs describe the ACT ARC's findings regarding applicable regulatory requirements to use a qualified device.

Part 61 or 141

Devices should be approved for use as courseware or in addition to those tasks which specifically require a device qualification type and level.

No change to the provisions for logging pilot time are recommended.

Part 121 Subparts N&O (Non-AQP)

Air carriers conducting training under Part 121, Subparts N & O must use devices qualified as required by specific regulatory provisions (*e.g.*, § 121.423(b) and Appendix E&F) in at least those instances that satisfy those requirements. The FAA should approve devices, regardless of qualification status or level, for use in addition to those minimum requirements, unless that approval would reasonably lead to negative training.

Part 121 Subpart Y (AQP)

The requirement to use a qualified device within an AQP is described in § 121.921(a):

> *(a) Each flight training device or airplane simulator that will be used in an AQP for one of the following purposes must be evaluated by the FAA for assignment of a flight training device or flight simulator qualification level:*
>
> *(1) Required evaluation of individual or crew proficiency.*

[6] See https://www.faa.gov/aircraft/draft_docs

[7] See ACT ARC Recommendation 26–1, Creation of Guidance for Qualification of FSTDs Under Part 60 Deviation Authority or with Additional Capabilities. for additional information

> *(2) Training to proficiency or training activities that determine if an individual or crew is ready for an evaluation of proficiency.*
> *(3) Activities used to meet recency of experience requirements.*
> *(4) Line Operational Simulations (LOS).*

§ 121.921(b) specifies requirements for approval of training equipment other than flight simulators or FTDs:

> *(b) Approval of other training equipment.*
> *(1) Any training equipment that is intended to be used in an AQP for purposes other than those set forth in paragraph (a) of this section must be approved by the FAA for its intended use.*
> *(2) An applicant for approval of training equipment under this paragraph must identify the device by its nomenclature and describe its intended use.*
> *(3) Each training device approved for use in an AQP must be part of a continuing program to provide for its serviceability and fitness to perform its intended function as approved by the FAA.*

The language of § 121.921 raises a number of questions. An important distinction identified by the ACT ARC, and a central concept to this recommendation, is the distinction between whether the use of a device is permissible versus whether it can be used to meet regulatory requirements that refer to a specific type and level. For example, International Civil Aviation Organization (ICAO) Document 9625, Manual of Criteria for the Qualification of Flight Simulation Training Devices (ICAO Doc. 9625) uses the term “training” to permit a device for use, and “training to proficiency” to refer to the use of the device to meet a specific requirement for pilot certification.

The statement “Training to proficiency or training activities that determine if an individual or crew is ready for an evaluation of proficiency” in § 121.921(a)(2) may lead to confusion when combined with previously accepted recommendations.

The FTSD WG recommends the FAA issue or revise guidance or policy specifically addressing the following questions, issues, and interpretations with respect to § 121.921:

- Clarify the intent of the phrase “Each flight training device or airplane simulator that will be used in an AQP” in § 121.921(a) as it relates to events that do not use flight training devices or airplane simulators (*e.g.*, flight attendant event management evaluations (EME)).
- Clarify that “training to proficiency” in § 121.921(a)(2) covers only those tasks for which a qualified FSTD is the approved media for that purpose.
- Clarify that “activities that determine if an individual or crew is ready for an evaluation of proficiency” in § 121.921(a)(2) refers to a limited number of sessions within a curriculum (typically the session immediately preceding the evaluation of proficiency), not the curriculum as a whole.

- Confirm that “Activities used to meet recency of experience” in § 121.921(a)(3) refers to operational recency of experience applied to pilots, vs the application of § 121.915(c) to non-flightcrew member duties of instructors or evaluators.
- Provide an example of how an AQP may “identify [a] device by its nomenclature” in § 121.921(b)(2) in order to account for granted deviations or additional capabilities of that device. (Attachment B to this Recommendation contains examples of appropriate documentation.)
- Provide an example of how an AQP may document the distinction between devices permissible for training versus training to proficiency. (Attachment B to this Recommendation contains examples of appropriate documentation.)

For event types not listed in §121.921(a), the ACT ARC recommends the FAA approve devices for use if any of the following apply:

- The event task specifically relates to a qualified device capability;
- There is SOQ or alternative method of compliance (AMOC) documentation supporting the capability of the device for the intended use;
- There is approved training program documentation (*e.g.*, AQP Job Task Analysis (JTA)) supporting the suitability of the device; or
- An inspector has made a first-hand assessment (*e.g.*, fly-out) and determined the device is suitable for the intended use.

Note: Except for event types listed in § 121.921(a), inspector assessments should prohibit the use of a device only if there is a reasonable expectation that negative training would result from use of device.

Part 142 (non-AQP)

Training providers conducting training under Part 142 must use devices qualified as required by specific regulatory provisions in at least those instances that satisfy those requirements. The FAA should approve devices, regardless of qualification status or level, for use in addition to those minimum requirements, unless that approval would reasonably lead to negative training.

Proposed Recommendation 3: Adopt a posture that appropriate technology will be approved for use in training activities regardless of qualification under Part 60 unless an applicable regulation specifically prescribes an FSTD qualification requirement.

The ACT ARC found that outdated and unclear guidance is a significant deterrent to innovation and improvement in flight simulation technology. Investment in features and systems that improve fidelity and enhance training outcomes is less likely when no clear expectation is provided that users will be able to “take credit” for training using those features and systems, or whether regulators will permit their use at all.

The objective of this recommendation is to increase the utilization of flight simulation devices during pilot training. The ACT ARC does not recommend or intend that the requirements for fidelity or performance standards be reduced for devices used to demonstrate proficiency or conduct line-oriented/line operational simulation events. The ACT ARC recognizes the

importance of full flight simulation and the application of Qualification Performance Standards (QPS) and other requirements to ensure pilots are thoroughly and accurately trained.

Conversely, the ACT ARC recommends and intends that the FAA create clear and usable guidance for how users seek approval to use devices, what considerations regulators should take when reviewing applications for approval, and what to expect will be approved.

The ACT ARC investigated several applications of devices across all sectors of the US pilot training industry, including qualified and non-qualified devices used in training under Parts 61, 121 (subparts N&O and subpart Y), 135, 141, and 142. The ACT ARC found consistently that users that were able to gain approval to use devices from their local regulators were able to provide more total training time in a flight deck environment and experienced improved training outcomes, particularly in advanced and complex aircraft.

The ACT ARC discussed concerns that adopting a posture encouraging approval of devices, particularly those incorporating emerging technologies, could be misconstrued as an opportunity to use lower fidelity devices in an inappropriate context. The ACT ARC recommends the FAA maintain and clarify requirements that flight crewmembers continue to demonstrate proficiency in devices that have historically been shown to provide the highest levels of assurance and realism.

The ACT ARC noted that organizations that have received approval to use devices and features that are not well addressed in current guidance have generally used them to enhance or replace lower fidelity methods of instruction. For example, a Part 142 certificate holder gained approval to use non-qualified devices with mixed touchscreen and physical input systems arranged to roughly represent a flight deck. Time in the devices both with an instructor and as self-guided experience took the place of classroom instruction using static images as courseware.

Proposed Recommendation 4: Facilitate cross-training between FAA personnel conducting FSTD qualifications and FAA personnel conducting training approvals.

Once the policies and processes described above are developed and published, the ACT ARC recommends appropriate FAA personnel, including Training Program Approval Authorities (TPAA), Certificate Management Offices (CMO), Flight Standards District Offices (FSDO), and Flight Standards Air Transportation Division, Training and Simulation Group (AFS–280) personnel, receive training on their application at a national level to align handling at the local level to a consistent standard. Training should be designed both to educate approvers and to calibrate their treatment of requests, to ensure consistent handling of similar requests by different approvers and offices. The ACT ARC believes this is an important component to this recommendation because the FAA FSTD qualification and training approval processes operate independently of each other and the introduction of new technologies and the associated measurement of training effectiveness requires a more integrated approach to ensure safety and to maintain regulatory consistency amongst air carriers.

VI. Background Information

Proposed recommendation FSTD–6 addresses Item 7 in the FSTD WG Scope of Work and ACT ARC Initiative #49 (see below):

FSTD WG Scope of Work:

7. Develop recommendations on how to provide a more responsive, consistent, and standardized environment for coordinating the introduction, qualification, and determination of training and/or checking credits associated with FSTD, including existing devices and those incorporating new technologies.

ACT ARC Initiatives:
Initiative #49: Conduct a review and analysis of the current qualification and use of Flight Simulation Training Devices (FSTD) in Title 14 Code of Federal Regulations (14 CFR) part 121 Air Carrier Flight Training, focusing on: air carriers' ability to receive credit for use of currently available and future devices and the ability to incorporate new technology FSTDs into training syllabi to enhance the flight training experience, building on ACT ARC Recommendation 21-10.

Review the conflicts and gaps between 14 CFR part 60 (Flight Simulation Training Device Initial and Continuing Qualification and Use), and Appendices E (Flight Training Requirements), and F (Proficiency Check Requirements) to part 121, and provide recommendations for the harmonization of those rules.

Conduct an analysis of ICAO Doc 9625 (Manual of Criteria for the Qualification of Flight Simulation Training Devices - Volume I – Aeroplanes) (9625-1) with a focus on FSTD Capability Signature (FCS) and FSTD features and fidelity levels in the simulation environment, and provide recommendations as to how these principles might be incorporated into the regulations applicable to the utilization of simulation in flight training.

References

- 14 CFR part 60
- 14 CFR part 121
  - Subparts N, O, & Y
  - Appendices E & F
- National Simulator Program (NSP) Guidance Bulletin 16-01

Attachments
Attachment A – Approval Scenario – Taxi Phase
Attachment B – Example AQP Documentation

Attachment A
Approval Scenario – Taxi Phase

An illustrative example of the distinction between qualification and approval identified by the ACT ARC involves the use of certain FSTDs during the taxi phase.

Consider a certificate holder with approval to conduct initial and continuing qualification training and evaluation in a transport category aircraft. All participants in these curricula must possess an Air Transport Pilot (ATP) certificate. The certificate holder owns and uses a qualified level 5 FSTD that includes a flat panel visual system and can visually simulate ground movement, but the device is not capable of motion cueing, steering control force feedback, and the visual field-of-view and other characteristics are not fully conformal to the real world as seen on a typical full flight simulator.

Virtually all operators of transport category aircraft have both OEM and operator-specific procedures that occur during the taxi phase. Normal flows and checklists, ATC communication, crew coordination, aircraft performance calculation, ground de-icing, changes to the flight plan or ATC instructions, engine run-ups, tarmac delay procedures, and ground emergencies are just some examples of tasks the example operator is likely to require crews to learn and demonstrate proficiency in.

While all of those tasks occur during taxi, none of them directly relate to the mechanics of how the specific aircraft moves on the surface. The important elements provided by the FSTD are a realistic workload and sequence of events supported by the device's ability to simulate movement on the surface and system functions, rather than the force dynamics or visual field. Essentially, by broadly defining the task as "taxiing", it inadvertently excludes relevant subtasks that could reasonably be conducted on lower level FSTDs.

While it certainly seems reasonable that the certificate holder should be able to gain approval for those tasks in the example FSTD provided other parts of the curriculum require participants to demonstrate proficiency in the mechanics of taxi, current guidance provides no clear directive for regulators to approve those activities, creating uncertainty for both the regulator and certificate holder.

Absent specific guidance related to approving FSTDs for use in an approved curriculum, the ACT ARC found that FAA inspectors with training program approval responsibilities routinely seek out FAA approved documentation that justifies the specific activity applied for. In this example, the approving inspector may refer to Table B1B as the most obvious resource for determining whether use of the FSTD should be approved for this activity. Table B1B shows only level 7 FTDs are required to demonstrate the taxi task under entry number 1.c.:

Table B1B - Table of Tasks vs. FTD Level						
QPS REQUIREMENTS						INFORMATION
Entry Number	Subjective Requirements In order to be qualified at the FTD qualification level indicated, the FTD must be able to perform at least the tasks associated with that level of qualification. See Notes 1, 2 and 3 at the end of the Table	FTD Level				Notes
		4	5	6	7	
1. Preflight Procedures.						
1.a.	Preflight Inspection (flight deck only)	**A**	**A**	**X**	**X**	
1.b.	Engine Start	**A**	**A**	**X**	**X**	
1.c.	Taxiing				**T**	
1.d.	Pre-takeoff Checks	**A**	**A**	**X**	**X**	
2. Takeoff and Departure Phase.						
2.a.	Normal and Crosswind Takeoff				**T**	
2.b.	Instrument Takeoff				**T**	
2.c.	Engine Failure During Takeoff				**T**	
2.d.	Rejected Takeoff (requires visual system)			**A**	**X**	
2.e.	Departure Procedure		**X**	**X**	**X**	
3. Inflight Maneuvers.						
3.a.	Steep Turns		**X**	**X**	**X**	
3.b	Approaches to Stalls		**A**	**X**	**X**	Approach to stall maneuvers qualified only where the aircraft does not exhibit stall buffet as the first indication of the stall.
3.c.	Engine Failure—Multiengine Airplane		**A**	**X**	**X**	
3.d.	Engine Failure—Single-Engine Airplane		**A**	**X**	**X**	
3.e.	Specific Flight Characteristics incorporated into the user's FAA approved flight training program.	**A**	**A**	**A**	**A**	Level 4 FTDs have no minimum requirement for aerodynamic programming and are generally not qualified to conduct in-flight maneuvers.
3.f.	Windshear Recovery				**T**	For Level 7 FTD, windshear recovery may be qualified at the Sponsor's option. See Table B1A for specific requirements and limitations.
4. Instrument Procedures.						
4.a.	Standard Terminal Arrival / Flight Management System Arrivals Procedures		**A**	**X**	**X**	

Note there is no character in the FTD Level 5 column for entry number 1.c. Taxiing. Strictly speaking, this means that no QPS requirement exists for the FTD "...to be qualified at the FTD qualification level indicated."

The approving inspector in this example must also consider Part 60 language that correlates the existence of a QPS requirement with the authority to approve the device for use, such as the statement below in Attachment 1 to appendix B:

> 2.Discussion
> * * *
> d. Table B1B provides the tasks that the sponsor will examine to determine whether the FTD satisfactorily meets the requirements for flight crew training, testing, and experience, and provides the tasks for which the simulator may be qualified.

Some inspectors in this example may conclude that table B1B has not provided "taxiing" as a task "for which the simulator may be qualified," and therefore any activities which occur during taxi are prohibited in the device.

Alternatively, the inspector may note that the intent of the proposed curriculum is not to qualify pilots on the mechanics of taxiing, but rather other tasks that merely happen to occur while taxiing. While reasonable, no guidance exists to distinguish the activities which require a device which provides and meets a QPS requirement from those that do not. This distinction is further

complicated by the common practice of using ”phase of flight” to organize tasks in approved programs.

A third interpretation in this example may rely on other activities within the overall curriculum approved for the certificate holder. For example, if flightcrew members are subsequently evaluated while taxiing in a level D full flight simulator, the additional activity in the level 5 FTD may be considered ”courseware” or ”above and beyond” the minimum requirements set by the FAA.

Yet another interpretation in this example may involve a strict reading of 14 CFR § 60.1,

> **§ 60.1 Applicability.**
> (a) This part prescribes the rules governing the initial and continuing qualification and use of all aircraft flight simulation training devices (FSTD) ***used for meeting training, evaluation, or flight experience requirements of this chapter for flight crewmember certification or qualification***. Additional requirements for FSTD representing powered-lift are set forth in part 194 of this chapter. [Emphasis added]
> (b) The rules of this part apply to each person using or applying to use an FSTD to meet any requirement of this chapter.
> (c) The requirements of § 60.33 regarding falsification of applications, records, or reports also apply to each person who uses an FSTD for training, evaluation, or obtaining flight experience required for flight crewmember certification or qualification under this chapter.

The inspector in this example may conclude that activities taking place while taxiing in a level 5 FTD are only approvable when Part 60 (and therefore table B1B) are *not* applicable, such as when the activity is not required for flightcrew member certification or qualification. The term “certification” in the context of training is typically interpreted to mean any activity required to issue a new certificate, such as an ATP certificate or type rating. “Qualification” generally means any activity required to initially authorize a person to serve as flight crewmember for a specific certificate holder. Curricula for recurrent training, continuing qualification, or requalification do not typically meet the definitions of those terms, leading to the conclusion that the authorization to use the device depends on the purpose of the curriculum, not the specific event or qualifications of the device.

This interpretation is further complicated by observing that a QPS requirement does exist to achieve a level 7 FTD qualification, with the following caveat:

Table B1B - Table of Tasks vs. FTD Level						
QPS REQUIREMENTS						**INFORMATION**
Entry Number	**Subjective Requirements** In order to be qualified at the FTD qualification level indicated, the FTD must be able to perform at least the tasks associated with that level of qualification. See Notes 1, 2 and 3 at the end of the Table	**FTD Level**				**Notes**
		4	**5**	**6**	**7**	
6.i.	Flight Control Systems	**A**	**A**	**X**	**X**	
6.j.	Anti-ice and Deice Systems	**A**	**A**	**X**	**X**	
6.k.	Aircraft and Personal Emergency Equipment	**A**	**A**	**X**	**X**	
7. Emergency Procedures.						
7.a.	Emergency Descent (Max. Rate)		**A**	**X**	**X**	
7.b.	Inflight Fire and Smoke Removal		**A**	**X**	**X**	
7.c.	Rapid Decompression		**A**	**X**	**X**	
7.d.	Emergency Evacuation	**A**	**A**	**X**	**X**	

Table B1B - Table of Tasks vs. FTD Level						
8. Postflight Procedures.						
8.a.	After-Landing Procedures	**A**	**A**	**X**	**X**	
8.b.	Parking and Securing	**A**	**A**	**X**	**X**	

Note 1: An "A" in the table indicates that the system, task, or procedure, although not required to be present, may be examined if the appropriate airplane system is simulated in the FTD and is working properly.

Note 2: Items not installed or not functional on the FTD and not appearing on the SOQ Configuration List, are not required to be listed as exceptions on the SOQ.

Note 3: A "T" in the table indicates that the task may only be qualified for introductory initial or recurrent qualification training. These tasks may not be qualified for proficiency testing or checking credits in an FAA approved flight training program.

Note 3 strongly suggests that table B1B does indeed directly list those tasks which are approvable, and that the purpose of the curriculum is relevant to approvability. It also suggests a fifth possible interpretation, that approvability depends on whether the device is used for proficiency testing or checking, versus other activity. It is not clear from the note what constitutes "introductory" training, and the mention of recurrent qualification training seems to conflict with the applicability statement in § 60.1. The phrase "recurrent qualification training" is confusing as well.

This example illustrates the complexity and opacity of current guidance related to whether a certificate holder should expect approval of a curriculum outline, as well as the challenging landscape of inconsistent and occasionally conflicting guidance facing the approving inspector. While one user may receive approval to use a level 5 FTD in all normal phases of flight to provide training on various tasks that happen to occur during those phases, another may only receive approval to conduct pre-takeoff checks (entry number 1.d.) followed immediately by a departure procedure (entry number 2.e.). Presumably, the user would be expected to perform pre-takeoff checks, then reposition the simulated aircraft into an airborne position to resume training at the beginning of the departure procedure rather than allowing the crew to use the FTD's features to move the simulated aircraft on the surface normally.

This outcome clearly provides an inferior training experience for flight crewmembers. It is less realistic, denies the opportunity to practice workload management and other skills during a phase of flight that is adequately modeled for beneficial training and practice in most events and curricula, and may lead to expectations or habits that reduce proficiency in actual operations.

This situation creates a clear issue with regard to expectations and interpretations. This issue is within the scope of the FTSD WG to address, and directly impacts both current and emerging technologies. The issue of inadequate guidance to users of FSTDs and their regulators discourages investment in, and use of, technologies and certifications which provide more realistic, higher fidelity, and comprehensive training opportunities to flight crewmembers.

Attachment B
Example AQP Documentation

The following provides an example of how a Part 121 air carrier approved to conduct an Advanced Qualification Program (AQP) may choose to document devices, systems, equipment, or technology. As previously discussed, the FTSD WG feels strongly that a distinction is made between device qualification (*i.e.,* capability) and the intended use of a device. Whether a device is qualified depends on how it will be used to conduct training or assessment according to regulatory requirements and the approval of the Advanced Qualification Program. It is therefore important that AQP documentation include both a list of devices, systems, equipment, or technology and documentation on how the program will use those devices to accomplish various learning objectives. Nothing in this example should be construed to mean that all devices, equipment, systems, or technologies used in an AQP must be qualified if the air carrier does not wish to demonstrate proficiency for the purposes of meeting a regulatory requirement that prescribes a minimum qualification level.

Conventional AQPs typically categorize learning objectives by developing a Job Task Analysis (JTA). This is done by separating the Tasks a pilot must produce into Terminal Proficiency Objectives (TPOs), Supporting Proficiency Objectives (SPOs), and Enabling Objectives (EO's). While not every AQP uses this nomenclature, the examples below will follow this convention utilizing SPOs as the trained or assessed Task. Each SPO will describe an Evaluation Strategy that prescribes the level of training or checking that must be accomplished to demonstrate proficiency prior to completing a course of training. To accomplish this effort, an air carrier may choose to employ multiple devices, systems, equipment, or technologies to introduce/train a task, train a task to proficiency, validate a task, or evaluate a task. Multiple media may be acceptable in each of these categories depending on the capability of the device, equipment, system, or technology. For the purposes of this example the following definitions are applied:

- Introduce/Train – a concept meaning that a task is first introduced or that basic learning objectives are being discussed or performed without the need to demonstrate proficiency.
- Train to Proficiency – a concept meaning that a task is performed or demonstrated to a standard developed by the AQP usually referred to as the Qualification Standard. Train to proficiency usually implies that a pilot may repeat a task until proficiency is demonstrated
- Validation – an assessment that represents a "gate" at the end of a phase of training but does not constitute the end of course test. Limited opportunity at repeating tasks to demonstrate proficiency may be allowed.

- Evaluation – an assessment at the end of a course of training where no instruction, coaching, or mentoring is typically allowed prior to assessment of skills. This activity typically requires the highest order of device, equipment, system, or technology as prescribed by applicable regulatory requirements.

The following chart provides an example of how an AQP may choose to document devices, equipment, systems, or technologies utilized in an approved program. The chart delineates each device, equipment, system, or technology type, and documents which AQP tasks (SPOs) apply to the device and to what degree the program intends to use the device indicated by the level of training or assessment. AQP's commonly refer to these charts as a List of Approved Devices or similar type nomenclature.

Device, Equipment, System, or Technology Description	SPO ID	Supporting Proficiency Objective	Train	Train to Proficiency	Validate	Evaluate	Notes
VIRTUAL REALITY WEARABLE HEADSET (VR 1, VR2)	3.1.1	Perform NADP-1 Noise Abatement Takeoff	x				limited to cockpit orientation/familiarization training
	3.1.2	Perform Low Visibility Takeoff	x				limited to cockpit orientation/familiarization training
	3.1.3	Perform Takeoff with Engine Failure/Fire at V1	x				limited to cockpit orientation/familiarization training
	3.1.4	Perform Maximum Performance Takeoff	x				limited to cockpit orientation/familiarization training
	3.1.5	Perform NADP-2 Noise Abatement Takeoff	x				limited to cockpit orientation/familiarization training
	3.1.6	Perform High Altitude Takeoff	x				limited to cockpit orientation/familiarization training
	3.2.1	Perform Crosswind Takeoff	x				limited to cockpit orientation/familiarization training
	3.2.2.	Perform Gusty Crosswind Takeoff	x				limited to cockpit orientation/familiarization training
	3.2.3	Perform …	x				limited to cockpit orientation/familiarization training
FIXED BASED TRAINING DEVICE #1 FAA ID # 1101 LEVEL 4	3.1.1	Perform NADP-1 Noise Abatement Takeoff	x				Limited to Procedures and LOFT training not requiring the use of flight controls, visual display, or motion systems
	3.1.2	Perform Low Visibility Takeoff	x				Limited to Procedures and LOFT training not requiring the use of flight controls, visual display, or motion systems
	3.1.3	Perform Takeoff with Engine Failure/Fire at V1	x				Limited to Procedures and LOFT training not requiring the use of flight controls, visual display, or motion systems
	3.1.4	Perform Maximum Performance Takeoff	x				Limited to Procedures and LOFT training not requiring the use of flight controls, visual display, or motion systems
	3.1.5	Perform NADP-2 Noise Abatement Takeoff	x				Limited to Procedures and LOFT training not requiring the use of flight controls, visual display, or motion systems
	3.1.6	Perform High Altitude Takeoff	x				Limited to Procedures and LOFT training not requiring the use of flight controls, visual display, or motion systems
	3.2.1	Perform Crosswind Takeoff	x				Limited to Procedures and LOFT training not requiring the use of flight controls, visual display, or motion systems
	3.2.2.	Perform Gusty Crosswind Takeoff	x				Limited to Procedures and LOFT training not requiring the use of flight controls, visual display, or motion systems

Device, Equipment, System, or Technology Description	SPO ID	Supporting Proficiency Objective	Train	Train to Proficiency	Validate	Evaluate	Notes
	3.2.3	Perform …	x				Limited to Procedures and LOFT training not requiring the use of flight controls, visual display, or motion systems
FULL MOTION SIMULATOR FAA ID #1501	3.1.1	Perform NADP-1 Noise Abatement Takeoff	x	x	x	x	None
	3.1.2	Perform Low Visibility Takeoff	x	x	x	x	None
	3.1.3	Perform Takeoff with Engine Failure/Fire at V1	x	x	x	x	None
	3.1.4	Perform Maximum Performance Takeoff	x	x	x	x	None
	3.1.5	Perform NADP-2 Noise Abatement Takeoff	x	x	x	x	None
	3.1.6	Perform High Altitude Takeoff	x	x	x	x	None
	3.2.1	Perform Crosswind Takeoff	x	x	x	x	None
	3.2.2.	Perform Gusty Crosswind Takeoff	x	x	x	x	None
	3.2.3	Perform …	x	x	x	x	None

As an alternate example, an AQP could choose to document device utilization by separating each SPO and describing which devices, equipment, systems, or technologies apply to that SPO and to what degree shown here.

SPO 3.1.1 Perform NADP-1 Noise Abatement Takeoff	Device Type	Device ID	Qualification Level	Train	Train to Proficiency	Validate	Evaluate	Notes
	VIRTUAL REALITY WEARABLE HEADSET	VR 1	N/A	X				Training limited to cockpit orientation, procedures...
		VR 2	N/A	X				Training limited to cockpit orientation, procedures...
		VR 3	N/A	X				Training limited to cockpit orientation, procedures...
		VR 4	N/A	X				Training limited to cockpit orientation, procedures...
		VR 5	N/A	X				Training limited to cockpit orientation, procedures...
	FMS TRAINER PILOT EFB APPLICATION	A319/320/321	N/A	X				Training limited to FMS and MCP operation only
		B737	N/A	X				Training limited to FMS and MCP operation only
		B757	N/A	X				Training limited to FMS and MCP operation only
		B767	N/A	X				Training limited to FMS and MCP operation only
		B777	N/A	X				Training limited to FMS and MCP operation only
		B787	N/A	X				Training limited to FMS and MCP operation only
	FIXED BASE TRAINING DEVICE NO VISUAL NO CONTROL LOADING	FAA ID 1101	Lvl 4	X				Training limited to procedures, automation...
		FAA ID 1102	Lvl 4	X				Training limited to procedures, automation...
		FAA ID 1103	Lvl 4	X				Training limited to procedures, automation...
		FAA ID 1104	Lvl 4	X				Training limited to procedures, automation...
	FIXED BASE TRAINING DEVICE VISUAL DISPLAY CONTROL LOADING	FAA ID 1201	Lvl 5		X			Training limited to takeoff not requiring crosswind...
		FAA ID 1202	Lvl 6		X			Training limited to takeoff not requiring crosswind...
		FAA ID 1203	Lvl 7		X			Training limited to takeoff not requiring crosswind...
		FAA ID 1204	Lvl 8		X			Training limited to takeoff not requiring crosswind...
		FAA ID 1205	Lvl 9		X			Training limited to takeoff not requiring crosswind...
	FULL MOTION SIMULATOR	FAA ID 1501	Lvl D			X	X	no restrictions
		FAA ID 1502	Lvl D			X	X	no restrictions
		FAA ID 1503	Lvl D			X	X	no restrictions
		FAA ID 1504	Lvl D			X	X	no restrictions
		FAA ID 1505	Lvl D			X	X	no restrictions
	AIRCRAFT	737NG	N/A				X	no restrictions
		737 MAX	N/A				X	no restrictions

The following examples provide an AQP Job Task Analysis (JTA) that defines each Task a pilot must perform and the Evaluation Strategy for that Task (as indicated by the highlighted box). As previously discussed, the program may choose to introduce components or concepts of a task utilizing devices, equipment, systems, and technologies that do not meet the requirements of the Evaluation Strategy. However, the final performance of the Task demonstrating proficiency, and thus where the AQP may conform to a regulatory requirement that specifies a minimum device level, must be performed in the appropriate device, equipment, system, or technology for the Evaluation Strategy listed.

Example 1 – SPO Evaluation Strategy – Train to Proficiency

TPO 3.1 Takeoff Operations

SPO ID	Supporting Proficiency Objective	Crew/Duty Position	Criticality	Currency	Fleet Applicability	Credit for Equivalency
3.1.1	Perform NADP-1 Noise Abatement Takeoff	Both	Yes	Yes	All Fleet Types	Yes

Performance Statement	
Demonstrate the ability to perform a normal takeoff sequence using Noise Abatement Departure Procedure-1. Pilots should...	
Evaluation Strategy	Train to Proficiency
Level of Training/Assessment	**Device Requirement**
Train/Introduce	VR 1, VR 2, FMST, VFD
Train to Proficiency	FAA ID 1201, 1202, 1203, 1204
Validate	N/A
Evaluate	N/A
Conditions	Variable
Contingencies	DP, ODP, SID requiring Noise Abatement Departure Procedures
Qualification Standards	
Examples of Qualification Standards	

Example 2 – SPO Evaluation Strategy Validate

TPO 3.1 Takeoff Operations

SPO ID	Supporting Proficiency Objective	Crew/Duty Position	Criticality	Currency	Fleet Applicability	Credit for Equivalency
3.1.2	Perform Low Visibility Takeoff	Both	Yes	No	All Fleet Types	No
Performance Statement						
Demonstrate the ability to perform a low visibility takeoff when weather conditions are below standard IFR takeoff minimums. Pilots should…						
Evaluation Strategy	Validate					
Level of Training/Assessment	**Minimum Device Requirement**					
Train/Introduce	VR 1, VR 2					
Train to Proficiency	FAA ID 1201, 1202, 1203, 1204					
Validate	FAA ID 1501, 1502, 1503, 1504					
Evaluate	N/A					
Conditions	Lowest authorized visibility and ceiling minima per OpSpec/SOP/Aircraft					
Contingencies	N/A					
Qualification Standards						
Examples of Qualification Standards						

Example 3 – SPO Evaluation Strategy – Validate

TPO 3.1 Takeoff Operations

SPO ID	Supporting Proficiency Objective	Crew/Duty Position	Criticality	Currency	Fleet Applicability	Credit for Equivalency
3.1.3	Perform Takeoff with Engine Failure/Fire at V1	Both	Yes	No	All Fleet Types	No
Performance Statement						
Demonstrate the ability to perform a takeoff with an engine failure (optional engine fire/severe damage) at or after V1 but prior to V2. Pilots should…						
Evaluation Strategy	Validate					
Level of Training/Assessment	**Minimum Device Requirement**					
Train/Introduce	VR 1, VR 2					
Train to Proficiency	FAA ID 1501, 1502, 1503, 1504					
Validate	FAA ID 1501, 1502, 1503, 1504					
Evaluate	N/A					
Conditions	Visibility/ceiling at CAT I approach minimums for intended runway					
Contingencies	One engine failure at or after V1 prior to V2					
Qualification Standards						
Examples of Qualification Standards						

Example 4 – SPO Evaluation Strategy – Evaluate

TPO 3.1 Takeoff Operations

SPO ID	Supporting Proficiency Objective	Crew/Duty Position	Criticality	Currency	Fleet Applicability	Credit for Equivalency
3.1.4	Perform Maximum Performance Takeoff	Both	Yes	No	B737	No
Performance Statement						
Demonstrate the ability to perform a short field/maximum performance takeoff. Pilots should...						
Evaluation Strategy	Evaluate					
Level of Training/Assessment	**Minimum Device Requirement**					
Train/Introduce	VR 1, VR 2					
Train to Proficiency	FAA ID 1501, 1502, 1503, 1504					
Validate	FAA ID 1501, 1502, 1503, 1504					
Evaluate	FAA ID 1501, 1502, 1503, 1504 or B737 Airplane					
Conditions	Variable					
Contingencies	Runway length or obstable height requiring maximum performance takeoff					
Qualification Standards						
Examples of Qualification Standards						