U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Effective Date: **9-30-2010**

SUBJ: Flightcrew Member Training Hours Requirement Review Aviation Rulemaking Committee

1. PURPOSE. This document establishes the Flightcrew Member Training Hours Requirement Review Aviation Rulemaking Committee (ARC) according to the Administrator's authority under Title 49 of the United States Code (49 U.S.C.), section 106(p)(5).

2. BACKGROUND.

a. In August 2010 Congress enacted the "Airline Safety and Federal Aviation Administration Extension Act of 2010" (the "Act"). Section 209(b) of the Act, titled "FAA Rulemaking on Training Programs," requires the FAA to convene a multidisciplinary panel to assess and make recommendations to the Administrator on:

1) The best methods and optimal time needed for flightcrew members of Title 14 Code of Federal Regulations (CFR) part 121 and 135 air carriers to master aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination;

2) The initial and recurrent testing requirements for pilots, including the rigor and consistency of testing programs such as check rides;

3) The optimal length of time between training events for such flightcrew members, including recurrent training events;

4) The best methods to reliably evaluate a flightcrew member's mastery of aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination;

5) Classroom instruction requirements governing curriculum content and hours of instruction;

6) The best methods to allow specific academic training courses to be credited toward the total flight-hours required to receive an airline transport pilot certificate; and

7) Crew leadership training.

b. Section 209(b) of the Act also requires the panel to consider industry best practices with respect to training protocols, methods, and procedures and to submit a report, based on the findings of the panel, to Congress and the NTSB by July 31, 2011.

c. To carry out the requirements of Section 209(b) of the Act, the FAA is chartering an ARC. The ARC will accomplish the tasks directed in Section 209(b) of the Act based on the Congressional timelines outlined in the Act and will additionally develop recommendations for the FAA regarding regulatory action in those same areas.

3. **OBJECTIVES AND SCOPE OF THE ARC.** The Flightcrew Member Training Hours Requirement Review ARC will provide a forum for the U.S. aviation community to discuss and provide recommendations to the FAA concerning the development of requirements to meet Section 209(b) of the Act.

a. Specifically, the ARC shall assess and make recommendations concerning:

1) The best methods and optimal time needed for flightcrew members of 14 CFR part 121 and 135 air carriers to master aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination;

2) The initial and recurrent testing requirements for pilots, including the rigor and consistency of testing programs such as check rides;

3) The optimal length of time between training events for such flightcrew members, including recurrent training events;

4) The best methods to reliably evaluate a flightcrew member's mastery of aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination;

5) Classroom instruction requirements governing curriculum content and hours of instruction;

6) The best methods to allow specific academic training courses to be credited toward the total flight-hours required to receive an airline transport pilot certificate; and

7) Crew leadership training.

b. The ARC shall consider scalability of its recommendations to address the needs of small businesses.

c. The ARC will develop recommendations to 14 CFR parts 121, 135, and other associated regulations as may be required to comply with the intent of Section 209(b) of the Act. These recommendations will be presented to the Associate Administrator for Aviation Safety for rulemaking consideration on or before July 31, 2011.

4. ARC PROCEDURES.

a. The ARC will provide advice and recommendations to the Associate Administrator for Aviation Safety and acts solely in an advisory capacity. Once the ARC recommendations are delivered to the Associate Administrator, it is within her discretion to determine when and how the report of the ARC is released to the public.

b. The committee will discuss and present information, guidance, and recommendations that the members of the committee consider relevant in addressing the objectives.

c. The ARC may be reconvened following the submission of its recommendations for the purposes of providing advice and assistance to the FAA, at the discretion of the Associate Administrator.

5. ORGANIZATION, MEMBERSHIP, AND ADMINISTRATION.

a. The membership of the ARC will consist of individuals from the government, pilot associations, training organizations, and other industry organizations that can provide experts in aircraft operations, flightcrew member training, human factors, and other appropriate specialties as determined by the FAA.

1) The ARC will consist of no more than 17 individuals.

2) The FAA will identify the number of ARC members that each organization may select to participate. The Associate Administrator for Aviation Safety will then request that each organization name its representative(s). Only the representative for the organization will have authority to speak for the organization or group that he or she represents.

3) Active participation and commitment by members will be essential for achieving the ARC's objectives and for continued membership on the ARC.

b. The Associate Administrator for Aviation Safety is the sponsor of the ARC and will select an industry chair(s) from the membership of the ARC and the FAA-designated representative for the ARC. Once appointed, the industry chair(s) will:

1) Coordinate required committee and subcommittee (if any) meetings in order to meet the ARC's objectives and timelines;

2) Provide notification to all ARC members of the time and place for each meeting;

3) Ensure meeting agendas are established and provided to the committee members in a timely manner; and

4) Other responsibilities as required to ensure ARC objectives are met.

c. A record of discussions of ARC meetings will be kept.

d. Although not required, a quorum is desirable at each ARC meeting.

6. **PUBLIC PARTICIPATION.** ARC meetings are not open to the public. Persons or organizations that are not members of the ARC and are interested in attending a meeting must request and receive approval before the meeting from the industry chair(s) and the designated Federal representative.

7. **AVAILABILITY OF RECORDS.** Records, reports, agendas, working papers, and other documents that are made available to or prepared for or by the ARC will be available for public inspection and copying at the FAA Flight Standards Service, Air Transportation Division, AFS-200, 800 Independence Avenue, SW., Washington, D.C. 20591, consistent with the Freedom of Information Act, 5 U.S.C. section 522. Fees will be charged for information furnished to the public according to the fee schedule published in Title 49 CFR part 7.

8. **PUBLIC INTEREST.** The ARC's formation is determined to be in the public interest and is designed to fulfill the performance of duties imposed on the FAA by Federal law.

9. **EFFECTIVE DATE AND DURATION.** This ARC is effective upon issuance of this order. The ARC will remain in existence until September 30, 2012, unless sooner suspended, terminated or extended by the Administrator.

J. Randolph Babbitt
Administrator

Flightcrew Member Training Hours Requirement Review Aviation Rulemaking Committee

Report from the THRR ARC

May 23, 2011

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Federal Aviation Administration (FAA) chartered the Flightcrew Member Training Hours Requirement Review (THRR) Aviation Rulemaking Committee (ARC) to develop the report required by Section 209 of the Airline Safety and FAA Extension Act of 2010 (Pub. L. 111–216). The THRR ARC charter appears in its entirety in Appendix F.

The THRR ARC was given three tasks, which are described below.

I. To assess and make recommendations concerning—

(1) The best methods and optimal time needed for flightcrew members of Title 14, Code of Federal Regulations (14 CFR) part 121 and 135 air carriers to master aircraft systems, maneuvers, procedures, takeoffs and landings, and flightcrew coordination;

(2) The initial and recurrent testing requirements for pilots, including the rigor and consistency of testing programs such as check rides;

(3) The optimal length of time between training events for such flightcrew members, including recurrent training events;

(4) The best methods to reliably evaluate a flightcrew member's mastery of aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination;

(5) Classroom instruction requirements governing curriculum content and hours of instruction;

(6) The best methods to allow specific academic training courses to be credited toward the total flight hours required to receive an airline transport pilot (ATP) certificate; and

(7) Crew leadership training.

II. To consider the scalability of recommendations to address the needs of small businesses.

III. To develop regulatory recommendations as may be required.

During early deliberations, the THRR ARC recognized that the aviation training paradigm needed to shift to achieve substantial changes to training/checking, and by extension, safety. This need is clearly illustrated in a report of the International Air Transport Association's (IATA) Training and Qualification Initiative:

> "For decades, the content of flightcrew training [programs] has remained unchanged according to regulation whilst aircraft design and reliability have evolved dramatically. Regulatory prescriptions for flightcrew training and checking are based on events, which are now highly improbable in aircraft

> designed to meet modern standards. Training [programs] are consequently burdened with items, which do little to mitigate real risks or enhance safety."[1]

Understanding it was necessary to provide methods to move beyond traditional prescriptive training if more effective learning and assessment are to occur, the THRR ARC investigated the field of learning systems design. Ultimately, the ARC accepted the need to move towards competency-based training, utilizing evidence (data and analysis) to develop the best training. Today, the optimum method to accomplish this would be through the group of methodologies referred to as Instructional Systems Design (ISD).

ISD methodologies are based upon analysis of the workforce, the equipment to be operated, and the operating environment. Variables must be considered, including the number of pilots, fleet size, and the diversity of fleet and staffing levels. Once the principles of ISD are utilized, training programs can be developed that address the common cohort of the individual operators and allow some flexibility for meeting the training needs of the individual.

The THRR ARC has concluded the FAA-approved training program known as Advanced Qualification Program (AQP) provides the best current method for training, assessing, and validating flightcrew members for commercial air carrier operations. Due to practical limitations, AQP is not a readily achievable, or in some cases even a possible training solution for all operators.

AQP has provided the industry with principles that have proven effective using the following three pillars:

1. *Competency-Based Training.* This principle relies on training that is delivered and evaluated based upon the amount of training each individual needs to "master" the required tasks. Competency may be achieved at different rates for different people, and the amount of elapsed time between training events that competency is maintained also varies individually and must be considered. Competency-based training varies from prescriptive training because it recognizes one size cannot fit all.

2. *Train to Proficiency.* Inherent to any competency-based training program is the principle of "train to proficiency". Train to proficiency provides for the variations of individual learning rates. It also allows for additional exposure to a task until the pilot is proficient, and competency is achieved. Training to proficiency drives the quantity of training required to gain competency

3. *Data Collection and Feedback.* This is possibly the most important element to ensure the effectiveness of this approach. This is where the skill and knowledge of the individual and flightcrew can be assessed, and the health of the training program is monitored. The data element provides a continuous feedback loop allowing for rapid adjustments when performance indicators warrant action and helps determine the correct intervals between training events.

[1] IATA Training and Qualification Initiative (ITQI) Report 2009 Fall Edition

In the competency-based training approach, the amount of time required to master an element is not fixed. Instead, it is determined by how long it takes for the individual to reach and/or maintain competency with regard to knowledge, skills, and attitudes (KSA). These KSAs are established through detailed task analysis of the aircraft and environment in which the pilot will be operating. Likewise, the evaluation and validation criteria are based on a demonstration of mastery of individual and flightcrew KSAs.

The THRR ARC was challenged by the need to provide scalable options that acknowledge the vast diversity of air carrier size and scope that exists in the industry, particularly between the large scheduled airlines of part 121 and the small, on-demand operators of part 135. Any "universal" training recommendations made by the ARC need to be appropriate for the smallest single-pilot, single-aircraft operator and the largest air carriers with fleets comprising hundreds of large jet aircraft flown by thousands of pilots.

The THRR ARC evaluated the seven issues to determine the optimal training solutions, but recognized that a prescriptive regulatory minimum must be maintained in order to accommodate the needs of the smallest air carriers that lack the resources and data pool necessary for the development of an ISD-driven training program. The ARC did believe the minimum regulatory standard should be reevaluated to determine air carriers' ability to produce an acceptable level of safety. In light of the many recommendations made by the ARC, the FAA should alter the minimum standard for smaller air carriers where prudent to improve pilot training and also provide mechanisms within the regulations, policy, and guidance that enable and encourage the smaller air carriers to adopt ISD-driven methods where able.

The THRR ARC used the basic principles of ISD to address Issues 1 through 5. Issues 6 and 7 were the subject of separate FAA-established ARCs. The ARC reviewed presentations by subject matter experts (SME) from those ARCs and used that information as the foundation for its response to those issues.

1.0 RECOMMENDATIONS

1.1 ISSUE 1

The best methods and optimal time needed for flightcrew members of Title 14 Code of Federal Regulations (CFR) part 121 and 135 air carriers to master aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination. (See section 3.1 on page 11 for the rationale.)

1.1.1 RECOMMENDATIONS

The THRR ARC recommends—

- That a process-based training development system, such as ISD, be used to develop a training course tailored to meet the requirements of each operator.
- That scenario-based training be used as often as possible throughout the curriculum.
- That as a minimum, each flightcrew member receives annual recurrent training without the option to replace the training event with a checking event, as currently permitted.
- That instructors and evaluators attend annual recurrent training that includes methods for ensuring consistent grading of training and validation events.
- That the identifiable pilot record shall only record satisfactory/unsatisfactory completion.
- That a multipoint grading scale will be used to assess and enhance the training program.
- That a new ARC be established to identify the methodology and data necessary to support a process-based training development system for those operators who do not currently use such a system or are without access to sufficient data to maintain such a system (that is, small air carriers). Examples of data that should be considered include:
    - Aircraft data monitoring programs, such as flight data monitoring (FDM) or Flight Operations Quality Assurance (FOQA);
    - Aviation Safety Action Program (ASAP);
    - Operator implemented safety reporting systems;
    - Safety Management System (SMS) and/or Internal Evaluation Program information;
    - Line Operations Safety Audit (LOSA);
    - Pilot survey and/or critique information; and

- Any other available regulator or industry information such as Information for Operators (InFO), Safety Alert for Operators (SAFO), and Flight Standards Board (FSB) reports.

- That an ARC be established to evaluate and clarify the rules governing the relationship between part 121 and part 135 air carriers and 14 CFR part 142 training centers.

1.2 ISSUE 2

The initial and recurrent testing requirements for pilots, including the rigor and consistency of testing programs such as check rides. (See section 3.2 on page 17 for the rationale.)

1.2.1 RECOMMENDATIONS

The THRR ARC recommends—

- That when a second in command (SIC) is required, the SIC shall be held to the same minimum performance standard as the pilot in command (PIC).

- That flight proficiency be validated by using a maneuvers list developed by the air carrier, who must use an ISD approach to job task analysis. The maneuvers list should be based on the air carrier's specific equipment and operation and may be supplemented by any FAA or industry requirements.

- That training, validation, and evaluation of flight proficiency in multi-pilot operations include pilot monitoring (PM) skills.

- That the line check program employed in part 121 is suitable for those operations.

- That for part 135 operations, the adoption of line check rule changes be made, as proposed by the Part 135/125 ARC.[2].

[2] Federal Docket No. FAA-2002-13923

1.3 ISSUE 3

The optimal length of time between training events for such flightcrew members, including recurrent training events. (See section 3.3 on page 22 for the rationale.)

1.3.1 RECOMMENDATIONS

- That early evaluation (short-cycle) should be required for:
    - Extended pilot absence from flight operations requiring requalification training that exceeds recurrent training but does not require initial training.
    - Unsatisfactory performance during an assessment.
- That under specified conditions, the evaluation interval may be extended if the air carrier can demonstrate operational characteristics contained in one or more of the following seven options.
    - Option 1: Implementation of a First Look Program— Special Purpose Operational Training (SPOT) Check; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.
    - Option 2: Implementation of Line Oriented Flight Training Program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.
    - Option 3: Implementation of an Enhanced Training Data Collection and Feedback Program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.
    - Option 4: Implementation of an SMS; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.
    - Option 5: Implementation of FOQA or FDM International Civil Aviation Organization (ICAO) program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.
    - Option 6: Enhanced Management Oversight program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.
    - Option 7: Demonstration of Individual Pilot Operational Tempo; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.
- That the evaluation interval is not extended beyond 12 months, unless the air carrier has developed an AQP program in accordance with part 121, subpart Y.

1.4 ISSUE 4

The best methods to reliably evaluate a flightcrew member's mastery of aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination. (See section 3.4 on page 26 for the rationale.)

1.4.1 RECOMMENDATIONS

The THRR ARC recommends—

- That flightcrew member mastery be evaluated through the use of an appropriate flight simulator training device (FSTD).
- That the flight proficiency be verified using scenario-based evaluation.

1.5 ISSUE 5

Classroom instruction requirements governing curriculum content and hours of instruction. (See section 3.5 on page 28 for the rationale.)

1.5.1 RECOMMENDATION

The THRR ARC members concluded the same process and procedures for Issue 1 apply to classroom training. Therefore, the recommendations for Issue 5 are included in those for Issue 1. (See section 3.1 on page 11 for the rationale.)

1.6 ISSUE 6

The best methods to allow specific academic training courses to be credited toward the total flight-hours required to receive an airline transport pilot certificate. (See page 29 for the rationale.)

1.6.1 RECOMMENDATIONS

The THRR ARC recommends—

- That the FAA implement the First Officer Qualification (FOQ) ARC's recommendation to establish an aeronautical experience credit system for an ATP certificate with SIC privileges in operations conducted under part 121. One member of the THRR ARC dissented from this recommendation.
- That an aeronautical experience credit system not be allowed for experience requirements for any ATP certificate for a PIC at a part 121 or part 135 air carrier.

- That the use of an aeronautical experience credit system not be used for any part 135 flight-hour requirements.

1.7 ISSUE 7

Crew leadership training. (See page 31 for the rationale.)

1.7.1 RECOMMENDATION

The THRR ARC recommends—

- That the FAA implement the Flight Crewmember Mentoring, Leadership, and Professional Development (MLP) ARC recommendation to require leadership training for the PIC. An ISD process could potentially be used in lieu of the specific hour requirement in the MLP ARC's recommendation.

- That leadership training be integrated into appropriate training events through the ISD process.

2.0 BACKGROUND

2.1 ARC COMPOSITION

The THRR ARC was composed of subject matter experts from 13 organizations (see Appendix A for a complete list). Collectively, the ARC members brought significant levels of experience to the deliberations in air carrier operations; the development, implementation, and management of pilot training and qualification programs; and the establishment of pilot training and qualification standards at the domestic and international level. The ARC also had access to representatives from the FAA to answer any specific regulatory or guidance issues that arose during deliberations.

2.2 CLARIFICATION OF SCOPE

While the THRR ARC's tasking was to address "flightcrew members," which by definition includes flight engineers and navigators, the ARC deliberations and response only address the flight deck crew (that is, pilots). This adjustment to the scope was made because the language from the legislation and charter implied that the ARC's focus is intended to be on pilot training. Although flight engineers and navigators are included in the definition of flightcrew member, their actual cohort is extremely small compared to pilots. Thus, the ARC felt that the overall impact on safety could better be served by spending its limited time and resources to address pilot training, the the principle area of concern.

In general, the THRR ARC members believe the existing regulatory minimum requirements have served the industry well, improvements are possible, and in some instances, necessary.

One of the biggest challenges for the THRR ARC was addressing parts 121 and 135 simultaneously. The difference in operating philosophies sometimes made it difficult to find a common solution. Ultimately, the ARC chose to recommend the optimal solution for each issue, which often required adjusting standards to the best practice of the more robust guidance. In several instances, it was difficult for the ARC members to envision how the FAA would apply the THRR ARC recommendations to many part 135 air carriers, particularly those classified as single-pilot or single-PIC operators. Where practical, this report notes the difficulty in applying certain recommendations to part 135 air carriers and suggests that the FAA undertake separate rulemaking, ideally via an ARC, to address concerns the THRR ARC was unable to consider.

With regard to the challenges faced when attempting to address the varied operations that exist under part 135, the FAA convened the Part 135/125 ARC in 2005, which was specifically tasked with reviewing and recommending changes to part 135. These changes included a complete review of the training and checking requirements of those operators, with consideration given to the small business aspects prevalent in that industry segment. The THRR ARC did not have sufficient time to review and comment on the extensive recommendations made by that ARC, and therefore has no specific comment on them. The THRR ARC does believe the FAA should review those recommendations in conjunction with its own, as appropriate, when considering new training standards for part 135.

2.3 METHODOLOGY

The bulk of the THRR ARC report provides guidance on Issues 1 through 5. These issues address the level of training, validation, and evaluation needed to ensure a pilot in part 121[3] or 135 flight operations has mastery of the KSAs to operate in the complex air carrier arena, and that the intervals between recurrent training events do not compromise safety. While the ARC tasking requires distinct responses to each issue, these five issues share enough commonality to allow deliberations and analysis to be conducted in three groupings:

- Training Courseware,
- Intervals of Training, and
- Evaluation and Validation.

Accordingly, the THRR ARC developed three subcommittees, one for each group. Each subcommittee was then assigned the specific issues(s) most closely associated with its area. The issues were divided as follows:

- Training Courseware: Issue 1 and Issue 5
- Intervals of Training: Issue 3
- Evaluation and Validation: Issues 2 and Issue 4

Issues 6 and 7 were the subject of two separate ARCs: the FOQ ARC and MLP ARC. While the THRR ARC charter requires independent deliberation and response, the ARC membership agreed that it was prudent to be familiar with and build on the previous ARCs' work. The THRR ARC received a series of briefs on the FOQ and MLP ARCs' work and used that as a foundation to develop its responses.

2.4 COMPETENCY-BASED TRAINING

Following extensive discussion on the optimal method to train and evaluate pilots, the THRR ARC members agreed upon a training system established on a train-to-proficiency standard. Currently, training is prescriptive in the specific instruction delivered and assessed, and in the hours required for each training event. This training system provides air carriers with little flexibility to adjust to the identified needs of an individual pilot or group of similarly situated pilots. The train-to-proficiency philosophy recognizes that the optimal time required to master a particular task can vary, and permits tailoring the training to the recipient. This philosophy is the over-arching element for how the THRR ARC approached its discussions and subsequent recommendations.

[3] Discussion of Part 121 was restricted to the regulations current as of May 5, 2011.

Currently, this philosophy is best associated with the ISD concept, which is explained in further detail in Section 2.4.1. Although relying heavily upon the current use of ISD, the THRR ARC does not intend to restrict the use of newer concepts for training program design that may arise in the future. To the contrary, the ARC members decided not to focus on a singular method of program design. The goal is to encourage air carriers to develop training programs that produce pilots who are "trained-to-proficiency." Today, that output is best captured by the ISD process, so it was used by the ARC as a model system.

The ISD curriculums are designed to provide a level of training that will allow a normally progressing pilot of average skills in a target group to complete all training successfully in the planned hours and days. Pilots following these curriculums are continually assessed on all tasks each day in each phase of training. At the completion of each phase, a pilot's training is validated and his or her performance must meet standards. If at any time a pilot's performance is assessed as not meeting the standards for a task during any curriculum period of training or phase validation, the pilot will be remediated to standards before progressing.

During the remediation process, a pilot may be provided additional training periods for that phase of training. Remedial training will continue as long as the pilot is making reasonable progress. When a pilot fails to make progress at a reasonable rate, he or she should be considered to have failed the curriculum.

At the end of the curriculum for a pilot who has met standards for all tasks and validations, the pilot must then be evaluated. The evaluation should be a scripted operational scenario-based event, and must be developed to allow for the evaluation of decision-making, leadership, crew resource management (CRM), and threat and error management (TEM) skills. If a pilot fails the evaluation, he will be remediated to standards and then re-evaluated. If the pilot fails the evaluation a second time, the pilot should be considered to have failed the curriculum.

2.4.1 ISD Process

ISD is a systematic process of developing training curriculum. It is used and applied in many different industries and work settings. ISD encompasses adult learning theory, educational psychology, human factors engineering, and cognitive psychology.

The ISD process involves the following steps:

- Analysis:
    - Develop a job or task list.
    - Analyze the list to determine its essential skill and knowledge requirements.
    - Determine which skills and knowledge requirements must be trained and/or tested.
    - Develop objectives, with conditions and standards that define acceptable performance.

- Design:
    - Allocate the objectives defined in the analysis step to the appropriate curricula.
    - Sequence and group the objectives within a curriculum for optimum training and evaluation.
    - Develop an evaluation strategy, and develop test items for the objectives.
- Development:
    - Develop instructional materials (for example, lesson plans, handouts, videos, and tests) for the curriculum developed in the design phase.
    - Determine the appropriate use of available technologies.
    - Train instructors to use the new curriculum materials.
    - Test the training materials by having the instructors teach a small group of students and modify the materials if necessary.
- Implementation:
    - Deliver the curriculum to the students.
    - Collect instructor and student critiques during and after the delivery process.
    - Collect student performance data.
- Evaluation:
    - Perform continual analysis of performance data, and use the results from that analysis to modify the course.
    - The following are possible sources of data for course evaluation:
        - FOQA,
        - ASAP,
        - LOSA,
        - Pilot critique,
        - Any available data such as: InFO, SAFO, and FSB reports.

In the ISD model, evaluation takes place throughout the development process. While performing the five steps, the developer will constantly be evaluating the process and resulting materials. It is a method of quality control to ensure the final result is as appropriate to the learning situation as possible.

Annual recurrent training should be established by performing risk analysis to determine the critical events that need to be trained. In addition to establishing event criticality, event currency must also be determined. Currency applies to events flightcrew members perform on a regular basis; annual training may not be necessary. The ISD process will be used to determine event criticality and currency.

Flightcrew members should then be trained on critical events and any other FAA or industry-required events on an annual basis. The current regulations allow for a "checking event" to be substituted for annual training. The THRR ARC believes this practice is detrimental to pilot performance and that annual training should be required.

2.5 NOT CONSIDERED

The following training and evaluation events were considered by the THRR ARC, but were deemed outside the scope of its charter:

- Transportation Security Administration training requirements (Title 49, Code of Federal Regulations (49 CFR), part 1500)
- Hazardous materials training (49 CFR, part 172)

3.0 RATIONALE

3.1 ISSUE 1 RATIONALE

The best methods and optimal time needed for flightcrew members of Title 14 Code of Federal Regulations (CFR) part 121 and 135 air carriers to master aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination.

3.1.1 SECTION INTRODUCTION

A grasp of the evolution of flight training is integral to this response. Traditional pilot training consists of several days or weeks of classroom lecture. The trainee then receives some form of procedures training in an aircraft or FSTD, followed by a checking event.

The following quote, taken from a report of the IATA Training and Qualification Initiative[4], helps illustrate the direction of this evolutionary process, a direction that will lead to higher levels of training quality if it is followed:

> "In addition to the wealth of accident and incident reports, flight data collection and analysis offers the possibility to tailor training programs to meet real risks. The aim is to identify and train the real skills required to operate, whilst addressing any threats presented by the evidence collected. If we fail to make a substantial change to the philosophy of airline pilot training, we will face an increasing gap between training and reality. It is time to create an effective bridge between safety data and the development of training solutions. At the same time, we must embed robust methodologies for the handling of real events and the development of key pilot skills, both technical and non-technical, into those training solutions."

The use of technology to meet training needs in all professional fields is well grasped and is no less available to aviation training. Exploiting technology to match the correct training tool to a specific training objective improves overall training quality and reduces the cost for learning and increased availability of training to a broader base of air carrier pilots.

The industry has a wealth of safety-related evidence at its disposal, including accident and incident reports and LOSA, FOQA, and ASAP data. In addition to safety data, the industry also has training data. Analyzing this data through a formalized SMS process provides an opportunity to influence and advance the philosophy of flightcrew training, by weighing risks and determining which situations are more likely to happen. There is strong evidence these programs have contributed significantly to the reduction in aircraft accident and incidents.

[4] IATA Training and Qualification Initiative (ITQI) Report 2009 Fall Edition

At this time, these programs are generally limited to large air carriers with fleets and pilot populations large enough to produce a viable data sample.[5] Smaller operators need access to this type of data in order to properly conduct the ISD evaluation process.

Ultimately, the success of any training program is highly dependent on the competency of its instructors. Historically, there has not been an appropriate level of criticality for instructor/evaluator training within the industry, and often this training is a onetime event. Instructor/evaluator training is a critical part of the process and will also be developed using a process-based training development system, such as ISD.

To fully develop a response to this issue, the following discussion and recommendations will focus on three areas:

1. Pilot Training,
2. Grading, and
3. Instructor/Evaluator Training.

3.1.2 PILOT TRAINING

Background

Considering the variability and scope of part 121 and part 135 flight operations, it is impractical to create a prescriptive list of tasks and optimal time that adequately address all certificate holder training and qualification requirements. Typical variables include the following:

- Experience of the flightcrew member;
- Training resources available/utilized;
- Scope of the certificate holder's operation (that is, long haul international, short haul domestic, single pilot operation, and associated threats);
- Type and complexity of the aircraft;
- Number of pilots with respect to the number of available data points; and
- Fleet mix, including variants.

[5] It is possible that creative solutions could allow smaller air carriers (and to some degree, training centers) to create a sufficient population to support these programs or variations thereof by combining data across multiple air carrier sources. The THRR ARC believes the value imparted by these data programs is sufficient to pursue these unique solutions. One example of a multi-carrier data collaboration program is the Medallion Program that has seen much success in Alaska.

The ARC endorses an analytical approach (ISD) to training development characterized by the use of a systematic process of analysis, design, development, implementation, and evaluation to define the best training methods tailored to meet the requirements of each operator. The optimum time required to complete training will be determined through the process.

The ISD process should lead to a strategy of training pilots to established standards. Once a pilot has demonstrated the ability to perform a maneuver or task to standard within that training cycle, there is no longer any need to assess that maneuver or task, and that pilot is considered to have "mastered" it. It is not necessary to evaluate each and every task a pilot must perform. The evaluation recommendations are further discussed in section 3.1.4.

The ISD process should apply to all FAA-required training curriculums. The recurrent training curriculum is established through risk assessment to determine task criticality and establish the appropriate annual training requirements.

Historically, the Federal Aviation Regulations have allowed air carriers the option to substitute a checking event for a training event. When this option is exercised by the air carrier, pilots are deprived of the opportunity to improve their skills and learn new skills through the interaction with a highly trained instructor pilot.

Scenario-based training incorporates profiles that include standard operating procedures (SOP), normal and abnormal emergency checklists, aircraft performance, CRM, and TEM. Profiles should contain an operationally relevant real-world-like situation or scenario, reflective of any special operational authorizations the operator has been granted. These profiles should be used to focus the students on a particular subject matter.

All training should integrate the use of current and future advanced technologies and flight training equipment, including full flight simulators. Air carriers should utilize a suite of equipment matched on the basis of analysis to the training requirements at any given stage of a curriculum. Judicious analysis determines the appropriate type and level of FSTD to use.

The training process should integrate aircraft systems; training, including normal, abnormal, and emergency procedures; CRM; and TEM. Most of these training topics have typically been considered classroom training, but training has been proven to be most effective when conducted with a combination of classroom training, computer-based training, training devices, simulators or aircraft, and other technologies.

It is important to have qualified flightcrew members occupy each seat during training and checking events. When an air carrier conducts its own training and checking, the best practice for flightcrew pairing is PIC and SIC.

If logistics do not allow the pairing of a PIC with an SIC for training or checking, the following are acceptable alternatives:

- Same position (PIC/PIC) or (SIC/SIC), as long as the flightcrew members have been specifically trained in the tasks that are "seat dependent." For example, if an SIC is being used as a substitute for the PIC, that SIC must be trained in the specific PIC seat-dependent tasks.

- PIC or SIC and air carrier certificate holder qualified flightcrew member.

After lengthy discussions, it became apparent to the THRR ARC members the current regulations do not adequately address many issues between air carriers and part 142-approved training centers. Some of these issues include, but are not limited to:

- Check airman/instructor training,
- Training program development,
- Training program maintenance/revision,
- Flightcrew member pairing,
- Multiple training providers used by one operator, and
- Multi-operator concurrent training (same training program, different air carrier using).

Conclusion

The best training methods will be determined through the use of an ISD process. The same process will determine the optimal time. Scenario-based training applied in conjunction with the most appropriate training device provides for a highly effective learning experience.

Recommendations

The THRR ARC recommends—

- That a process-based training development system, such as ISD, be used to develop a training course tailored to meet the requirements of each operator.
- That scenario-based training be used as often as possible throughout the curriculum.
- That as a minimum, each flightcrew member receives annual recurrent training without the option to replace the training event with a checking event as currently permitted.
- That a new ARC be established to identify the methodology and data necessary to support a process-based training development system for those operators who do not currently use such a system or are without access to sufficient data to maintain such a system (that is, small air carriers). Examples of data that should be considered include:
    - Aircraft data monitoring programs, such as flight data monitoring (FDM) or FOQA;
    - ASAP;
    - Operator implemented safety reporting systems;
    - SMS and/or Internal Evaluation Program information;

- LOSA;
- Pilot survey and/or critique information; and
- Any other available regulator or industry information such as InFO, SAFO, FSB, Flight Safety Foundation, and Air Charter Safety Foundation reports.

- That an ARC be established to evaluate and clarify the rules governing the relationship between parts 121 and 135 air carriers and part 142 training centers.

3.1.3 GRADING

Background

The practice of pass/fail and satisfactory/unsatisfactory grading may have been influenced by certain FAA forms and job aids used by air carriers to develop their own proficiency check grading system, which remains valid for the purpose of assessing overall performance of the flightcrew member.

Mutli-point grading scales for tasks and maneuvers have shown to be better for purposes of data analysis. This granularity provides better assessment of the pilot's training progress and the strengths and weaknesses, and trends of the program over time (examples of 4- and 5-point grading scales are shown in Appendix C). Instructors and evaluators should make comments about the flightcrew member's progress through the training, validation, and evaluation process. The grades and comments should only be used to further feed the ISD process and should not, under any circumstances, be maintained in the flightcrew member's permanent record. Maintaining the grades and comments in the flightcrew member's permanent record would have disastrous results in the integrity of the training program.

Conclusion

The training program should include a grading scale. It should provide sufficient granularity or detail to be used in the ISD evaluation process.

Recommendations

The THRR ARC recommends—

- That the identifiable pilot record shall only record satisfactory/unsatisfactory completion.
- That a multi-point grading scale will be used to assess and enhance the training program.

3.1.4 INSTRUCTOR/EVALUATOR TRAINING

Background

The THRR ARC recognizes that effective validation of pilot skills can only be accomplished by individuals who are specifically trained to conduct instruction and validation. In addition to the training requirements currently applicable for initial designation as an evaluator, annual recurrent

training should be required. This training should include operator-specific ground instruction and observation of the evaluator conducting validation events for the certificate holder in a line-oriented scenario.

Instructor/evaluator training is a critical part of the process and will also be developed using ISD. The instructor/evaluator training should have a continued professional development requirement. Currently this training is a onetime event. Calibration of the instructor/evaluator needs to provide for consistent grading across the instructor staff. This is important for effective program evaluation.

Conclusion

The creditability of any training program is only as good as the personnel who are entrusted to conduct the training, validation, and evaluation. To be effective in the role, it is essential specific focused training be provided and the currency be maintained through required recurrent training.

Recommendations

The THRR ARC recommends—

- That instructors and evaluators attend annual recurrent training that includes methods for ensuring consistent grading of training and validation events.

3.2 ISSUE 2 RATIONALE

The initial and recurrent testing requirements for pilots, including the rigor and consistency of testing programs such as check rides.

3.2.1 SECTION INTRODUCTION

The evaluation of a pilot's KSAs involves the observation of the pilot's performance during a set of tasks (maneuvers) that were developed using an ISD process. This observation measures the pilot's performance against a set of defined standards of performance. For multi-crew operations, it is important to also measure the performance of all flightcrew member positions during this evaluation. In response to this issue, the following discussion and recommendations will focus on five areas:

1. Flight Proficiency Standards;
2. Validating the Task;
3. Flightcrew Composition for Validation;
4. Validation of PM Skills; and
5. Line Checks.

3.2.2 FLIGHT PROFICIENCY STANDARDS

Background

The current flight proficiency standards used when evaluating a pilot is based on their grade of pilot certificate (that is, commercial or ATP practical test standard (PTS)). This approach is problematic in that it can allow different demonstrated levels of proficiency between the PIC and SIC, particularly in the case of turbojet aircraft. Although the standards of performance defined by these two FAA PTS sources are similar when compared task by task, some variation does exist. The use of multiple FAA sources for pilot performance may not be the ideal solution.

Conclusion

One level of proficiency for air carrier pilots can best be served by holding all pilots to a common standard of performance, regardless of duty position and operating regulation.

Recommendation

The THRR ARC recommends—

- That when an SIC is required, the SIC shall be held to the same minimum performance standard as the PIC .

3.2.3 VALIDATING THE TASK

Background

The current evaluations of air carrier pilots' flight proficiency are based on a list of tasks (maneuvers) that may be defined by multiple regulatory sources: FAA Practical Test Standards or part 121, subpart H; part 135; and FAA guidance materials. To accurately validate the skills of a pilot conducting air carrier operations, the validation should be tailored to the operational environment in which the pilot operates. For example, validation of instrument approach procedure skills should be based on those instrument procedures used by the air carrier in the actual conditions in which it uses them. This will allow operators to focus on areas that need special emphasis.

Although all air carriers essentially perform the same basic flight tasks—ground operations, takeoffs, instrument approaches, and landings—the required list of maneuvers to which a pilot must be trained, checked, and tested both initially and annually, will be unique to each specific air carrier.

CONCLUSION

The operational analysis using an ISD approach to training requirements will determine the tasks for each air carrier.

RECOMMENDATION

The THRR ARC recommends—

- That flight proficiency be validated by using a maneuvers list developed by the air carrier, who must use an ISD approach to job task analysis. The maneuvers list should be based on the air carrier's specific equipment and operation, and may be supplemented by any FAA or industry requirements.

3.2.3 VALIDATION OF PILOT MONITORING SKILLS

Background

Typically, flight operations involve PIC and SIC performing both pilot flying (PF) and PM duties.

Each flightcrew member must carefully monitor the aircraft's flight path and systems, and actively cross-check the actions of each other. Effective flightcrew member monitoring and cross-checking can be the last line of defense; when a flightcrew member can detect an error or unsafe act, this may break the chain of events leading to an accident scenario. Conversely, when this layer of defense is absent, the error may go undetected, leading to adverse safety consequences.

A strict adherence to procedures associated with each flightcrew member position is essential. Observation is needed during normal and abnormal procedures in order to check the proper division of duties between the PF and PM.

Conclusion

Each pilot should demonstrate PM duties sufficient to determine compliance with and knowledge of aircraft procedures and company SOPs, including normal and abnormal procedures.

Recommendations

The THRR ARC recommends—

- That training, validation, and evaluation of flight proficiency in multi-pilot operations include PM skills.

3.2.4 Line Checks

Background

As currently regulated, no certificate holder may use any person as a PIC of an aircraft unless, within the preceding 12 calendar months, that person has passed a line check in which he or she satisfactorily performs the duties and responsibilities of a PIC in one of the types of airplanes he or she is to fly. The flight check shall be given by an approved check airman or by an FAA inspector. The line check shall consist of at least one flight over a typical part of the certificate holder's route, over a foreign or Federal airway, or over a direct route, and shall include takeoffs and landings at one or more representative airports.

While operation of the aircraft is not insignificant, the purpose of the line check is not to determine competency to safely operate the specific aircraft type. The objective is instead to observe the PIC perform the duties and responsibilities associated with the conduct of a revenue flight. Another benefit of the line check is for a check airman or an FAA inspector to observe, evaluate, and provide data to the in-flight operations of a certificate holder within the total operational environment of the air transportation system.

Line checks may be conducted by a check airman or FAA inspector occupying the approved observer's seat in the cockpit (jumpseat) or, if the check airman is fully line qualified, from either pilot seat while also serving as a required flightcrew member.

The line check program for part 121 operations continues to be effective and appropriate and no recommendations for change are proposed.

When conducting line checks in part 135 on-demand air carrier operations, there are significant constraints on the opportunity for a check airman or FAA inspector to observe actual line operations. Most aircraft used in on-demand operations do not have approved observer seat and the check airman or FAA inspector must sit in the passenger compartment. In general, observations from the passenger compartment are not adequate for monitoring cockpit commutations and flightcrew member interaction. The short notice scheduling and lack of published routes make the scheduling of the line check very difficult. The majority of the line checks conducted in on-demand air carrier operations are flights dispatched for the sole purpose of accomplishing that check and are not conducted in revenue service with passengers.

Unlike scheduled air carrier operations where these checks are conducted during revenue operations, the on-demand operator must bear the total cost of the check. To counter the economic disadvantages, the on-demand operator will attempt to comply with the regulatory requirements with the minimum flight time possible. Line checks conducted in the aircraft under these circumstances do not provide the check airman or inspector with many of the opportunities to comply with the intent of the regulation, such as operations in high altitude airspace. In many instances, operators are not authorized adequate numbers of check airmen and therefore must rely on FAA inspectors to conduct some line checks. Due to limited FAA resources, many on-demand operators are having difficulty in scheduling qualified FAA inspectors to conduct the line checks.

In 2003, the FAA chartered the Part 135/125 ARC to recommend changes to those operations.[6] In preparation for that ARC, the FAA solicited public comments. It received more comments from the public regarding line check concerns than any other issue raised for the ARC. The Part 135/125 ARC achieved full consensus on recommendations that would allow for greater flexibility in scheduling the line check, less dependence on FAA resources, and more importantly, would also encourage conducting line checks as part of line operations. The final recommendations from the ARC were to: provide for an alternative means of compliance (MOC) for the initial line check in the form of initial operating experience (IOE); extend the authority for line check airmen to similar aircraft for which they may not be qualified; and provide for an alternative MOC for recurrent line checks by using a simulator-based Line Operational Program.

Conclusion

The line check program for part 121 operations continues to be effective and appropriate.

To achieve a more effective and efficient line check program for part 135 operators, the line check program should be conducted more like those conducted in part 121 scheduled air carrier operations with regard to evaluation of the flightcrew in more realistic operational environments.

The following recommendations would allow for greater flexibility in the scheduling of the check, less dependence on FAA resources and more importantly, to encourage the conduct of line check as part of line operations (For information about implementing these recommendations, see page 20A).

[6] See 68 FR 5488 and FAA Order 1110.135.

For operations using aircraft that do not have an approved observer's seat and do not have FAA-approved line check airmen, the operator may accomplish the PIC line check by any of the following methods:

- A flight in actual revenue service using a contract line check airman from another operator, or

- A Line Operational Simulation (LOS) conducted in a Full Flight Simulator using a contract check airman from a 14 CFR part 142 training center or an FAA Inspector.

For operations using aircraft that do have an approved observer's seat and do not have FAA approved Line Check Airmen, the operator may accomplish the PIC line check by any of the following methods:

- A flight in actual revenue service using a contract line check airman from another operator or an FAA inspector occupying the observer seat, or

- An LOS conducted in a Full Flight Simulator using a contract check airman from a part 142 training center or an FAA Inspector.

For operations using aircraft that do have an approved observer's seat and do have FAA-approved line check airmen, the operator may accomplish the PIC line check by any of the following methods:

- A flight in actual revenue service using a company line check airman or an FAA inspector occupying the observer seat.

- A flight in actual revenue service using a company line check airman occupying a pilot seat and performing the duties as a SIC.

- Using a company line check airman who is qualified in one of the aircraft operating by the certificate holder but not qualified on the specific aircraft on which the PIC is being checked. This check is conducted from the observer seat. The purpose of the line check is to determine the PIC is competent to operate safely within the ATC system. While operation of the aircraft is not insignificant, the purpose of the line check is not to determine competency to safely operate the specific aircraft type. For this reason, it is intended that a check airman employed by the certificate holder can conduct a line check in any aircraft family. For example, a check airman in a Gulfstream V is authorized to conduct a line check in a Hawker 800, even if the check airman is not type rated nor qualified to operate the Hawker 800.

- An LOS conducted in a Full Flight Simulator using a contract check airman from a part 142 training center or an FAA Inspector on an alternating rotation with the aircraft.

Recommendations

The THRR ARC recommends–

- That the line check program employed in part 121 is suitable for those operations.
- That for part 135 operations, the adoption of line check rule changes be made, as proposed by the Part 135/125 ARC.

3.3 ISSUE 3 RATIONALE

The optimal length of time between training events for such flightcrew members, including recurrent training events.

3.3.1 SECTION INTRODUCTION

It is the opinion of the THRR ARC that existing regulatory training intervals are adequate to ensure pilots maintain adequate KSAs necessary to safely carry out flightcrew member duties in commercial flight operations. However, the ARC did consider change of intervals for evaluation. The remaining portion of this section's discussion deals only with the modification of evaluation intervals.

Although there are a number of factors that may influence the appropriate length between evaluation events for an individual pilot or all pilots flying for an operator, the ARC believes existing regulatory intervals for these events must be reduced in cases where a pilot reenters the operator's training program after an extended absence, or where they have demonstrated unsatisfactory performance during an evaluation. This concept is described as a short-cycle (described below).

The THRR ARC also examined whether the FAA should consider the merits of extending certain evaluation event intervals for operators by demonstrating one or more attributes described later in this section.

Operators will have to consider how to allocate available resources to adequately demonstrate to the FAA any or all of the characteristics listed above to apply for extending their assessment intervals. The more of these characteristics the operator is able to demonstrate, the greater assessment interval the FAA may grant, up to a maximum interval of 1 year.

Background

Frequency of evaluations center around the knowledge and tasks necessary to maintain the requisite higher cognitive skills needed to handle normal, non-normal, or emergency conditions during flight operations. For the purpose of this discussion, these higher cognitive skills are referred to as the KSAs needed to handle normal, non-normal, or emergency conditions.

The ARC did not consider optimum intervals for operators evaluating under an AQP since intervals for those operators are derived from an ISD analysis. These recommendations for optimum intervals are only appropriate for operators training under part 135, subpart G, and/or part 121, subpart O.

The ARC currently does not believe there is sufficient justification for extending any interval beyond 12 months. An operator who wishes to extend intervals beyond 12 months should develop and implement an AQP as currently permitted under part 121, subpart Y.

EARLY EVALUATION (SHORT-CYCLE)

The THRR ARC believes there are specific cases where existing regulatory evaluation intervals are not appropriate when a pilot had an extended absence from the operator's training program, or where a pilot has demonstrated unsatisfactory performance during an evaluation. In these cases, the ARC has determined the pilot should be subject to a "short-cycle" where their interval is shortened to one-half of the evaluation interval for the event that was unsatisfactory.

The specific methods to carry out the short-cycle concept and develop regulatory requirements are complex. The THRR ARC did not have time to consider all implementation issues. Therefore, the ARC recommends the FAA consider various options for implementing these concepts and publish options for public comment prior to rulemaking.

EXTENDING EVALUATION INTERVALS

The THRR ARC believes there are cases where an air carrier may be granted an extension to an existing regulatory evaluation interval in cases where the air carrier demonstrates certain operational characteristics. The ARC considered seven operational characteristics that the FAA could consider single or cumulative in incrementally increasing the evaluation interval up to a maximum of 12 months.

> **Note:** The THRR ARC recommends any carrier wishing to extended evaluation intervals beyond 12 months should develop and implement AQP.

The THRR ARC considered a total of seven characteristics that could be used by an air carrier to justify a 1-month interval extension. An air carrier may be entitled to one or more months of interval extension based on the number of characteristics it demonstrates to the FAA.

Three of these characteristics were identified from the regulatory exemption process the FAA has previously used to grant operators regulatory relief from PIC proficiency check requirements of up to 12 months. This exemption, called the "Single-Visit-Exemption," has been granted to operators while they developed an AQP. The THRR ARC believes provisions from this exemption may be considered in granting interval extensions:

- Implementation of a First Look Program—SPOT Check; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

- Implementation of a line oriented flight training (LOFT) Program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

- Implementation of an Enhanced Training Data Collection and Feedback Program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

Four other characteristics were identified, such as appropriate management staffing and oversight of flight operations that exceed minimum baseline regulations. Numerous air carriers realize the benefit(s) of "over and above" processes, procedures, and programs to enhance the company's safety and thus operational performance. As a result, the THRR ARC believes

operators who employ voluntary safety systems or oversee their flight operations with full-time management oversight, or demonstrate frequent flight operations may also be justified in extending their training and assessment intervals. The four voluntary safety or enhanced management characteristics are—

1. Implementation of an SMS; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

2. Implementation of FOQA or FDM (ICAO) program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

   Note: In considering these two characteristics, the THRR ARC realizes that most voluntary and mandatory safety programs are created for large part 121 air carriers. The approval process and operator and inspector guidance is not available to the part 135 industry. Due to this, numerous part 135 air carriers have had to adapt ICAO-based safety systems to meet the requirements to operate as an international carrier compliant with ICAO. Since the United States also recognizes ICAO, an ICAO-based system should be considered to be equivalent when no specific U.S. regulation is available.

3. Enhanced Management Oversight program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

4. Demonstration of Individual Pilot Operational Tempo; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

The THRR ARC has defined these seven characteristics into options that carriers can use to extend evaluation intervals up to 12 months. Suggestions for implementing these options are contained in Appendix D.

Recommendations

The THRR ARC recommends—

- That early evaluation (short-cycle) should be required for:
  - Extended pilot absence from flight operations requiring requalification training that exceeds recurrent training but does not require initial training.
  - Unsatisfactory performance during an assessment.
- That under specified conditions, the evaluation interval may be extended if the air carrier can demonstrated operational characteristics contained in one or more the following seven options.
  - Option 1: Implementation of a First Look Program—SPOT Check; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

- Option 2: Implementation of Line Oriented Flight Training Program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

- Option 3: Implementation of an Enhanced Training Data Collection and Feedback Program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

- Option 4: Implementation of an SMS; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

- Option 5: Implementation of FOQA or FDM (ICAO) program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

- Option 6: Enhanced Management Oversight program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

- Option 7: Demonstration of Individual Pilot Operational Tempo; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

- That the evaluation interval is not extended beyond 12 months, unless the air carrier has developed an AQP program in accordance with part 121, subpart Y.

3.4 ISSUE 4 RATIONALE

The best methods to reliably evaluate a flightcrew member's mastery of aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination.

3.4.1 SECTION INTRODUCTION

The evaluation of a pilot's KSAs involves observation of the pilot's performance during a set of maneuvers that were developed using an ISD process. This observation measures the pilot's performance against a set of defined standards of performance. For multi-crew operations, it is important to measure the performance of all flightcrew member positions during this evaluation. In response to this issue, discussion and recommendations focus on two areas:

- The use of scenario-based evaluations.
- The use of FSTD equipment in the evaluation process.

Background

SCENARIO-BASED EVALUATION

At the end of the curriculum and for a pilot who has met standards for all tasks and validations, the pilot must then be evaluated. The evaluation should be a scripted operational scenario-based event and should in addition to evaluating skills associated with accomplishing selected tasks, must be developed to allow for the evaluation of decision making, leadership, CRM, and TEM skills. If a pilot fails the evaluation, he will be remediated to standards and then reevaluated. If the pilot fails the evaluation, a second time it should be considered the pilot has failed the curriculum.

Evaluation profiles should contain an operationally relevant real-world-like situation or scenario, reflective of any special operational authorizations the operator has been granted, that is used to focus the flightcrew members into a particular subject matter.

THE USE OF FSTD EQUIPMENT IN THE EVALUATION PROCESS

Parts 121 and 135 permit certificate holders to use simulators for varying amounts of the training, testing, and checking required by the FAA. Use of simulators is a voluntary alternative to training and checking in the airplane. The only required use of an FSTD in the current regulations is in the windshear requirements of § 121.409(d). Using FSTD rather than aircraft allows for more in-depth checking in a safer environment, including the practice of critical emergency procedures using a broad range of scenarios to replicate virtually any possible situation, in every conceivable weather and environmental condition. FSTDs also provide other benefits, such as reducing noise, air pollution, and air traffic congestion, and conserving petroleum resources. This proposal addresses concerns raised by the National Transportation Safety Board Recommendations A–94–191 through A–94–194, which state that part 121 flight training and checking should be required in FSTDs wherever possible.

Conclusion

The ARC strongly believes better pilot performance will result from realistic training and validation of pilot skills. Therefore, pilot validation events should be accomplished in line-oriented events in flight simulators (when simulation is available). The events should be structured to ensure all pilot skill tasks are validated, but flexibility should be permitted in how those tasks are validated. This flexibility should include the ability to validate training over multiple sessions rather than one check-ride event. In addition, the line-oriented validation should focus on operator specific requirements, specific operational challenges faced by the operator, or issues identified in the operator's safety management program.

Recommendations

The THRR ARC recommends—

- That flightcrew member mastery is best evaluated by the use of an appropriate FSTD.
- That the flight proficiency be accomplished by using scenario-based evaluation.

3.5 ISSUE 5 RATIONALE

Classroom instruction requirements governing curriculum content and hours of instruction.

As discussed in the rationale for Issue 1, classroom training is integral to overall pilot training. Therefore, the THRR ARC members concluded the same process and procedures discussed in section 3.1 apply to classroom training. For information about the background, conclusion, and recommendations, see Section 3.1 on page 28.

3.6 ISSUE 6 RATIONALE

The best methods to allow specific academic training courses to be credited toward the total fligh- hours required to receive an airline transport pilot certificate.

3.6.1 SECTION INTRODUCTION

Background

Today, part 121 requires an ATP certificate for pilots acting as PIC and a commercial certificate for SIC pilots. With the passage of Pub. L. 111-216, a pilot serving as SIC for a part 121 air carrier will require an ATP certificate. This legislation allows the FAA to consider using specific academic training courses towards the ATP flight hour requirements. Under part 135, PICs are required to hold an ATP certificate for operations in turbojet airplanes having a passenger seating configuration of 10 or more. An ATP certificate is also required for a PIC conducting commuter operations in any multi-engine airplane.[7] An SIC in those operations is required to hold a commercial certificate.

The THRR ARC believes the existing ATP requirements are appropriate for obtaining that certificate when the pilot will be acting as the PIC of an aircraft (where FAA regulations require an ATP certificate for the aircraft and type of operation). For an ATP certificate required for pilots acting as a SIC under part 121 regulations, the ARC recommends a system providing academic credit, with limitations. The ARC's position is that any pilot serving as PIC at a part 121 air carrier must meet the minimum regulatory standard for full ATP certification, and no academic credit would be provided for a pilot seeking PIC privileges.

The FAA chartered an ARC to address Section 217 of Pub. L. 111-216, the FOQ ARC. The FOQ ARC considered what criteria would permit academic training and quality of experience to substitute for the existing aeronautical experience requirements required to obtain an ATP certificate necessary to exercise SIC privileges under part 121. The FOQ ARC developed an aeronautical experience credit system that could be used to meet ATP aeronautical experience requirements, but restricted the applicability of that system to the issuance of an ATP certificate limited to SIC privileges in part 121 operations. In reviewing the recommendations drafted by the FOQ ARC, the THRR ARC believes the aeronautical experience credit system proposed is valid for exercising SIC privileges under part 121.

In addition to the recommendations proposed by the FOQ ARC, the THRR believes the following factors must be considered by the FAA:

- There is a need for any aeronautical experience credit system to be reconciled, where possible, with ICAO licensing standards and recommended practices and initiatives.

[7] See § 135.243 (a).

- The ARC does not support applying an academic training credit system beyond the certification for ATP to act as a part 121 SIC. In the opinion of the THRR members, a pilot that will be upgrading from an SIC to PIC at a part 121 air carrier would need to meet the existing regulatory requirements for ATP. This means an SIC upgrading to PIC would need to meet the minimum total flight hours requirement for an ATP certificate of 1,500 hours, as well as other specific flight hour requirements for cross-country, night, and instrument flying experience.[8]

- The recommendations submitted by FOQ ARC are specific to the certification requirements for a pilot who will perform SIC duties at an air carrier operating under part 121. The requirements for a pilot that will perform SIC duties at a part 135 air carrier are not addressed. It is the view of the THRR ARC the certification requirements for pilots of part 135 air carriers are appropriate to the operations they conduct. The ARC therefore does not recommend any changes to the part 135 pilot certification and experience requirements.

Conclusion

The THRR ARC concludes there is value and benefit to providing limited academic training and experience credits for those pilots who are required to obtain an ATP certificate in order to exercise SIC privileges in part 121 operations.

Recommendations

The THRR ARC recommends—

- That the FAA implement the FOQ ARC's recommendation to establish an aeronautical experience credit system for an ATP certificate with SIC privileges in operations conducted under part 121. One member of the THRR ARC dissented from this recommendation.[9]

- That an aeronautical experience credit system not be allowed for experience requirements for any ATP certificate for a PIC at a part 121 or part 135 air carrier.

- That the use of an aeronautical experience credit system not be used for any part 135 flight-hour requirements.

[8] See § 61.159.

9 Refer to Appendix E for CAPA's Dissent Statement submitted to the FOQ ARC.

3.7 ISSUE 7 RATIONALE

Crew leadership training.

3.7.1 SECTION INTRODUCTION

Background

There is required training for a pilot to serve as a PIC. This training largely consists of the performance of operational tasks and responsibilities specific to the duty station, and does not necessarily provide education to the PIC on his or her leadership role. CRM training, which is now required for all air carriers, contains some elements of the desired leadership training. It is not designed to aid the PIC in assuming a leadership role in the aircraft and the air carrier as the training envisioned by the THRR ARC would.

In accordance with § 206 of Pub. L. 111-216, the FAA convened the MLP ARC to provide recommendations for flightcrew member mentoring, leadership, and professional development for part 121 air carriers. While the tasking of the MLP ARC's deliberations and recommendations exceed that of the THRR's scope, their analysis of leadership training was reviewed by the THRR ARC members. With some modifications, the THRR ARC concurs with their recommendation to require leadership training for the PIC. The ARC has made no assessment of the other recommendations of the MLP ARC. Additionally, while the MLP ARC deliberations were limited to part 121 operators, the THRR ARC is tasked with considering leadership training for part 135 operators as well.

The THRR ARC suggests an ISD process could potentially be used in lieu of the specific hour requirement recommended by the MLP ARC. The ISD method of training permits the air carrier to determine, based upon data and experiences, the optimal training times for pilots. Establishing a mandatory fixed-minimum runs contrary to the principles of training the THRR ARC endorses.

Further, due to the wide variety of operations and the size and scope of various air carriers, including those operating under part 135, a specific hour requirement could ultimately have a negative learning impact on the pilots. For instance in a small operation, with only a few aircraft and PICs, mandating a minimum of 32 hours of training, as proposed by the MLP ARC, could prove difficult to execute.

The THRR ARC believes a facilitated discussion among those attending the course is a key component to the success of this particular aspect of training. The ARC concurs with the MLP ARC that leadership training is not well suited to distance learning due to the value of the interactive group dynamic among multiple pilots. Additional items each air carrier may deem necessary to introduce in a leadership and command course may be suitable for distance learning.

The FAA should, when describing how an air carrier with a small number of PICs would implement this training, permit flexible solutions in which PICs from multiple, similarly situated air carriers (that is, similar aircraft and scope/type of operations) could pool their PICs into a class size that would then provide the interactive group discussion dynamics envisioned.

The leadership training should be developed as a training event separate from the existing PIC upgrade transition syllabus. It is recommended that each air carrier develop their course to incorporate air carrier-specific course material. The leadership training should be divided into two segments. The initial segment would be completed prior to upgrade training in order to cover the leadership modules of the course. The second segment would need to be completed between 6 and 18 months after completion of the operating experience/IOE and should incorporate lessons learned during the new captain's initial experiences as a captain. It should also reinforce the concepts covered in the initial leadership and command course.

Conclusion

Providing specific training to the PIC on his or her leadership role will increase the safety and professionalism of air carrier operations.

Recommendations

The THRR ARC recommends—

- That the FAA implement the MLP ARC recommendation to require leadership training for the PIC. An ISD process could potentially be used in lieu of the specific hour requirement in the MLP ARC's recommendation.

- That leadership training be integrated into appropriate training events through the ISD process.

APPENDIX A—THRR ARC MEMBERS AND SUPPORT STAFF

THRR ARC MEMBERS AND AFFILIATION

Ms. Jacqueline Rosser, *Co-Chair*, National Air Transportation Association (NATA)

Capt. Randy Hamilton, *Co-Chair*, Regional Airline Association (RAA)

Mr. Timothy Beglau, Designated Federal Official, FAA

AERO-MICRONESIA

Mr. Michael Quinn

AIR LINE PILOTS ASSOCIATION, INTERNATIONAL

Mr. Bill Edmunds

Capt. Chuck Hogeman

AIR TRANSPORT ASSOCIATION

Capt. John Dudley

Capt. Dave Lynn

AIRBUS AMERICAS

Capt. Rudy Canto

ATLANTIC SOUTHEAST AIRLINES

Capt. Eric Carlson

Capt. Patrick Greene

THE BOEING COMPANY

Capt. Terry McVenes

Capt. Tom Pryde

BOMBARDIER AEROSPACE

Mr. Robert Freeman

CAE SIMUFLITE

Mr. William Campbell

Mr. Steve Hall

THE COALITION OF AIRLINE PILOTS ASSOCIATIONS

Capt. Gregory Bowen

FLIGHTSAFETY INTERNATIONAL

Mr. Rick Bedard

Mr. John Hinchey

KEY AIR

Capt. Knut Finnevolden

NATA

Mr. Dave Hewitt

RAA

Mr. Steve Briner

SUPPORT STAFF

FAA

Ms. Catherine Burnett

Mr. Christopher MacWhorter

Mr. Jeffrey Schroeder

Mr. Christopher Skully

Mr. Peter Tokarz

PAI CONSULTING

Ms. Kelly Akhund

Ms. Sarah O'Brien

APPENDIX B—ACRONYMS

14 CFR	Title 14, Code of Federal Regulations
AC	advisory circular
AQP	Advanced Qualification Program
ARC	Aviation Rulemaking Committee
ASAP	Aviation Safety Action Program
ATP	airline transport pilot
CRM	crew resource management
FAA	Federal Aviation Administration
FDM	flight data monitoring
FOQ	First Officer Qualification
FOQA	Flight Operations Quality Assurance
FSB	Flight Standards Board
FSTD	flight simulator training device
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ILS	instrument landing system
InFO	Information for Operators
IOE	initial operating experience
ISD	Instructional Systems Design
ITQI	IATA Training and Qualification Initiative
KSA	knowledge, skills, and attitude
LOFT	Line Oriented Flight Training
LOSA	Line Operations Safety Audit
MLP	Mentoring, Leadership, and Professional Development

NATA	National Air Transportation Association
OPTEMPO	operational tempo
PF	pilot flying
PIC	pilot in command
PM	pilot monitoring
POI	principal operations inspector
PTS	practical test standard
RAA	Regional Airline Association
SAFO	Safety Alert for Operators
SIC	second in command
SME	subject matter expert
SMS	Safety Management Systems
SOP	standard operating procedures
SPOT	Special Purpose Operational Training
TEM	Threat and error management
THRR	Training Hours Requirement Review

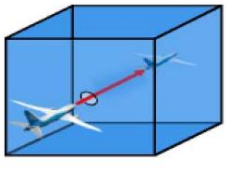
APPENDIX C—POINT GRADING EXAMPLE

SAMPLE GRADING SCALE

Standard Scale:	Reason Code Required	Generates Rollover	Repeat
5–Excellent	NO	NO	NO
4–Standard	NO	NO	NO
3–Satisfactory	YES	NO	NO
2–Below Standard	YES	YES	YES
1–Unsatisfactory	YES	YES	YES
N/A–Not Accomplished	NO	YES	_

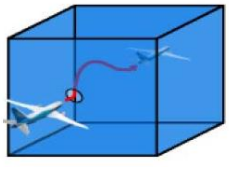
5–Excellent

Performance remains well within the prescribed performance standards. Individual performance, management, and CRM skills are exemplary.



4–Standard

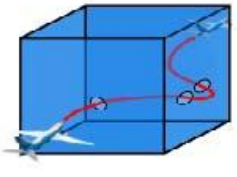
Student performance remains within the prescribed performance standards. Individual performance meets expectations. CRM skills are effective**.**



3–Satisfactory

Deviations occur from the performance standards that are recognized and corrected in a timely manner. Individual performance meets expectations. CRM skills are effective.

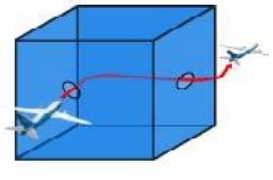
REASON CODE Required



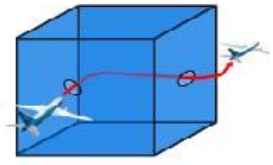
2–Below Standard

Deviations occur from the performance standards that are not recognized and corrected in a timely manner. Individual performance does not jeopardize the airplane. CRM skills are not completely effective.

REASON CODE Required



1–Unsatisfactory



Major deviations from the performance standards occur that are not recognized or corrected. Individual performance could result in a hull loss or loss of life. CRM skills are not effective.

REASON CODE Required

0–Not Attempted

For tasks not accomplished due to time constraints or equipment malfunctions, Aviation-savvy training systems will rollover the task(s) to the next training event unless it appears in the following lesson. If it is the last training day prior to the check, all training events must be signed off. If it is a simulator-related issue, provide some comment indicating that there was a simulator/device-related issue.

REASON CODES

Technical

PY	Proficiency	Lack of psychomotor (stick and rudder) skills.
PD	Procedure	Deviation in the execution of regulations and/or operator procedures. The intention is correct but the execution is flawed. A task is forgotten or skipped.
NC	Intentional Noncompliance	Willful deviation from regulations and/or operator procedures.
AT	Automation	Lack of knowledge or skill in automation use.

Proficiency Errors

- Manual handling
- Lateral/vertical deviations
- Wrong airplane configuration
- Ground navigation
- Systems knowledge
- Radios/instruments

Automation

- Autopilot
- Mode control panel
- Flight Management System
- Autothrottle
- Electronic Flight Bag
- Display management
- Information management
- Inappropriate level

Procedural Errors

- Checklists
- Briefings
- Callouts
- Cross-checking
- Limitations
- Documentation
- Improper initiation
- Not completed
- Other procedural

Intentional Noncompliance

- Violations of SOP or regulations

Non-technical (CRM/TEM)

CM	Communication	Miscommunication, misinterpretation, or failure to communicate or solicit pertinent information. Failure to communicate the plan or set the tone for crew coordination.
SA	Situational Awareness	Failure to monitor or perceive elements in the environment, the comprehension of their meaning, and the projection of their status in the near future.
DM	Decision Making	An error that is not standardized by regulations or operator procedures and that unnecessarily compromises safety. Failure to develop a plan.
WL	Workload Management	Absence of actions/strategies that allow for timely and appropriate completion of all operational tasks. Failure to prioritize tasks and/or manage responsibilities.

Communication

- Pilot-to-pilot communication.
- Crew to external communication.
- Failure to communicate and cooperate with crew members and other staff in sharing information.
- Improper radio phraseology.
- Doesn't verbalize action.

Decision Making

- Fails to establish goals and monitor outcomes.
- Jumps to conclusions.
- Extreme maneuvers on approach.
- Choosing to fly into adverse weather.
- Information management.

Situational Awareness

- Fails to monitor/perceive elements in environment and project them into the future.
- Inability to actively monitor and evaluate the operation.

Workload Management

- Fails to slow things down and control the pace by making time.
- Fails to prioritize tasks.
- Absence of strategies for task completion.
- Absence of actions for task completion.

REPEATS AND FINAL RATINGS

Provided that there is time left in the training session, repeats allow the instructor to perform tasks that are not satisfactory and capture a grade for this additional task. If the grade is a 3 or higher, the item will not roll into the next scheduled session and repeats will not be required. Select the number of times you repeated the task, not the total number of times the task was accomplished.

GRADING ACCURATELY

The grades given in all courses will be evaluated on a monthly basis or when there are curriculum revisions driven by customer/program requests. These data are crucial in determining where deficiencies in curriculum exist. To make valid changes, the data must be reliable. Instructor observation skills of student performances are critical in determining all types of student performance. Even though the focus is on lower levels of performance, good performance averages will be used to determine proficiency levels. Inflated grades will skew the placement of where these gates in training occur.

JOINT AVIATION AUTHORITY 5-POINT GRADING EXAMPLE[10]

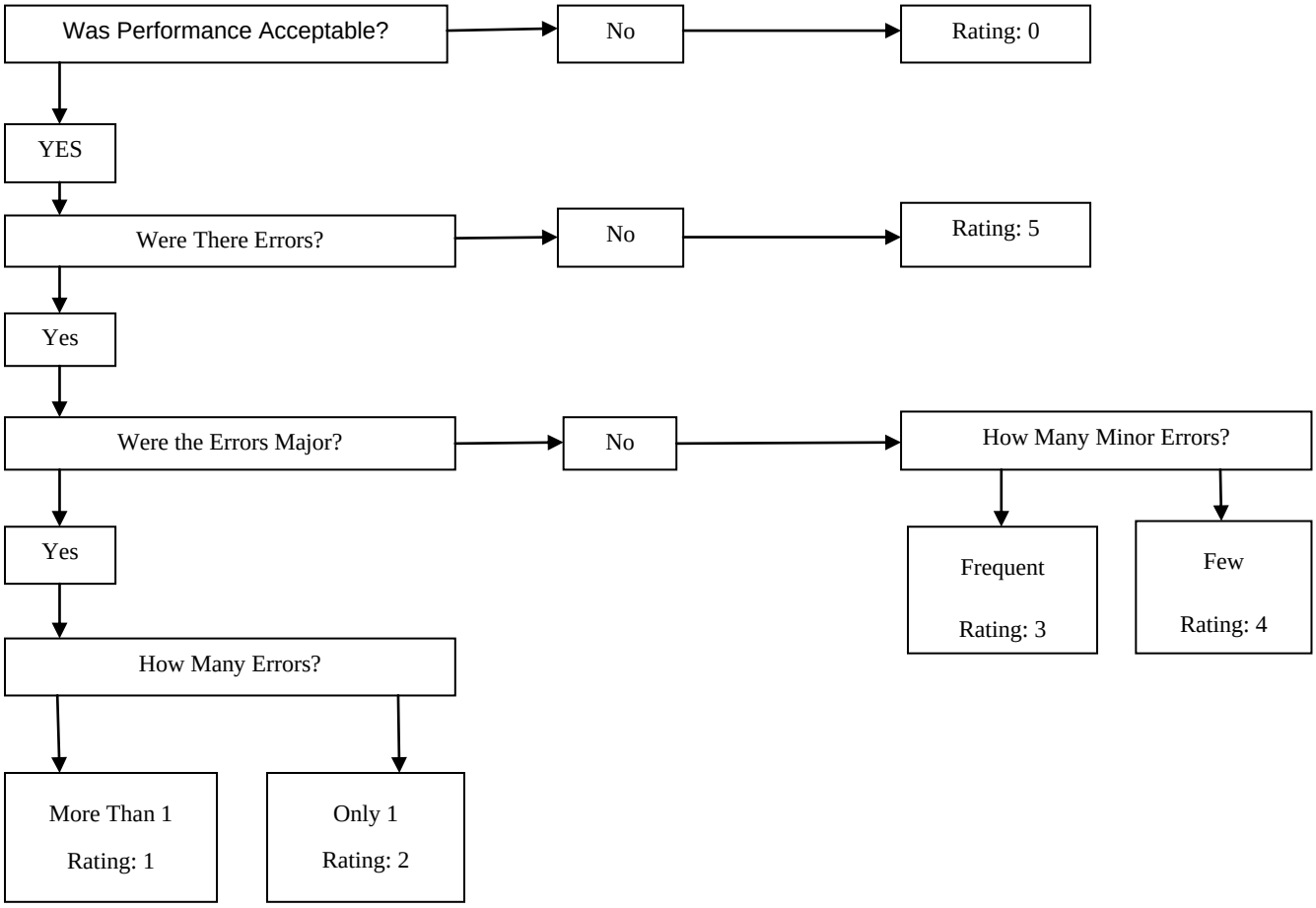
Grade	Description
5	The ideal performance under existing conditions. Anticipates and adapts easily to changing or unusual flight situations.
4	The aim of the exercise is safely achieved with very few minor variations from ideal. Performance shows smooth control of aircraft.
3	The aim of the exercise is safely achieved with frequent minor but no major variations from the ideal.
2	The aim of the exercise is safely achieved. Performance includes not more than one major variation from the ideal and may include frequent minor variations from the ideal.
1	The aim of the exercise is safely achieved in a rough manner. Performance includes more than one major variation from the ideal and indicates a level of skill or knowledge, which results in a marginally acceptable performance.
0	Any one of the following will result in an assessment of fail: • The aim of the exercise is not completed. • There is an insufficient level of knowledge to ensure safety. • The aim of the exercise is completed, but at the expense of using unsafe airmanship and/or handling errors. • Dangerous aircraft handling, requiring assistance from the examiner. • Tolerances specified in the flight test standards are exceeded.

Written remarks are required when awarding a flight test exercise a mark of 2 or less. The remarks should be clear and concise, and in the case of an exercise assessed as—

- Grades 1 and 2 reflect the major variation(s) from the acceptable performance for the exercise as outlined in the appropriate flight test standards; or
- Grade 0 reflects the appropriate item or items that result in an assessment of fail as listed in the grading scale section of the flight test standard(s).

[10] Joint Aviation Authority. Flight Examiners Manual: Aeroplane and Helicopter, version 17, May 2011.

During a flight test, it is sometimes difficult to write clear and concise remarks. It is recommended that examiners use notes made during the flight test to complete a final copy of the flight test report. This provides the examiner with the opportunity of referencing the appropriate flight test standards while writing final comments.



TRANSPORT CANADA 4-POINT GRADING SCALE[11]

When applying the 4-point scale, award the mark that best describes the weakest element(s) applicable to the candidate's performance. Remarks to support mark awards of 1 or 2 must link to a safety issue, a qualification standard (performance criteria), or an approved technique or procedure.

4	Above standard	Performance remains well within the qualification standards and flight management skills are excellent.	• Performance is ideal under existing conditions. • Aircraft handling is smooth and precise. • Technical skills and knowledge exceed the required level of competency. • Behavior indicates continuous and highly accurate situational awareness. • Flight management skills are excellent. • Safety of the flight is assured. Risk is well mitigated.
3	Standard	Minor deviations occur from the qualification standards and performance remains within prescribed limits.	• Performance meets the recognized standard, yet may include deviations that do not detract from the overall performance. • Aircraft handling is positive and within specified limits. • Technical skills and knowledge meet the required level of competency. • Behavior indicates that situational awareness is maintained. • Flight management skills are effective. • Safety of the flight is maintained. Risk is acceptably mitigated.

[11] Transport Canada. TP 14277 – Pilot Examiner Manual, 3rd ed., April 2010.

2	Basic standard	Major deviations from the qualification standards occur, which may include momentary excursions beyond prescribed limits, but these are recognized and corrected in a timely manner.	• Performance includes deviations that detract from the overall performance, but are recognized and corrected within an acceptable time frame. • Aircraft handling is performed with limited proficiency and/or includes momentary deviations from specified limits. • Technical skills and knowledge reveal limited technical proficiency and/or depth of knowledge. • Behavior indicates lapses in situational awareness that are identified and corrected by the pilot/crew. • Flight management skills are effective but slightly below standard. Where applicable, some items are only addressed when challenged or prompted by other crewmembers. • Safety of the flight is not compromised. Risk is poorly mitigated.
1	Below standard	Unacceptable deviations from the qualification standards occur, which may include excursions beyond prescribed limits that are not recognized or corrected in a timely manner	• Performance includes deviations that adversely affect the overall performance, are repeated, have excessive amplitude, or for which recognition and correction are excessively slow or nonexistent, or the aim of the task was not achieved. • Aircraft handling is rough or includes uncorrected or excessive deviations from specified limits. • Technical skills and knowledge reveal unacceptable levels of technical proficiency and/or depth of knowledge. • Behavior indicates lapses in situational awareness that are not identified or corrected by the pilot/flightcrew.

			• Flight management skills are ineffective, unless continuously challenged or prompted by other flightcrew members. • Safety of the flight is compromised. Risk is unacceptably mitigated.

FLIGHTSAFETY 4–POINT GRADING SCALE[12]

1–Proficient (to PTS Standard)

2–Normal progress (anticipate proficient within normal course structure)

3–Needs additional training (simulator or ground school beyond course structure)

4–Unsatisfactory

TASKS/TOPICS THAT ARE NOT REQUIRED TO BE TRAINED TO PROFICIENCY:

T–Trained procedure only

D–Discussed task/topic

C–Complete (LOFT Only)

FlightSafety encourages instructor remarks by task or by training session. For grades of 1 and 2, these remarks are usually the location of training and a summary of the scenario; grades of 3 and 4 require remarks addressing each objective standard in the PTS not met, as well as any target areas for emphasis.

[12] FlightSafety International. Learning Center Operations Manual, Revision 5.2, 22 March 2011, Section 5.11

APPENDIX D—APPLYING ISSUE 3'S RECOMMENDATIONS

IMPLEMENTING THE EARLY EVALUATION CONCEPT (SHORT-CYCLE)

The ARC recommends that if a pilot has had an extended absence from flight duties requiring additional training beyond the normal recurrent training (but less than the training required for initial qualification) then that pilot shall be subject to a short cycle for the appropriate evaluation.

The ARC also recommends that if a pilot demonstrates unsatisfactory performance while completing one of the following events, he or she shall be subject to a short-cycle for the respective event:

- Part 135
    - Recurrent Ground Training (either written or oral test) § 135.351(b).
    - Competency Check § 135.297(b).
    - Instrument Proficiency check § 135.297.
    - Line check § 135.299.
    - ATP Certificate Practical Test § 61.153(g).
    - Aircraft Type Rating Practical Test § 61.63(d).
- Part 121
    - Recurrent Training–Ground § 121.427(b)(1) oral and/or written test.
    - Proficiency Check § 21.441(a).
    - Proficiency Training §§ 121.441(a) and 121.409.
    - Line check § 121.440.
    - LOFT §§ 121.441(a) and 121.409.
    - ATP Practical Test § 61.153(g).
    - Aircraft Type Rating Practical Test § 61.63(d).

Pilots who have demonstrated unsatisfactory performance must receive the necessary training to achieve performance standards. Once this training is completed, pilots must be reevaluated before being allowed to resume flight duties. After resuming flight duties, the pilot will return for a short-cycle of the event deemed unsatisfactory that is one-half the normal interval stipulated in the operator's training program. Once completing the short-cycled evaluation satisfactorily,

the pilot returns to the normal interval approved for the operator. If unsatisfactory performance is again demonstrated during the short-cycled training and KSA assessment, then the pilot is subject to another short cycle interval.

In cases where the training and assessment interval is an odd number, the interval is one-half rounded up to an even number.

- Example A: An operator uses a 12-month recurrent training and assessment interval for the competency check required under § 135.293(b). A pilot who demonstrates unsatisfactory performance during KSA assessment would be required to complete recurrent training and assessment 6 months after the unsuccessful KSA assessment and necessary remedial training. If during the short-cycled recurrent training the pilot does not require any additional training beyond the normal events and satisfactorily demonstrates performance standards, then they would return to the normal 12-month interval.

- Example B: An operator is allowed by the FAA to use a 9-month training and assessment interval for a proficiency check (§ 121.441(a)). A pilot who undergoes recurrent training but demonstrates unsatisfactory performance during KSA assessment would be required to complete recurrent training and assessment 5 months after the unsuccessful KSA assessment and necessary remedial training (one-half of 9 months would be 4.5 months, rounded up to 5 months). If during the short-cycled recurrent training the pilot does not require any additional training beyond the normal events and satisfactorily demonstrates performance standards, then they would return to the normal 9-month interval.

The existing "base-month" concept, where training may be scheduled 1 month prior to the base month or 1 month after the base month, should apply in these provisions.

IMPLEMENTING EVALUATION EXTENSIONS

The ARC recommends that the FAA offer one of seven options (either individually or combined) to operators who wish to extend training and assessment intervals by implementing enhanced safety or training programs. The FAA should consider the provisions for each option listed below in considering an extended interval.

The options include the following:

Option 1 Requirements: Implementation of a First Look Program—SPOT Check; a 1- month interval extension for a § 121.441 or § 135.297 flight evaluation.

Prior to annual training there will be an initial simulator session consisting of a 2-hour SPOT session. The simulator instructor conducting the period will complete a blind (deidentified) data collection form on each flightcrew member. Four fixed "first look" maneuvers will be identified on an aircraft specific basis by the director of training for FAA approval.

Four fixed maneuvers should be selected on the following criteria:

- At least one maneuver will be flown with a diminished aircraft system.

- At least one maneuver will be flown with diminished avionics.
- At least one maneuver will be flown engine out.
- At least one approach/missed approach will be flown manually (without autopilot).

A sampling of all other maneuvers in this Appendix (called "variable maneuvers") will be selected by the simulator instructor, along with any other aircraft specific training items as determined by the director of training.

A complete evaluation utilizing the concepts of fixed/variable maneuvers will be administered during the SPOT simulator session. The evaluation itself will be for a total of 2 hours (with PF duties split about 1.5 hours for the PIC and .5 hours for the SIC) and conducted in the flightcrew concept mode. Flightcrew members are accountable for and individually evaluated on all respective PF and PM duties, as applicable during the entire period. The instructor completing the SPOT evaluation will complete a blind data collection on each flightcrew member as described later.

A minimum of eight maneuvers will be completed during the check: six of these events must be completed with the PIC flying (four fixed, two variable) and two of the fixed maneuvers with the SIC flying.

Proficiency Check maneuvers—Sample of maneuvers—

- PIC PF; SIC PM—
    - Fixed:
        - Instrument landing system (ILS) with flight control failure,
        - Raw data ILS,
        - Takeoff with an engine failure, and
        - Full procedure non-precision manually flown approach,
    - Variable:
        - Aborted takeoff, and
        - ILS to lowest minimums.
- SIC PF; PIC PM—
    - Fixed:
        - Full procedure missed approach, and
        - ILS with engine-out.

For all tasks, maneuvers, or procedures included on first look evaluations, the certificate holder will identify the performance standards to be employed. Current FAA practical test advisory materials and pertinent flight standardization board reports for a given type of aircraft will be employed for guidance in developing specifications for performance standards. The specifications for performance standards will be submitted to the air carrier's principal operations inspector (POI) for approval.

Each event on the SPOT check will be individually graded based on the following criteria:

- For successful completion of an event, SPOT check data collection will not require retraining and retesting. Two unsatisfactory items will be retrained during the remainder of recurrent training:
    - Event flown to standards, and
    - Event unsatisfactory.
- Level of flightcrew member coordination displayed—
    - Flightcrew member coordination met standards, and
    - Flightcrew member coordination was unsatisfactory.
- Data will be aggregated for a report to the FAA with 2 points for each event as described above: 1 for successful completion and 1 for flightcrew member coordination, resulting in 16 points available for each SPOT check.

Data will be collected and analyzed during the training until all pilots have cycled through a SPOT evaluation. If, at the end of the period, the SPOT program indicates an aggregate average of greater than 90 percent ones (1), the time between checking may be extended for 1 month, up to the 12-month maximum. Approval for a 1-month extension is determined by the POI upon review of data. Collection and analysis of data will be continued and the results will be presented to the certificate holder's POI annually to determine if the checking extension should be reapproved.

Option 2 Requirements: Implementation of LOFT Program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

Air carrier training programs must include a 2-hour, full flightcrew member complement simulator period dedicated to LOFT, as outlined in the line operational simulation advisory circular (AC) 120–35C. This LOFT session will be conducted separately from the normal simulator training program. The LOFT scenario will be constructed to focus on human factors skills as well as other specific training objectives appropriate to the air carrier.

For all tasks, maneuvers, or procedures included in LOFT scenarios, the certificate holder will identify the performance standards to be employed. Current FAA practical test advisory materials and pertinent flight standardization board reports for a given type of aircraft will be employed for guidance in developing specifications for performance standards. The specifications for performance standards will be submitted to the POI for approval.

LOFT will be a no-jeopardy event. The period cannot result in an unsatisfactory grade, although additional LOFT may be given if deemed necessary. The LOFT will be videotaped and reviewed at the end of the period to facilitate the debriefing session.

Instructors conducting the LOFT will complete one blind data form on the entire flightcrew:

- Successful completion of LOFT:
    - All LOFT events met standards, or
    - Event was unsatisfactory.
- Level of CRM Displayed:
    - CRM met standards, or
    - CRM was unsatisfactory.

Because LOFT and CRM are key elements in the training program, a LOFT working group will be assembled each year consisting of pilot representatives from each aircraft type and coordinated by the air carrier's director of training and CRM working group. The team will determine the annual CRM theme and design LOFT scenarios that complement and reinforce that theme. Recurrent CRM training will use the theme as the main topic of classroom discussion, and aircraft types will tailor the basic scenario for specific use LOFT. LOFT design will adhere to AC 120–35, as amended, for general guidance and comply with the following requirements.

- Annual LOFT scenarios and the CRM theme must always be complementary.
- LOFT scenarios (and the CRM theme) must be varied and updated annually.
- Identical LOFT scenarios cannot be used in consecutive training sessions for a given pilot.
- Flightcrew member substitution stated in AC 120–35C for recurrent LOFT will be utilized.

Data will be collected and analyzed during the training until all pilots have cycled through a LOFT scenario. If, at the end of the period, the LOFT program indicates an aggregate average greater than 90 percent ones (1), the time between checking may be extended for 1-month, up to the 12-month maximum. Collection and analysis of data will continue and the result will be presented to the certificate holder's POI annually to determine if the checking extension should be reapproved.

Option 3: Implementation of an Enhanced Training Data Collection and Feedback Program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

Each pilot is required to attend training required under 14 CFR at least annually. Annual training for each pilot will be a combination of distributed training and onsite training that must be accomplished during the pilot's 3-month eligibility period (base month, plus or minus 1 month). This will include:

- Annual ground school instruction, which includes mandated training under parts 121 and 135 in recurrent school subject lessons.
- Annual simulator flight training to proficiency for each flightcrew member.

Annual simulator events will be conducted to the maximum extent possible in a flightcrew member-oriented session, with a flightcrew consisting of a PIC and SIC.

For all tasks, maneuvers, or procedures included in proficiency evaluations, the certificate holder will identify the performance standards to be employed. Current FAA practical test advisory materials and pertinent flight standardization board reports for a given type of aircraft will be employed for guidance in developing specifications for performance standards. The specifications for performance standards will be submitted to the POI for approval.

The certificate holder will develop a proficiency rating scale for the training sessions from 1–5 for approval by their POI.

Examples of these include:

- Met standards on first attempt.
- Failed to meet standards, debriefed, no additional simulator training required.
- Failed to meet standards on first attempt. Met standards on second attempt after debrief and retraining, additional program hours not required.
- Training to proficiency required additional time over and above program requirements.
- Unsatisfactory, unable to meet standards.

Each instructor will complete a data sheet on completion of each training date evaluating each task or maneuver. Each evaluator will grade each task or maneuver based on the above criteria.

Data on pilot performance conducted under this part shall be captured by the certificate holder and reported to the FAA POI. Performance evaluations will be accomplished in accordance with the following categories and provisions above.

- By aircraft type (according to the criteria in AC 120–53).
- By flightcrew position (PIC or SIC). Each flightcrew member's data shall be reported as a single identifiable record. Appropriate identifiers will be used to distinguish flightcrew position in order to permit tracking individual performance, where possible, through first-look evaluation (where appropriate) using proficiency training and evaluation. The certificate holder will report additional training sessions beyond the normally programmed training for any flightcrew member.
- By individual task, maneuver, or procedure, as applicable.
- By type of evaluation, as follows:
    - First-look (if applicable),
    - Proficiency training, and
    - Proficiency evaluation.
- Rating scale data shall be obtained for each task, maneuver, or procedure.
- For items requiring multiple attempts to acquire proficiency, the number of repetitions required. Rating scale data shall be obtained for each repetition of a proficiency task, maneuver, or procedure.

The certificate holder shall provide the FAA with deidentified raw data on a monthly basis, in accordance with POI requirement.

The monthly report will:

- Document the certificate holder's own analysis of data acquired under this part.
- During the second and subsequent years of data collection, incorporate comparisons of data between equivalent periods of the preceding years.
- Identify any trends, common problem areas, or potential deficiencies.
- Include a description of corrective steps taken or warranted.

Implementation of this program, when approved by the certificate holder's POI, may be used to increase the period between evaluations by 1 month, period not to exceed 1 year.

Option 4: Implementation of an SMS; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

If the air carrier has implemented an SMS (FAA or ICAO recognized), a 1-month interval extension for a §§ 121.441 or 135.293 flight evaluation is approvable.

Option 5: Implementation of FOQA or FDM (ICAO) program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

If the air carrier has a FOQA or FDM (ICAO) program in place, a 1-month interval extension for a §§ 121.441 or 135.297 flight evaluation is approvable.

Option 6: Enhanced Management Oversight program; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

If a full 14 CFR part 119 qualified management team (including safety manager for part 135 air carrier) is managing more than 75 percent of its work days and actually occupying a cockpit for less than 25 percent of work days, a 1-month interval extension for a §§ 121.441 or 135.297 flight evaluation is approvable.

Option 7: Demonstration of Individual Pilot Operational Tempo; a 1-month interval extension for a § 121.441 or § 135.297 flight evaluation.

For the purpose of this proposal, operational tempo (OPTEMPO) is a term used to describe operational attributes that impact a flightcrew member's KSAs with respect to aircraft operations.

Studies indicate that skill and knowledge decay is directly related to the frequency of use or practice of a given skill. Several studies cited by Ms. Monica Martinussen and Mr. David R. Hunter, authors of *Aviation Psychology and Human Factors*, substantiate this as referenced below.

- Skill decay is defined as a loss or decay of trained or acquired skills or knowledge after periods of nonuse. The inverse is intuitive: as trained/acquired skills or knowledge are exercised; abilities improve, or at least skill decay is prevented.

- Difficulties with skill decay are exacerbated by the current generation of cockpit automation, which tends to place pilots in a passive, monitoring mode.

- Some skills decay faster than others. Memories and cognitive skills tend to be lost much faster than motor skills.

- Basic visual flight skills remain intact for up to 36 months, while skills relating to instrument flight procedures fall below acceptable levels within 12 months for about half the pilots in the study.

This led to the supposition that frequency of activity by a pilot in critical phases of flight should be considered when determining the optimum training interval between recurrent training events. The THRR ARC recommends giving a 1-month assessment interval extension for each of the following OPTEMPO thresholds, not to exceed a 12-month interval for any individual pilot:

- 180 or more take-offs and landings within the previous 6 months, and
- 36 instrument approaches in actual instrument meteorological conditions within the previous 6 months.

The operator must establish a tracking system to substantiate that their pilots meet these thresholds.

This assessment interval credit recognizes that pilots who fly more frequently than others should sustain their motor and cognitive skills better than those pilots who fly less often. However, any pilot that fails an assessment would be required to enter a "short-cycle" as described earlier due to unsatisfactory assessment. After satisfactorily completing the short-cycle requirements, the pilot may return to the previous extended interval based on OPTEMPO factors if he or she meets the prescribed thresholds.

Options 1-7 may be used only if the following requirements are met:

- The pilot successfully passed the previous two proficiency checks.
- The pilot is single-airplane (fleet) qualified.
- The pilot is a full-time employee.
- An FAA-approved training program for the air carrier is used.

In all cases, data collection and analysis requirements necessary to comply with the above safety programs listed above must substantiate that extending training intervals beyond current regulatory requirements is appropriate.

APPENDIX E—DISSENTING STATEMENT

CAPA was also a member of the FOQ ARC and submitted the following dissenting statement to specific recommendations made by that ARC. To the extent that the THRR ARC discussed and made recommendations based upon the FOQ ARC's recommendations for an academic credit system, CAPA also dissented to the THRR ARC's recommendations. CAPA provided a copy of its prior statement to serve as its dissenting opinion for the THRR ARC recommendation related to academic credit.

Coalition of Airline Pilots Associations

First Officer Qualifications (FOQ) – ARC
Dissent Statement

August 31, 2010

Respectfully submitted by:

Captain Paul Onorato, President
Coalition of Airline Pilots Associations
World Headquarters
444 N. Capitol Street, Suite 532
Washington, DC 20001
(202) 624-3540

Introduction

The First Officer Qualifications Aviation Rulemaking Committee (FOQ-ARC) has done an excellent job of reviewing, defining and recommending changes to the educational and training requirements for prospective airline pilots. CAPA fully supports the ARC's efforts in this area, and supports the outlined enhancements recommended within this report.

However, CAPA dissents to the majority view of the FOQ-ARC regarding allowing a reduction in flight experience to attain an Airline Transport Pilot certificate (ATP) through a "flight time credit system". CAPA also dissents to the creation of an ATP "SIC only" restriction or any other scheme involving new pilot certifications or licenses that are established for the purpose of bypassing the flight experience requirements necessary to qualify for the ATP. One level of safety in all operations conducted under Part 121 is a CAPA goal and applies to major, regional and cargo airline operators.

CAPA's dissent is based on the following fundamental concepts:

- The difference between training and experience: structured or un-structured training designed for successful completion of a flight-check, does not create the judgment and decision-making ability to operate in Part 121 operations.
- The industry's adoption of CRM in today's Part 121 operating environment: Captains do not fly airliners – flight crews fly airliners.
- The need for experienced flight crew members in today's Part 121 environment.

CAPA answers to FAA's ARC Questions:

a. What should be the minimum certification level required of a First Officer?

CAPA Safety and Training experts all agree that the Airline Transport Pilot's (ATP) license must be the minimum certification level for all flight crew members operating under Part 121. A competent professional pilot should hold the certificate commensurate with the responsibilities of the position. A second-in-command (SIC) certification would allow a lesser degree of training or preparedness which is not the purpose of this ARC, the FAA, or the intent of Congress.

In addition to the experience and aeronautical knowledge requirements of the ATP, and in agreement with the ARC, CAPA believes that both flight crew members should have the commensurate knowledge of the aircraft that they are operating. Accordingly, both flight crew members need to hold the specific **type rating** for the aircraft they fly in Part 121 operations.

b. What should be the minimum flight hour experience requirements of a First Officer?

CAPA believes that <u>all</u> the requirements of the Airline Transport Pilots license (ATP) must be met by a prospective Part 121 First Officer and that individual hold an ATP certificate. To align experience requirements with actual flight crew member

responsibilities, CAPA recommends enhancements to the ATP flight experience requirements as outlined in the dissenting view.

c. 1. Can academic training substitute for hours of experience?

CAPA believes that academic training is a necessary and vital component to the education of a prospective Part 121 First Officer, but academic training cannot substitute for hours of experience as outlined in the dissenting view.

c. 2. If so, what subjects and how much flight experience?

Academic training cannot substitute for hours of experience.

d. 1. Should there be an air carrier endorsement on a commercial pilot certificate?

CAPA believes that the Airline Transport Pilots license is the minimum certification standard for a Part 121 flight crew member; First Officer and Captain.

d. 2. If so, what kind of flight and ground training should be required?

CAPA fully supports the additional flight and ground training recommended by this ARC. The enhanced flight and ground training should be incorporated into the Airline Transport Pilot certificate requirements.

e. Should there be an operational experience requirement (high altitude, icing, etc.) before being permitted to operate as a First Officer?

The FOQ-ARC unanimously agreed that actual flight in these conditions is not recommended due to safety considerations, however, Part 121 operations are conducted daily in these challenging conditions. This is the essence of why actual flight hours are so essential in qualifying as a first officer. In almost all cases, the flight experience requirements of the ATP allows a reasonable amount of time for the prospective airline pilot to experience the hazardous flight conditions listed in this question. While one certainly would not be able to guarantee actual flight in these conditions, the chances are greatly enhanced as the pilot works towards the aeronautical flight experience requirements of the ATP.

CAPA also believes that training requirements need to be significantly increased. Specifically:

- The practice of stalls and spins in an actual aircraft should be mandatory to ensure the prospective pilot has experience with un-controlled flight and recovery techniques.

- Exposure to high-altitude hypoxia in an altitude chamber should be required to prepare pilots who may be involved in a sudden loss of cabin pressure.

Dissenting View

The Coalition of Airline Pilots Associations (CAPA) represents 28,000 pilots within the industry, has access to the safety and training committees of many of the nation's most prestigious airline pilot groups, and has a unique perspective on the requirements and qualifications necessary to pilot a modern airliner in today's environment.

CAPA believes that there are 2 necessary components to the training and maturation of a safe and capable airline pilot. First, they must have the education and training applicable to their role on the flight deck of an airliner. Second, they must have a requisite level of experience to operate in real-world Part 121 operations.

The academic requirements suggested by the FOQ-ARC are quality enhancements that CAPA supports, but only in addition to, and not in lieu of current ATP flight experience and knowledge requirements.

As the prospective professional pilot works towards the ATP certificate, he/she is developing and honing airmanship skills while providing exposure to the challenges of flight in difficult conditions. Flying aircraft of any size develops airmanship skills. For example, a pilot flying small single engine aircraft near the limits of the aircraft, such as flight instructors, banner towers and fire fighters, over time develop excellent airmanship skills. These aeronautical skills together with the training required for the ATP certificate allow for a smooth and confident transition to Part 121 operations. The concept of progression is well-defined in FAA-approved Advanced Qualification Programs (AQP Training Programs) used to train experienced pilots throughout the major airlines.

The structured learning process, discussed by the ARC at length, is excellent for providing knowledge and practice for a specific challenge; for example, a stall recovery technique or a de-icing procedure. But structured learning, by its definition, has a known quantity and a known outcome. A student knows and can prepare for the lesson beforehand since the standards for completion of the lesson and the required outcomes are known. Most importantly, in the case of simulator training, and regardless of the performance, the personal safety of the pilot is never in jeopardy. Airline flying, in contrast, is highly unpredictable. CAPA realizes the value of simulator training, to teach and practice specific tasks in a safe and controlled environment. However, no amount of training can replace exposure and experience in an aircraft.

Flight Time Credits: CAPA is particularly concerned with the FOQ-ARC's "flight time credit scheme" whereby the ARC is applying "academic credits" in lieu of flight experience for the purpose of bypassing the requirements of the ATP. The ARC proposes reducing the established 1,500 hour ATP minimum *to as low as 500 hours* by way of credits for both academic training and specific flight hours. As a result, allowing "1,000 hours of credit" a full two-thirds of the total requirement for the ATP.

CAPA vigorously opposes allowing specific academic training courses to be credited toward any of the aeronautical flight experience requirements of the ATP certificate, including the 1,500 hour total flight time requirement. CAPA experts agree that while the academic courses proposed by the FOQ-ARC are much needed enhancements, they are not substitutions for the requisite flight hour requirements. CAPA also contends that the "flight time credit scheme" goes beyond

what HR 5900 permits, and certainly beyond the laws intention. The ARC majority interpreted the term "academic training" in HR 5900 (Section 217) to include "flight training." CAPA believes this to be in direct violation of HR 5900.

2010 Pilot Source Study Data: While CAPA recognizes that modern pilot training programs have benefited from the latest scientific studies regarding the human learning process, CAPA's Safety and Training Committee experts contend that the pass-fail training data, used by the ARC to justify the "flight time credit scheme", is inconclusive and does not support their position. Statistics on whether training is successful or not only reveals how students respond in a training environment and does not validate a pilot's readiness for Part 121 operations and hazardous conditions they may encounter. The flight time credit system derived from the 2010 pilot source study data does not support or warrant a reduction to ATP flight experience requirements.

Flight Crew Concept: The role of Captain and First Officer in regional and major airline cockpits has changed dramatically. In today's airline environment, Captains do not fly airliners, **'flight crews'** fly airliners.

Cockpit Resource Management (CRM) programs were first introduced in the 1980's and established a flight crew concept where the Captain no longer dictates the level of First Officer involvement in the operation of the aircraft. The First Officer is now an integral part of the flight crew with specific duties, responsibilities, and FAA accountability. He or she is encouraged and expected to challenge the thinking and decisions of the Captain. All training and standard operating procedures (SOPs) are now based upon and practiced with the Captain and First Officer interacting as a team and each member of the team conducting their duties to comply with SOPs. The dual responsibilities inherent in our modern safety culture mandate that entry-level pilots perform at a level consistent with seasoned veterans.

The industry structure has also changed. A new-hire Part 121 pilot is no longer flying slow propeller driven aircraft into less traveled airports as was the case when current qualification regulations were written. Currently, new-hire pilots are immediately responsible for their role as a flight crew member and as such, expected to have mastered sophisticated high speed, high altitude technologically advanced turbine powered aircraft into saturated airspace and high traffic density airports.

ATP Enhancements

CAPA's Training and Safety Committees believe that the aeronautical experience and knowledge requirements of the FAA Airline Transport Pilot certificate need to be updated to reflect the realities of modern airline operations. Today's challenging airline operational environment dictates that the ATP requirements be further enhanced by including the following:

- **500 hours of PIC time:** Allows exposure to command and judgment decisions and develops flight deck decision making skills.
- **500 hours of multi-engine time (100 of which will be in a turbine multi-engine aircraft):** Prepares the flight crew member for Part 121 operations as there are no single engine Part 121 operators. Turbine time is essential to master the operation of turbine engines and the higher speeds of multi-engine turbine aircraft utilized in Part 121 operations.

- **100 hours of actual instrument or simulated instrument flight time, (50 hours in an aircraft):** ATP applicants need time to gain a comfort level operating aircraft with no visual cues, and navigating with reference solely to instrumentation. Development of strong instrument scan requires practice. Although procedures can be practiced in the simulator, there is no substitute for experiencing low-visibility takeoff's, approaches, landings, weather, and diversion issues in an actual aircraft.

Basic ATP Flight Experience Requirements

The underlying experience requirements of the Airline Transport Pilot Certificate are the vital prerequisites for the ability to perform as a flight crew member. They include:

- **500 hours of cross country time**: ATP applicants gain experience by operating in unfamiliar ground and flight operations. Actual experience gained includes; flight, fuel and contingency planning, weather analysis, hazardous flight conditions, practical application of MEA's, MORAs and/or grid obstruction altitudes, operations on and off airways, ATC and AIM procedural experience.

- **100 hours of night flight time:** ATP applicants gain experience in night flight and ground operations, airport lighting, visual acuity along with differences in spatial orientation, night landings and take offs, night weather avoidance and traffic recognition.

- **75 hours of instrument time:** CAPA's position is that this requirement needs to be increased to a minimum of 100 hours as discussed in ATP Enhancements.

- **1,500 hours of total time:** CAPA has spent a significant portion of this document on this requirement and why it is a current FAA requirement.

- **23 years of age:** leading to a more mature aviator on the flight deck.

- **Type rating:** This should be accomplished in the specific aircraft flown prior to acting as an airline flight crew member in Part 121 operations. CAPA believes that it is vital for both members of the flight crew to display the appropriate mastery of their specific aircraft and the decision making, judgment skills and knowledge required by the **Type Rating.**

❖ *All permissible FAA approved simulator time must be in a full visual and full motion simulator.*

Each one of these experience requirements is necessary to produce operational knowledge and skills that are not available from a text book or simulator. Judgment is not developed through training. In contracts, like airmanship skills, it is only practiced and enhanced with exposure in aircraft.

Procedural Background

Four of the last five fatal airline accidents have involved regional carriers, who in many cases hire less experienced pilots, as opposed to major airlines. In July of 2009, the US House of Representatives Transportation and Infrastructure Committee conducted an aviation hearing where the issue of First Officer Qualifications was highlighted by professional witnesses. Both

the House and the Senate conducted further hearings on aviation safety that included testimony on pilot experience and first officer qualifications.

On February 8, 2010, the FAA issued an Advanced Notice of Proposed Rulemaking on the subject of "New Pilot Certification Requirements for Air Carrier Operations" and received 1,299 comments from all interested parties, groups and organizations.

Congress recently passed legislation that requires all pilots in Part 121 cockpits to possess an Airline Transport Pilot certificate (ATP), with a three year implementation window. The legislation also permits the FAA Administrator the discretion to allow credit towards the flight experience requirements of the ATP for certain coursework exceeding that required for the ATP certificate. Accordingly, the FAA has most recently chartered the First Officer Qualifications Aviation Rulemaking Committee (ARC) for which this document is prepared.

Issue Background, Pilot Experience

Historically, airlines could choose from a highly experienced pilot applicant pool and have require many thousands of hours of flying experience to meet their safety standards. The professional status of an airline career allowed the industry to select from groups that included former military pilots and the most highly qualified civil aviation pilots.

With the degradation of financial incentives for men and women entering the airline pilot profession in the last decade, coupled with the cost of initial pilot training and the inability of the airline piloting profession to stay financially competitive with comparative professions, an airline pilot career is far less desirable. The result is many experienced pilots and new prospective pilots have sought other career fields that offer compensation commensurate with the responsibilities of their position.

This drastic change in the industry's dynamics has altered the demographics of the pilot hiring pool, causing the experience levels of new hire pilots operating transport category aircraft to diminish substantially. Where, at one time, flying airline transport aircraft with passengers on board was a prestigious position in the industry, it is now an entry-level position and FAA minimum licensing requirements are being tested today as never before.

The alarming trend brought representatives of over 90,000 professional airline pilots before congress to state that the current situation is an unconscionable safety lapse as demonstrated by the recent fatal accidents of regional airlines, and, at a minimum, the flight standards and experience levels incorporated in the Airline Transport Pilot Certificate should be required for pilots engaged in Part 121 air operations.

Summary

Recent tragic events have shown the need to revisit the training and experience level requirements of pilots employed in Part 121 service. The First Officer Qualifications ARC has recommended a type rating and educational enhancements that if adopted will more closely align pilot training with the actual line environment.

The opportunity to develop airmanship skills is critical in the process of producing safe and capable airline pilots. It is no coincidence that the major airline with the best safety record also has the highest standards for pilot qualifications. Southwest Airlines, which has never had a passenger fatality in its over 38 years of existence, requires their new hire pilots to possess 2,500 total flight hours, 1,000 hours of pilot-in-command time (PIC), an FAA Airline Transport Pilots (ATP) certificate and a type rating in the Boeing 737, the aircraft which that pilot will fly when employed by Southwest Airlines.

CAPA therefore is resolute in our stance that any part 121 pilot should possess the FAA Airline Transport Pilot (ATP) certificate and that the training and experience requirements of the ATP certificate be enhanced as stated above. In addition, Part 121 flight crew members need to be type-rated in the aircraft they fly prior to acting as a line flying crew member.

Congress had the wisdom to pass sweeping airline safety legislation including a mandate to increase flight crew experience levels and for each flight crew member to possess the ATP certificate. CAPA firmly believes it was their intent to maintain the ATP certificate as a requirement for Part 121 flying and does not believe that the "flight time credit scheme" or an ATP SIC only restriction advocated by the FOQ ARC is in the spirit of the law. The expectations of Congress and of the American people are for safe efficient air travel with qualified, trained, and experienced flight crew professionals at the controls. It is the responsibility of the regulating body, the FAA, to ensure that the traveling public's expectations are met, by requiring that both captain and first officer possess an Airline Transport Pilots certificate with the requisite experience requirements, and training.

ADDENDUM TO CAPA's DISSENT STATEMENT:

First Officer Qualifications (FOQ) ARC

COMPARISON OF CURRENT REQUIREMENTS vs. RECOMMENDATIONS:

	CURRENT LAW ATP Requirements	CAPA ATP Recommendations	FOQ-ARC Experience Reduction (Recommendations)	COMMERCIAL Requirements
TOTAL TIME	1500	1500	DECREASE to: 500	250
CROSS COUNTRY	500	500	DECREASE to: 100	50
NIGHT	100	100	DECREASE to: 50	5
INSTRUMENT	75	100	DECREASE to: 50	10
PILOT -IN-COMMAND (PIC)	250	500	No change: 250	100
MULTI -ENGINE and/or TURBINE	10	500 (100 in turbine)	Increase to: 50	10

APPENDIX F—CHARTER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Effective Date: **9-30-2010**

SUBJ: Flightcrew Member Training Hours Requirement Review Aviation Rulemaking Committee

1. PURPOSE. This document establishes the Flightcrew Member Training Hours Requirement Review Aviation Rulemaking Committee (ARC) according to the Administrator's authority under Title 49 of the United States Code (49 U.S.C.), section 106(p)(5).

2. BACKGROUND.

a. In August 2010 Congress enacted the "Airline Safety and Federal Aviation Administration Extension Act of 2010" (the "Act"). Section 209(b) of the Act, titled "FAA Rulemaking on Training Programs," requires the FAA to convene a multidisciplinary panel to assess and make recommendations to the Administrator on:

1) The best methods and optimal time needed for flightcrew members of Title 14 Code of Federal Regulations (CFR) part 121 and 135 air carriers to master aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination;

2) The initial and recurrent testing requirements for pilots, including the rigor and consistency of testing programs such as check rides;

3) The optimal length of time between training events for such flightcrew members, including recurrent training events;

4) The best methods to reliably evaluate a flightcrew member's mastery of aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination;

5) Classroom instruction requirements governing curriculum content and hours of instruction;

6) The best methods to allow specific academic training courses to be credited toward the total flight-hours required to receive an airline transport pilot certificate; and

7) Crew leadership training.

b. Section 209(b) of the Act also requires the panel to consider industry best practices with respect to training protocols, methods, and procedures and to submit a report, based on the findings of the panel, to Congress and the NTSB by July 31, 2011.

c. To carry out the requirements of Section 209(b) of the Act, the FAA is chartering an ARC. The ARC will accomplish the tasks directed in Section 209(b) of the Act based on the Congressional timelines outlined in the Act and will additionally develop recommendations for the FAA regarding regulatory action in those same areas.

3. **OBJECTIVES AND SCOPE OF THE ARC.** The Flightcrew Member Training Hours Requirement Review ARC will provide a forum for the U.S. aviation community to discuss and provide recommendations to the FAA concerning the development of requirements to meet Section 209(b) of the Act.

a. Specifically, the ARC shall assess and make recommendations concerning:

1) The best methods and optimal time needed for flightcrew members of 14 CFR part 121 and 135 air carriers to master aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination;

2) The initial and recurrent testing requirements for pilots, including the rigor and consistency of testing programs such as check rides;

3) The optimal length of time between training events for such flightcrew members, including recurrent training events;

4) The best methods to reliably evaluate a flightcrew member's mastery of aircraft systems, maneuvers, procedures, takeoffs and landings, and crew coordination;

5) Classroom instruction requirements governing curriculum content and hours of instruction;

6) The best methods to allow specific academic training courses to be credited toward the total flight-hours required to receive an airline transport pilot certificate; and

7) Crew leadership training.

b. The ARC shall consider scalability of its recommendations to address the needs of small businesses.

c. The ARC will develop recommendations to 14 CFR parts 121, 135, and other associated regulations as may be required to comply with the intent of Section 209(b) of the Act. These recommendations will be presented to the Associate Administrator for Aviation Safety for rulemaking consideration on or before July 31, 2011.

4. ARC PROCEDURES.

a. The ARC will provide advice and recommendations to the Associate Administrator for Aviation Safety and acts solely in an advisory capacity. Once the ARC recommendations are delivered to the Associate Administrator, it is within her discretion to determine when and how the report of the ARC is released to the public.

b. The committee will discuss and present information, guidance, and recommendations that the members of the committee consider relevant in addressing the objectives.

c. The ARC may be reconvened following the submission of its recommendations for the purposes of providing advice and assistance to the FAA, at the discretion of the Associate Administrator.

5. ORGANIZATION, MEMBERSHIP, AND ADMINISTRATION.

a. The membership of the ARC will consist of individuals from the government, pilot associations, training organizations, and other industry organizations that can provide experts in aircraft operations, flightcrew member training, human factors, and other appropriate specialties as determined by the FAA.

1) The ARC will consist of no more than 17 individuals.

2) The FAA will identify the number of ARC members that each organization may select to participate. The Associate Administrator for Aviation Safety will then request that each organization name its representative(s). Only the representative for the organization will have authority to speak for the organization or group that he or she represents.

3) Active participation and commitment by members will be essential for achieving the ARC's objectives and for continued membership on the ARC.

b. The Associate Administrator for Aviation Safety is the sponsor of the ARC and will select an industry chair(s) from the membership of the ARC and the FAA-designated representative for the ARC. Once appointed, the industry chair(s) will:

1) Coordinate required committee and subcommittee (if any) meetings in order to meet the ARC's objectives and timelines;

2) Provide notification to all ARC members of the time and place for each meeting;

3) Ensure meeting agendas are established and provided to the committee members in a timely manner; and

4) Other responsibilities as required to ensure ARC objectives are met.

c. A record of discussions of ARC meetings will be kept.

d. Although not required, a quorum is desirable at each ARC meeting.

6. **PUBLIC PARTICIPATION.** ARC meetings are not open to the public. Persons or organizations that are not members of the ARC and are interested in attending a meeting must request and receive approval before the meeting from the industry chair(s) and the designated Federal representative.

7. **AVAILABILITY OF RECORDS.** Records, reports, agendas, working papers, and other documents that are made available to or prepared for or by the ARC will be available for public inspection and copying at the FAA Flight Standards Service, Air Transportation Division, AFS-200, 800 Independence Avenue, SW., Washington, D.C. 20591, consistent with the Freedom of Information Act, 5 U.S.C. section 522. Fees will be charged for information furnished to the public according to the fee schedule published in Title 49 CFR part 7.

8. **PUBLIC INTEREST.** The ARC's formation is determined to be in the public interest and is designed to fulfill the performance of duties imposed on the FAA by Federal law.

9. **EFFECTIVE DATE AND DURATION.** This ARC is effective upon issuance of this order. The ARC will remain in existence until September 30, 2012, unless sooner suspended, terminated or extended by the Administrator.

J. Randolph Babbitt
Administrator