U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Effective Date: JUL 16 2010

SUBJ: First Officer Qualifications Aviation Rulemaking Committee

1. PURPOSE. This document establishes the First Officer Qualifications 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. On February 8, 2010, the Federal Aviation Administration (FAA) issued the New Pilot Certification Requirements for Air Carrier Operations Advanced Notice of Proposed Rulemaking (75 FR 6164, Docket No. FAA-2010-0100; Notice No. 10-02). This ANPRM requested public comment on possible changes to regulations relating to certifying pilots conducting domestic, flag, and supplemental operations. The purpose of this ANPRM was to gather information on whether current eligibility, training, and qualification requirements for commercial pilot certification are adequate for engaging in such operations. The ANPRM asked questions concerning First Officer certification level, additional training and experience needed to perform as a First Officer, if specific ground training can substitute for flight experience, and the need for additional carrier specific training. As of April 29, 2010, we received 8,227 comments from 1,299 commenters.

b. To carry out the FAA's safety mandate, the FAA is chartering an ARC that will develop recommendations regarding rulemaking on flight experience and training requirements prior to operating as a First Officer in a Part 121 air carrier operation.

3. OBJECTIVES AND SCOPE OF THE COMMITTEE. The First Officer Qualifications ARC will provide a forum for the U.S. aviation community to discuss flight experience and training requirements to fly as a First Officer in a part 121 air carrier operation. The ARC will also evaluate the comments received in response to the ANPRM. Specifically, the ARC should consider and address:

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

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

c. Can academic training substitute for hours of experience? If so, what subjects and how much flight experience?

d. Should there be an air carrier endorsement on a commercial pilot certificate? If so, what kind of flight and ground training should be required?

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

Within ninety (90) days, the ARC will develop recommendations and submit them to the Associate Administrator for Aviation Safety for rulemaking consideration.

4. COMMITTEE PROCEDURES.

a. The committee provides advice and recommendations to the Associate Administrator for Aviation Safety. The committee acts solely in an advisory capacity.

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

5. ORGANIZATION, MEMBERSHIP, AND ADMINISTRATION.

a. The FAA will establish a committee representing the various parts of the industry and Government.

i. The ARC will consist of no more than 15 individuals.

ii. The FAA will invite selected organizations and individuals to participate as a member in the ARC. The ARC will include representatives from the aviation community, including pilot associations, universities, as well as a representative from family members of victims of aviation accidents.

iii. 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.

iv. Active participation and commitment by members will be essential for achieving the committee objectives and for continued membership on the ARC.

b. The Associate Administrator for Aviation Safety will receive the committee recommendations and reports.

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

(1) Determine, in coordination with the other members of the committee, when a meeting is required.

(2) Arrange notification to all committee members of the time and place for each meeting.

(3) Draft an agenda for each meeting and conduct the meeting.

e. A Record of Discussions of committee meetings will be kept.

f. Although not required, committee meeting quorum is desirable.

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

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

8. PUBLIC INTEREST. Forming the First Officer Qualifications ARC is determined to be in the public interest to fulfill the performance of duties imposed on FAA by law.

9. EFFECTIVE DATE AND DURATION. This committee is effective upon issuance. The committee will remain in existence 90 days from July 19, 2010, unless sooner terminated or extended by the Administrator.

J. Randolph Babbitt
Administrator

September 9, 2009

Ms. Margaret Gilligan
Associate Administrator for Aviation Safety
Aviation Safety
Federal Aviation Administration
800 Independence Avenue SW.
Washington, DC 20571

Dear Ms. Gilligan:

On behalf of the Flight and Duty Time Limitations and Rest Requirements Aviation Rulemaking Committee (ARC), we are pleased to provide you with a copy of the ARC's recommendations on updated flight and duty time limitations and rest requirements. The recommendations are in the format of a draft notice of proposed rulemaking, as required by the ARC's charter.

These recommendations reflect diligent work by the ARC on an accelerated timeline, and represent careful deliberation by the members, combining the best available science and their collective experience in the air carrier industry. We are confident that the recommendations represent a substantial improvement over current regulations and will be effective in helping to achieve the FAA's goal of reducing fatigue and increasing alertness among flightcrew members.

We trust these recommendations will be helpful in your decisionmaking process. We and our fellow ARC members stand ready to assist the FAA in prioritizing implementation of the ARC's recommendations.

Sincerely,

Jim Mangie
Co-Chair

Don Wykoff
Co-Chair

Enclosure

THE FIRST OFFICER QUALIFICATIONS AVIATION RULEMAKING COMMITTEE REPORT

Recommendations Regarding Rulemaking on Flight Experience, Training, and Academic Requirements Prior to Operating as a First Officer in Part 121 Air Carrier Operations

September 28, 2010

FIRST OFFICER QUALIFICATIONS
AVIATION RULEMAKING COMMITTEE CHAIR APPROVAL

Scott W. Foose
Vice President
Regional Airline Association

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EXECUTIVE SUMMARY

The Federal Aviation Administration (FAA) Administrator chartered the First Officer Qualifications (FOQ) Aviation Rulemaking Committee (ARC) to develop recommendations regarding rulemaking on the flight experience and training requirements of a pilot prior to operating as a first officer in a Title 14, Code of Federal Regulations (14 CFR) part 121 air carrier operation. Subsequent to this tasking, the U.S. Congress passed the Airline Safety and Federal Aviation Administration Extension Act of 2010 (H.R. 5900)[1], in response to which the FAA gave the FOQ ARC several additional taskings.

The FOQ ARC was composed of subject matter experts from nine organizations. The FOQ ARC members collectively brought to the deliberations significant levels of experience in air carrier operations; development, implementation, and management of pilot training and qualification programs; the establishment of pilot training and qualification standards at the domestic and international level; and public advocacy for aviation safety. The FOQ ARC also had expertise available to it through the FAA to answer any technical questions that arose during discussion.

In section 217 of H.R. 5900, Congress legislated both that the total flight hours required for airline transport pilot (ATP) certification "shall be at least 1,500 flight hours" and that "The Administrator may allow specific academic training courses… to be credited toward the total flight hours required…." The recommendations of the FOQ ARC consider both of these legislative directives. However, two FOQ ARC member organizations filed minority opinions disagreeing with the concept of awarding flight hour credits for academic training. That being said, all FOQ ARC members agree that every effort should be made by the industry and by the Administrator to encourage all prospective pilots to attain the higher knowledge and experience standards herein recommended by the FOQ ARC. Few would argue with the benefits that come from having pilots in air carrier operations who have completed university flight training programs, advanced jet training courses, or military flight training programs available today. The FOQ ARC therefore recommends that any new and increased qualification standard for pilots entering the air carrier industry require a proper balance between experience and education.

The FOQ ARC adopted a safety risk assessment program to identify the enhanced aeronautical knowledge and flight proficiencies believed to be essential to part 121 first officer qualifications. The same approach was taken when determining levels of credit for alternate academic and flight training paths leading to a professional pilot position in air carrier operations.

As a result of the passage of H.R. 5900, and beyond the tasking initially given to the FOQ ARC, the Administrator also asked the FOQ ARC to define the flight hours and/or experience in difficult operating conditions necessary to prepare a pilot for part 121 operations. The FOQ ARC based its activity in this regard on past recommendations by the National Transportation Safety Board defining difficult areas of operation requiring enhanced training. The FOQ ARC extensively discussed the issue of difficult operating conditions and determined

[1] Signed into law as Public Law 111–216 by President Obama August 1, 2010.

that simulator training is an important tool by which to provide flight experience to the pilot for recognition and appropriate response in the difficult environments experienced by air carriers. Because of safety concerns, the FOQ ARC is not recommending pilots be intentionally placed in these difficult conditions in actual aircraft.

The FOQ ARC would like to thank the Administrator for the opportunity provided to submit its recommendations in this report. The FOQ ARC's recommendations achieve a significant enhancement in safety over the current requirements in 14 CFR part 61 and exceed the requirements of H.R. 5900. The majority of the FOQ ARC recommends that in order to be a qualified second-in-command (SIC) pilot in part 121 operations, the individual must possess an ATP certificate or an ATP SIC certificate, as described in section 2.0 of this report.
Two FOQ ARC member organizations filed minority opinions disagreeing with the sufficiency of ATP SIC requirements. The FOQ ARC members unanimously agree that a pilot be required to have (1) enhanced aeronautical knowledge and flight proficiency skills, (2) an aircraft type rating, and (3) experience in multiengine, multipilot, turbine-powered aircraft. Although the FOQ ARC has focused on experience and training requirements for an SIC in part 121 operations, the group believes the Administrator should also ensure the knowledge and skills contained in this recommendation, as well as training for command, leadership, mentoring, and experience requirements, including part 121 experience as first officer, are incorporated into the requirements for a pilot in command in part 121 operations.

1.0 RECOMMENDATIONS SUMMARY

This section identifies those questions the Administrator tasked to the First Officer Qualifications (FOQ) Aviation Rulemaking Committee (ARC) (see appendix C to this report) and the FOQ ARC's subsequent recommendations. Sections 1.10 and 1.11 are recommendations the FOQ ARC made in addition to the tasking made by the Administrator. An in-depth explanation and supporting data are found in the appropriate section for each recommendation.

1.1 MINIMUM CERTIFICATION

Question A. What should be the minimum certification level required of a first officer?

The FOQ ARC agrees there must be a new, higher level minimum certification requirement for Title 14, Code of Federal Regulations (14 CFR) part 121 first officers. Our recommendations include changes to subpart G of 14 CFR part 61, Airline Transport Pilot, as well as enhanced knowledge and flight proficiency skills, aircraft type rating, and multiengine, multipilot, turbine experience that exceed current airline transport pilot (ATP) standards. See sections 2.0 and 3.0.

1.2 MINIMUM FLIGHT HOUR EXPERIENCE

Question B. What should the minimum flight hour experience requirements be for a first officer?

First officers will have 1,500 hours of flight time or of combined flight time and aeronautical experience credit as defined in the recommendations. See sections 2.4 and 2.5. The Coalition of Airline Pilots Associations (CAPA) and National Air Disaster Alliance/Foundation (NADA/F) dissent from this position; see their minority opinions in section 5.0.

1.3 FLIGHT TIME AND ACADEMIC CREDIT SYSTEM

Question C1. Can academic training substitute for hours of experience?

Yes. A credit system is outlined in the recommendations in section 2.5. CAPA and NADA/F dissent from this position; see their minority opinions in section 5.0.

Question C2. If so, what subjects and how much flight experience?

The recommendations cover a wide range of paths, subjects, and flight training that have been found creditable by the FOQ ARC. See sections 2.0 and 3.0. CAPA and NADA/F dissent from this position; see their minority opinions in section 5.0.

1.4 Air Carrier Endorsement

Question D1. Should there be an air carrier endorsement on a commercial pilot certificate?

No. The FOQ ARC has determined the commercial certificate does not qualify a pilot to act as a pilot for a part 121 air carrier. The FOQ ARC made recommendations for enhanced pilot qualifications before acting as a pilot for a part 121 air carrier. See sections 2.0 and 3.0.

Question D2. If so, what kind of flight and ground training should be required?

The FOQ ARC recommends specific aeronautical knowledge and flight proficiency areas applicable to part 121 operations to be trained and evaluated through a knowledge and practical test. See sections 3.2 and 3.3.

1.5 Operational Experience

Question E. Should there be an operational experience requirement (for example, high altitude and icing) before being permitted to operate as a first officer?

The FOQ ARC recommends training and aeronautical experience, including in difficult operating conditions. The FOQ ARC considered operating experience requirements/flight time requirements for difficult operational conditions, and in the interest of safety recommends these be conducted in a flight simulation training device using realistic scenario-based training. See section 3.4.

1.6 Background Check

Question F. Background Checks: What additional background checks should be accomplished to ensure the flight crewmembers have proper qualifications and experience?

The FOQ ARC agrees the air carrier should gain a thorough understanding of each applicant's airman training and checking history. The FOQ ARC therefore recommends "notices of disapproval" be considered by air carriers before an employment decision.

1.7 Pre-Employment Screening

Question G1. Comprehensive Pre-employment Screening: For an employer to assess the suitability, aptitudes, skills, and airmanship of an applicant, should a knowledge and/or skills evaluation be required?

The FOQ ARC considered a variety of best practices from air carriers but decided not to make specific recommendations in this area.

Question G2. If so, what are the competencies that should be evaluated?

See above answer to question G1.

1.8 Multiengine Experience

Question H. To ensure part 121 flight crewmembers have the proper qualifications and experience, what type of multiengine flight experience, if any, is appropriate?

The FOQ ARC recommends a minimum of 50 hours of multiengine flight time be required, as well as aeronautical experience in multiengine, multipilot, turbine-powered aircraft. The FOQ ARC further recommends the award of a type rating be required before a pilot may act in part 121 operations. See sections 2.5 and 2.6. CAPA and NADA/F dissent from this position; see their minority opinions in section 5.0.

1.9 Difficult Operating Experience

Question I1. Difficult operational conditions: Considering a part 121 operational environment, what difficult operating conditions should a pilot experience prior to operating in that environment?

The FOQ ARC defines difficult operating conditions and addresses the required pilot experience in section 3.4. In the interest of safety, the FOQ ARC does not recommend an actual flight time requirement to acquire proficiency in difficult operating conditions. See section 3.4.

Question I2. How many flight hours in difficult operating conditions?

The FOQ ARC defines difficult operating conditions and addresses the required pilot experience in section 3.4. In the interest of safety, the FOQ ARC does not recommend an actual flight time requirement to acquire proficiency in difficult operating conditions. See section 3.4.

1.10 Air Carrier Quality Assurance

The FOQ ARC recommends air carriers provide deidentified feedback to the FAA on SIC performance during and after training. See section 2.7.

1.11 Air Carrier Annual Reporting

The FOQ ARC recommends that air carriers provide an annual report to the FAA showing flight hours, education, and qualifications for each first officer hired during that past year. See section 4.0. The National Business Aviation Association (NBAA) and Regional Airline Association (RAA) dissent from this position; see their minority opinions in section 5.0.

2.0 ACADEMIC CREDIT SYSTEM

2.1 BACKGROUND

Current regulations (§ 121.437) require a first officer to obtain a commercial pilot certificate in the appropriate category and class with an instrument rating to perform duty in part 121 air carrier operations. Based on the regulatory aeronautical experience requirements for obtaining a commercial pilot certificate, it is possible a first officer candidate could receive such a certificate with as few as 250 flight hours (or 190 flight hours under 14 CFR part 141 or 14 CFR part 142) of actual flight experience. It is also possible for a first officer candidate to gain the majority of this flight time in a single-engine, single-pilot, piston-powered aircraft. A multiengine commercial certificate is awarded for an average of 10 hours of multiengine flight time, which also often is obtained in a piston-powered, single-pilot, multiengine aircraft.

The most common entry-level part 121 air carrier position offered to a new first officer candidate is as a flightcrew member on a multiengine, turbine-powered, multipilot aircraft. Comparative review by the FOQ ARC has made it clear there is a significant gap between the knowledge and flight experience required for success as a first officer in part 121 air carrier operations and the knowledge and flight experience acquired by meeting the minimum regulatory requirements for a commercial pilot certificate. The FOQ ARC also determined that, depending on the manner in which a new first officer candidate chooses to gain flight experience, this gap may remain even after the candidate has completed the 1,500 flight hours required to obtain an ATP certificate. All flight hours do not impart the same level of aeronautical experience. Preparation for part 121 operations requires quality experience and learning not necessarily obtained through flight hours alone.

Bridging this knowledge and flight experience gap requires training in important subject areas, such as turbine-powered aircraft, multiengine aircraft, multipilot operations, air carrier operations and procedures, high-altitude flight conditions, and the operation of digital flight systems. These and other subject areas are not covered in the training that typically leads to the award of a commercial pilot certificate. There has been longstanding debate on the extent to which academic education and advanced training techniques can provide an effective substitute for actual flight hours and in-cockpit flight experience. However, research into training program performance data and how people learn indicate the commercial pilot/part 121 pilot knowledge and flight experience gap can be best and most effectively bridged through successful completion of a modern pilot training program that methodically integrates academic training, practical training, and flight experience.

The design of modern pilot training programs has benefitted from the latest scientific studies about the human learning process. Understanding this learning process necessitates an understanding of two types of memory, long-term memory and working memory. The learning process occurs in working memory, which is the “workbench” where information is dissected and reassembled until it can be encoded in long-term memory (Wickens, 1992). In order to learn a new concept, the working memory taps into recognized patterns from long-term memory (Hunt, 1997). If patterns are easily recognized, it takes less time to learn and there will be a positive transfer of training. If previous patterns detract from the learning process, there will be

a negative transfer of training. Another challenge to learning occurs if too many new patterns are being evaluated at once (Wickens, 1992). Learning occurs best when only a few new patterns are evaluated at any time. This also promotes an incremental and positive transfer of training. Attempting to learn in several new environments impedes an effective transfer of training. Well-structured training programs that feature integrated academics and flight experience optimize the learning process and achieve efficient knowledge and skill acquisition.

Based on academic references, review of available data in the subject area, and the FOQ ARC's experience in part 121 operations and training, the FOQ ARC members developed a regulatory construct for part 121 first officer qualifications. It recognizes the quality of each potential component of an individual's education and previous experience. This construct, presented and further discussed below, credits both total flight hour experience and specific academic training courses that collectively provide a positive transfer of knowledge and capabilities in the training of a part 121 first officer. As such, it is consistent with the latest requirements for ATP certification as defined in sections 216 and 217 of the Airline Safety and Federal Aviation Administration Extension Act of 2010 (H.R. 5900).

Under a flight training program qualified in accordance with this construct, successful accumulation of 1,500 hours of actual flight time and aeronautical experience credit will begin to provide a first officer candidate with the knowledge and flight experience necessary for certification as a part 121 first officer. To further ensure each first officer candidate trained under such a program maintains a proper balance of flight experience and academic training, a majority of the FOQ ARC members have agreed all first officer candidates must have a minimum of 500 hours of flight time for certification, regardless of the number of credits they earn through academic training. This requirement more than doubles the current commercial certificate requirements. The majority of the FOQ ARC members believe this ensures sufficient real-world operational experience is gained.

2.2 2010 Pilot Source Study

In the spring of 2010, six participating colleges/universities and six regional air carriers jointly studied the backgrounds of the most successful first officer applicants at the regional air carrier level. The 2010 Pilot Source Study (see appendix D to this report) was conducted to determine how new-hire first officer pilots from various training backgrounds performed in initial air carrier training. These backgrounds included college/university aviation programs, college/university non-aviation programs, fixed-base operator programs, non-college part 141 and non-college part 61 programs, and military flight training programs.[2] The study group examined 2,156 records of pilots hired within a 5-year period (2005–2009).

[2] The number of military pilots captured in this study was too small to draw conclusions.

The 2010 Pilot Source Study collected data through an online data collection instrument designed by five study researchers, all of whom teach in graduate research programs. Data was gathered from each air carrier's human resources and training department records. This collection was performed at each air carrier by a combination of air carrier personnel, volunteer graduate students, interns, and college professors. The research team leader received the resulting six data collection instruments, deidentified them, and combined the data into a single spreadsheet. The research team leader sent this spreadsheet and the research questions to the researchers. Each researcher independently analyzed the data.

In a series of conference calls, the five researchers came to a consensus on all of the findings. The research team submitted these findings to the FAA Administrator in response to the advance notice of proposed rulemaking (Docket Number FAA–2010–0100; Notice Number 10–02). The research team also submitted its study to the International Journal of Applied Aviation Studies, a peer-reviewed publication supported by an international panel of consulting editors. The study was accepted for publication in the summer 2010 issue of the International Journal of Applied Aviation Studies.

The findings of the 2010 Pilot Source Study indicated that the new-hire first officer pilots with the highest rate of success[3] in initial first officer training shared three attributes: (1) they were graduates of college accredited flight degree programs, (2) they had experience as certified flight instructors, and (3) they had accrued between 500 and 1,000 flight hours.

2.3 Atlantic Southeast Airlines Training Success Study

Atlantic Southeast Airlines (ASA), a regional air carrier operating over 160 Canadair Regional jet aircraft and employing 1,600 pilots, performed an independent, in-depth study of over 1,000 applicant hiring and training records from January 2007 to May 2008 (see appendix E to this report). The study compared how pilots performed during the interview (a 2–day process involving oral and written tests and a simulator evaluation) and training process based on each applicant's training background (either structured or nonstructured). This study suggests pilots who received structured training performed better throughout the interview process and had greater success in the training phase. They required the least amount of additional training to successfully achieve the training program requirements. It is important to note the median total flight hours for pilots with a structured training program background was approximately 625 hours. The flight hour experience for this category of pilots ranged from a minimum of 200 total flight hours to a maximum of 6,590 total flight hours.

[3] The two examined outcomes were (1) extra training events before initial operating experience and (2) course completions through initial operating experience. The total pilot group was categorized by nine variables, including the source of training. In the context of this study, a class of first officer trainees with a high rate of success is one with statistically fewer repeated training events and statistically fewer training incompletes than the pilot group as a whole (see appendix B to this report).

2.4 Recommended First Officer Qualifications

The FOQ ARC was tasked to recommend to the FAA the minimum qualification level for an individual to serve as an SIC pilot in part 121 operations. The FOQ ARC recognizes that H.R. 5900 section 216, signed into law August 2, 2010, directs that, effective August 2, 2013, the ATP certificate, as defined in part 61, subpart G be established as the minimum qualification level for any individual hired as a pilot in part 121 air carrier service. In addition, H.R. 5900 section 217 provides that "The Administrator may allow specific academic training courses to be credited toward the total flight hours required" to meet the ATP requirements outlined in part 61, subpart G.

The FOQ ARC therefore recommends qualification standards for two methods of compliance with the ATP requirement to permit an individual to serve as an SIC pilot in part 121 revenue operations. The first is a traditional ATP plus additional qualification recommendations. The second method uses a credit system designed to achieve an ATP SIC.

CAPA and NADA/F dissent from this position; see their minority opinions in section 5.0.

2.5 Recommended First Officer Qualification Standards

Method One

Meet the qualification standards for grant of an ATP certificate and an appropriate type rating (see section 2.6) as specified in part 61, subpart G, including having "at least 1,500 hours of total time as a pilot," and—

- Have a minimum of 50 actual hours of multiengine time.
- Complete an advanced jet training (AJT) program or have demonstrated equivalent aeronautical knowledge and flight proficiency in multipilot, turbine-powered aircraft before acting in revenue service.
- Have passed a practical and written examination (as defined in section 3.0 of this report).

Method Two

Hold an appropriate type rating (see section 2.6) and an ATP SIC, which requires 1,500 hours "total time as a pilot." This includes flight time and aeronautical experience credits. In addition, the first officer must—

- Be at least 21 years of age.
- Hold at least a second class medical certificate.
- Have the appropriate category and class ratings for the aircraft concerned.
- Have passed a practical and knowledge test (as defined in section 3.0 of this report).
- Have a minimum of—
  - 50 actual hours of multiengine time,
  - 100 actual hours of cross-country time,

- 50 actual hours of night time,
- 50 hours of simulator or actual instrument time, of which 25 hours must be actual flight time, and
- 250 actual hours of time as pilot in command, including—
  - 75 actual hours of cross-country time, and
  - 25 actual hours of night time, of which 5 hours must also be cross-country hours.

NOTE: The FOQ ARC recommends that pilots holding an ATP SIC certificate not be authorized to provide instruction under § 61.167(b).

CAPA and NADA/F dissent from this position; see their minority opinions in section 5.0.

2.6 Aircraft Type Rating Requirement

Each part 121 SIC must attain an aircraft type rating, pursuant to § 61.63(d) or § 61.157(b), on the aircraft to be operated in revenue service upon completion of the next initial, transition, or upgrade air carrier training program. (The type rating flight evaluation may be conducted from either cockpit seat except for those tasks that are "seat specific" as determined by the FAA Aircraft Evaluation Group.)

2.7 Aeronautical Experience Credit System

There are many possible paths by which an individual may obtain the combination of aeronautical knowledge and flight experience necessary to earn an ATP SIC. While much public discussion has focused on raw flight hour numbers as the basis for a new regulatory qualification standard for the part 121 first officer position, aviation training programs have long proven that the knowledge and skills necessary for success as a part 121 pilot are best imparted through a structured combination of academic and practical training programs and flight experience.

The legislation wisely allows for a thoughtfully constructed credit system by which the various learning paths to the necessary knowledge and flight experience can be credited toward the ATP. Such a system is presented below and provides the basis for earning an ATP SIC. Section 217 of H.R. 5900 provides the authority necessary for the FAA to authorize the aeronautical experience credit system recommended by the FOQ ARC.

CAPA and NADA/F dissent from this position; see their minority opinions in section 5.0.

Academic and Practical Training Program Valuation

The left column in the top half of table 1 (above the gray line) presents various pathways by which a pilot may achieve commercial, instrument, and multiengine certificates. An aeronautical experience credit value (right column) has been assigned to each of these pathways. Aeronautical experience credit accounts for academic training and type of flight experience. The most credits are assigned to training achieved through completion of an accredited flight training program at a 4-year aviation university or college. Fewer, but appropriate credits are assigned to less-structured training programs.

In the lower portion of the table (below the gray line), the left column details advanced academic training determined to add important value to a pilot seeking a part 121 first officer position. The table details the aeronautical experience credit value determined appropriate for each of these programs. Pilots can claim only one of the credit values above the gray line. They may claim as many credits as they want from below the line, but, with the exception of flight instructor ratings, may not claim the same credit twice (for example, pilots may not claim credit for more than one type rating).

The pilot should total actual flight time and the aeronautical experience credit value, as determined by table 1, to determine the equivalent aeronautical experience that should then be compared against the current ATP part 61 flight time requirements. (Refer to table 1 and appendix F to this report to identify specific aeronautical experience credit values and examples of qualification pathways.)

Table 1—Academic and Practical Training Program Valuation with regard to Aeronautical Experience Credits

Educational Source of Aeronautical Knowledge	Aeronautical Experience Credit Value
4-year Aviation University/College Accredited Flight Training Program	350
4-year Aviation University/College Flight Training Program	200
2-year Aviation College Accredited Flight Program	150
2-year Aviation College Flight Training Program	100
Flight Academy (part 141/142) Flight Training Program	100
Part 141 Training Program	50
Part 61 Flight Training Program	0
Military “Fixed Wing” Flight Training Program	750
Military “Rotary Wing” Flight Training Program	500
Initial certified flight instructor certificate[4]	100
Each additional certified flight instructor ratings[3]	50
Military Instructor Pilot	200
AJT Course not resulting in a type rating	200
AJT Course resulting in a type rating	250

An ATP SIC certificate may not be issued to any candidate with fewer than 500 actual hours of total flight time.

[4] Applicable to only certified flight instructor-airplane single engine (CFI), certified flight instructor-instrument airplane (CFII), and certified flight instructor-multiengine-airplane (MEI).

The FOQ ARC assigned a high aeronautical experience credit value to pilots who complete a military fixed-wing flight training program. The number of aeronautical experience credits for fixed-wing military flight training programs was established based on the following attributes:

- The selection process is highly competitive and all applicants are extensively screened.
- Both academic and flight training are intense, which results in a high attrition of those not meeting qualification standards.
- All flight training is conducted in complex turbine aircraft.
- Pilots receive extensive flight training in acrobatics, stalls, spins, and upset recovery procedures.

Advanced flight training involves high-performance aircraft in high-altitude operations.

Military rotary-wing flight training programs share many of the same qualities of fixed-wing flight training programs. However, rotary-wing pilots receive less training in fixed-wing aircraft and will not achieve as many fixed-wing hours as a military fixed-wing pilot. For this reason, a rotary-wing pilot's aeronautical experience credit value is less.

The FOQ ARC also debated the applicability of unmanned aerial vehicle (UAV) operations. Because it is unclear whether or not the FAA allows flight hour credit for UAV operations, the FOQ ARC decided UAV flight time does not count toward the award of an ATP SIC.

Table 1 reflects credit valuations for currently defined academic training programs. This table should be thought of as a living list to which programs and valuations could be added as new creditable training programs are developed. Examples of such training programs the Administrator might consider include stall and upset recovery programs (currently under industry development) and ab initio[5] training programs that may be developed in the future.

QUALITY OF FLIGHT HOURS

The FOQ ARC agrees there are varying degrees of quality flight hours by which flight experience is acquired. Flight hours performed as a flight instructor, on-demand operator, corporate pilot, or in 14 CFR part 91 multiengine land flying or its equivalent demonstrate competencies and experiences readily associated with those expected in part 121 operations. For example, pilots performing their duties in a multipilot, turbine-powered aircraft in part 91, subparts F and K operations gain experience much like that required in a part 121 environment, including experience in "difficult operational conditions" (such as icing, high altitude, poor weather, difficult airport, and air traffic control (ATC) environments). In contrast, flight hours performed in a single-engine aircraft towing a banner or on pipeline or power line patrol generally do not provide the same quality of flight experience.

[5] See ab initio definition in appendix B to this report.

Table 2 details the categories of flying experience the FOQ ARC has determined are the highest quality and complexity, and that provide the greatest value in preparation for part 121 operations. The aeronautical experience credit system recommends awarding aeronautical credits on a one-for-one basis for actual flight hours operated in the flight categories listed in table 2.

Table 2—Quality of Flight Hours

Single-engine turbine
Multipilot/Multiengine
Multiengine turbine
Multiengine piston*
Night Instrument Metrological Conditions
CFI/CFII/MEI dual-given**

*Aeronautical experience credits for flight hours performed in visual flight rules part 91 multiengine land flight operation are awarded on a one-for-one basis, but such awards only apply to the first 100 hours of such flight.

**Aeronautical experience credits for flight hours performed in CFI/CFII/MEI dual-given operation are awarded on a one-for-one basis, but such awards only apply to the first 500 hours of such flight.

2.8 Quality Assurance and Oversight

The FOQ ARC believes the enhanced provisions in the recommendations to the FAA should, if implemented, be examined and analyzed over time to ensure their effectiveness. This review and followup by the FAA is an essential part of supporting broad public confidence in the national air transportation system. The FOQ ARC has provided its recommendations based on the following three items:

1. The most comprehensive and current training research available,
2. The most advanced and current operational best practices, and
3. The broadest and most representative expert opinion available on aviation safety and performance.

The three recommendations reflect all of the above knowledge and can be enhanced by an ongoing FAA process committed to continuous improvement via data collection, analysis, feedback, and operational change by part 121 operators.

A data collection process should be instituted for continuous feedback on all pilots attaining a restricted ATP certificate. In addition, oversight should be conducted through a division of the FAA. The FOQ ARC recommends that the Flight Standards Service, Air Transportation Division, Voluntary Safety Programs Branch (AFS–230) conduct this oversight.

It is further recommended that air carriers provide deidentified feedback to the FAA on each ATP SIC's performance both during and after training. During training, feedback should include the total number of simulator events over-planned, written test scores (testing must not be corrected), results of initial checkrides and any subsequent retraining/rechecking events, and the total number of initial operating experience(IOE) hours, or termination in any phase of training.

After the completion of training, feedback should include performance evaluations during line operations and continuing (recurrent) qualifications. To support the feedback after training is completed, the FOQ ARC recommends the FAA create a standardized evaluation tool for part 121 pilots in command to provide periodic comment on an ATP SIC's performance and knowledge during line operations. All knowledge tests should be administered and monitored by the FAA. Also, the FAA should explore how to protect the questions and answers from public disclosure.

3.0 KNOWLEDGE AND SKILL COMPETENCIES

3.1 SUPPORTING EQUIVALENT CONCEPTS AND IMPROVED STANDARDS

FOREWORD

The FOQ ARC envisions these recommendations as governed by part 61 for a knowledge and practical test, as appropriate.

1. The term air carrier as used in this document refers to operations conducted under part 121.
2. First officers entering into part 121 services must meet the aeronautical knowledge and flight proficiency skills, as outlined in this document.
3. The aeronautical knowledge areas listed in the next section should be defined in greater detail by the Administrator. The curriculum and hours should also be defined by the Administrator, to include but not be limited to the knowledge and flight proficiency areas described in the next section. Appendix G to the report includes a sample training objectives list.

   The majority of learning design models follow a similar approach consisting of three categories: analysis, design, and evaluation. These three categories may be further subdivided into phases, with each phase identifying a specific output. Feedback loops are a critical element of any model, and are used to confirm assumptions or make adjustments when errors or omissions are discovered.

SATISFACTORY PERFORMANCE

"Exhibits knowledge" means the applicant can describe in general or specific terms a response to an evaluator's question or other knowledge testing system.

Some examples of "demonstrate" ability, flight proficiency, or skill include—

1. Performing tasks and demonstrating satisfactory proficiency and competency within approved standards.
2. Demonstrating mastery of the aircraft with the successful outcome of each task performed never seriously in doubt.
3. Demonstrating sound judgment and multipilot resource management.
4. Demonstrating an overall ability to adapt and respond by adjusting aircraft configuration, within appropriate limitations, for changing conditions such as weather, last-minute ATC clearance amendments, or uncharted visual approach procedures.

NOTE: The FOQ ARC recommends the flight proficiency tasks that require instrument competency must be demonstrated to the performance standards published in the ATP Practical Test Standards.

UNSATISFACTORY PERFORMANCE

Examples of unsatisfactory performance in exhibiting knowledge or demonstrating flight proficiency would generally be characterized as—

1. The inability to describe or explain in general or in specific terms an aeronautical concept listed in this document in response to an evaluator's question or other knowledge testing system.
2. Any action or lack of action by the applicant that requires corrective intervention by the examiner to maintain safe flight.
3. Consistently exceeding tolerances stated in the objectives.
4. Failure to take prompt corrective action when tolerances are exceeded.
5. Failure to use proper and effective visual scanning techniques, when applicable, to clear the area before and while performing flight maneuvers.

INSTRUCTION AND EVALUATION

1. Criteria for instructors and evaluators that administer the training and evaluation of part 121-specific topics should be reviewed or established as necessary.
2. Instructors and evaluators should be required to demonstrate proficiency in training and evaluating pilots within these recommended knowledge and flight proficiency areas.
3. Criteria are set for FAA oversight for issuing the ATP SIC.
4. Consider the International Civil Aviation Organization Next Generation Aviation Professionals and the International Air Transport Association Training and Qualification Initiatives concerning the establishment of instructor and evaluator criteria for air carriers.

3.2 AERONAUTICAL KNOWLEDGE AREAS

This section lists the aeronautical knowledge areas proposed to be required for training pilots to operate as SIC in part 121 air carrier operations, but having no part 121 experience. Also, before acting as a pilot in part 121 air carrier service, such pilots should be required to prove their competency in these knowledge areas by receiving a satisfactory grade on a knowledge test that is developed in accordance with § 61.35 and administered by the FAA.

ADVANCED AIRCRAFT SYSTEMS AND PERFORMANCE

A. Exhibits satisfactory knowledge of jet transport aerodynamics.

B. Exhibits satisfactory knowledge of specific aircraft flight characteristics.

C. Exhibits satisfactory knowledge of turbine engine theory.

D. Exhibits satisfactory knowledge of jet transport engine monitoring systems, such as the engine indication and crew alerting system.

E. Exhibits satisfactory knowledge of flight operations engineering to include air carrier aircraft performance, weight and balance (W&B), and hydroplaning, including the ability to determine—

   1. W&B loading,

   2. Air carrier takeoff performance requirements,

   3. Air carrier en route requirements, and

   4. Air carrier landing requirements.

F. Exhibits satisfactory knowledge of modern transport aircraft avionics systems.

G. Exhibits satisfactory knowledge of air carrier aircraft emergency, irregular, and non-normal procedures including—

   1. Checklist philosophies,

   2. Proper use of quick reference handbook/checklists, and

   3. Use of flight manual procedures.

NAVIGATION IN AIR CARRIER OPERATIONS

A. Exhibits satisfactory knowledge of high altitude airspace.

B. Exhibits satisfactory knowledge of navigation systems for practical use in all phases of flight incorporating relative and coordinate-based navigation systems.

C. Exhibits Extended-Range Twin-Engine Operational Performance Standards.

D. Exhibits Reduced Vertical Separation Minimum.

E. Exhibits satisfactory knowledge of jet transport navigation and approach chart interpretation.

F. Exhibits satisfactory knowledge of jet transport flight management systems (FMS).

G. Exhibits satisfactory knowledge in the selection and application of all available levels of automation (including hand flying), and the actions necessary to readily transition between levels of automation.

H. Exhibits satisfactory knowledge of flight guidance systems used in air carrier operations.

I. Exhibits satisfactory knowledge of air carrier route planning techniques and tools.

AIR CARRIER OPERATIONS AND SAFETY AND SECURITY

A. Exhibits satisfactory knowledge of part 121 Certification and Operations: Domestic, Flag, and Supplemental Air Carriers and Commercial Operators of large aircraft. Also, exhibits satisfactory knowledge of aviation security concepts, including—

   1. Transportation Security Administration requirements,

   2. Airport security requirements, and

   3. Ground/in-flight security roles and responsibilities.

B. Exhibits satisfactory knowledge of the Department of Transportation's dangerous goods requirements to include proper identification, packaging, and loading of dangerous goods aboard air carrier aircraft.

C. Exhibits satisfactory knowledge for the use of air carrier operations specifications.

D. Exhibits satisfactory knowledge of high altitude physiology.

E. Exhibits satisfactory knowledge of the effects of fatigue on performance, including mitigation strategies.

F. Exhibits satisfactory practical knowledge of airport surface operations, including—

   1. Taxi route planning,

   2. Airport movement areas,

   3. Ramp procedures and communications,

   4. Charted procedures,

   5. Complex taxi procedures,

   6. Aircraft configurations for specific weather conditions,

   7. Aircraft configurations for fuel economy, and

   8. Surface movement guidance and control systems.

G. Exhibits satisfactory knowledge of air carrier operational control, including—

   1. Dispatch and flight following,

   2. Dispatcher and pilot responsibilities, and

   3. Emergencies.

H. Exhibits satisfactory knowledge of air carrier maintenance procedures appropriate to flight operations, including—

1. Maintenance release procedures,

2. Use of the master minimum equipment list (MEL)/configuration deviation list (CDL) in developing an air carrier MEL/CDL, and

3. Use of the MEL/CDL.

AIR CARRIER WEATHER PLANNING

A. Exhibits satisfactory knowledge of high altitude weather characteristics.

B. Exhibits satisfactory knowledge of high altitude weather and weather planning tools used in part 121 operations.

C. Exhibits satisfactory knowledge of adverse weather phenomena that affects air carrier operations such as windshear, turbulence, and icing.

D. Exhibits satisfactory knowledge of the use of technology tools to avoid adverse weather.

E. Exhibits satisfactory knowledge of air carrier low-visibility operations, including—

1. Low-visibility surface movement and

2. Category II (CAT II) and CAT III approaches.

COMMUNICATIONS

A. Exhibits satisfactory knowledge of air carrier communication requirements and systems, including—

1. Voice communication and

2. Advanced communications such as data link.

B. Exhibits satisfactory knowledge of ATC communication requirements and systems.

C. Exhibits ATC phraseology:

1. ATC phraseology,

2. Complex ATC clearances, and

3. Communications at high-density airports.

STALL AND UPSET RECOGNITION AND RECOVERY

A. Exhibits satisfactory knowledge of in-flight loss of control and appropriate upset recovery techniques in transport category aircraft.

B. Exhibit satisfactory knowledge of loss of control phenomena, such as—

1. Stalls,

2. Wake turbulence,

3. Flight instrumentation failure, and

4. Flight control failure.

AIR CARRIER PILOT PROFESSIONALISM

A. Exhibits satisfactory knowledge of a pilot's professional responsibility and ethics, to include communications, risk management, decisionmaking, and leadership.

B. Exhibits satisfactory knowledge of aviation safety concepts to include Flight Operational Quality Assurance, Aviation Safety Action Program, Line Operations Safety Audit, Safety Management Systems, and a safety culture.

C. Exhibits satisfactory knowledge of good customer service to include passenger communications, affairs, and regulations.

3.3 FLIGHT PROFICIENCY

Listed in this section are the flight proficiency areas proposed to be required for training pilots to operate as SIC in part 121 air carrier operations, but have no part 121 experience. In addition, before acting as a pilot in part 121 air carrier service, such pilots should be required to prove their competency in these flight proficiency areas by receiving a satisfactory grade on a practical test developed in accordance with § 61.43 and administered by the FAA.

GENERAL SUBJECT AREAS

A. Demonstrates the ability to function in a multipilot environment during a flight under normal and non-normal situations.

B. Demonstrates the ability to perform air carrier standard operating procedures.

C. Demonstrates the ability to lead multipilot briefings to establish expectations and promote effective teamwork during predeparture, departure, en route, and approach and landing. Areas of emphasis include—

1. Sterile cockpit procedures,

2. Effective cabin multipilot briefings,

3. Normal procedures,
4. Non-normal procedures,
5. Briefings to assist in mitigating adverse weather encounters (for example, windshear),
6. Aircraft de-ice/anti-ice procedures, and
7. Deferred maintenance items.

D. Demonstrates the ability to use cockpit check procedures, which can include—

1. Checklist philosophies,
2. Normal and non-normal checklist usage,
3. Flows,
4. Use of quick reference handbooks, and
5. Demonstrating the ability to satisfactorily complete transport aircraft emergency, irregular, and non-normal procedures.

E. Demonstrates the ability to satisfactorily apply performance, W&B, and navigation data in an operational environment.

F. Demonstrates satisfactory proficiency in operating flight management systems (FMS).

G. Demonstrates proficiency in the use of all available levels of automation (including hand flying), and the actions necessary to readily transition between levels of automation.

H. Demonstrates proficient use of transport aircraft systems.

I. Demonstrates the ability in practical use of navigation systems in all phases of flight, which can include incorporating relative and coordinate-based navigation systems.

J. Demonstrates satisfactory proficiency in using air carrier and ATC communication systems including—

1. Company communications systems such as an Aircraft Communications Addressing and Reporting System,
2. Proper use of ATC phraseology, and
3. The ability to receive and understand ATC instructions in high-density airport operations.

PREFLIGHT AND TAXI AREAS

A. Demonstrates the ability to determine compliance with part 121 W&B and performance requirements before takeoff.

B. Demonstrates the ability to follow aircraft Maintenance Release Procedures before departure.

C. Demonstrates the ability to use an MEL/CDL, which can include—

1. Aircraft equipment deferral and dispatch implications and

2. Complying with cockpit placarding requirements.

D. Demonstrates the ability to taxi the aircraft after receiving complex taxi instructions from ATC.

E. Demonstrates the ability to taxi the aircraft using appropriate aircraft configuration for adverse weather conditions (for example, ground icing conditions or high winds).

F. Demonstrates the ability to taxi the aircraft using appropriate configuration for fuel economy.

G. Demonstrates the ability to taxi the aircraft using surface movement guidance and control systems.

TAKEOFF

A. Demonstrates the ability to perform low visibility takeoffs using air carrier takeoff minimums.

B. Demonstrates the ability to apply appropriate precautions for adverse weather during takeoff (for example, windshear).

C. Demonstrates proficient use of automation during departure.

D. Demonstrates the ability to fly the aircraft during complex departure procedures and noise abatement procedures.

EN ROUTE

A. Demonstrates proficient use of an advanced navigation system while en route—

1. During Reduced Vertical Separation Minimum operations and

2. To perform FMS route modifications.

B. Demonstrates ability to avoid adverse weather en route, which can include—

1. The use of technology to avoid adverse weather and

2. The use of aircraft icing and de-icing systems in air transport aircraft.

STALL AND UPSET RECOGNITION AND RECOVERY

A. Demonstrates the ability to apply appropriate upset recovery techniques in mitigating in-flight loss of control during realistic scenario-based training events such as takeoffs, en route, approach, and landing as the result of phenomena. Such phenomena include—

1. Stalls,

2. Wake turbulence,

3. Flight instrumentation failure, and

4. Flight control failure.

ARRIVAL: HIGH ALTITUDE TOP OF DESCENT TO INITIAL APPROACH FIX

A. Demonstrates the ability for descent planning with emphasis on fuel planning.

B. Demonstrates satisfactory use of aircraft energy management (for example, airspeed, altitude thrust, and drag management) during descent.

C. Demonstrates ability to verify appropriate descent point.

D. Demonstrates satisfactory use of aircraft energy management to comply with area navigation arrivals/published approaches in both vertical and lateral components.

ARRIVAL: INITIAL APPROACH FIX TO STABILIZED APPROACH

A. Demonstrates the ability to apply appropriate techniques for conducting nonprecision and visual approaches using constant descent approach procedures.

B. Demonstrates the ability in practical use of navigation systems in all phases of flight, incorporating relative and coordinate-based navigation systems.

C. Demonstrates the ability to conduct charted and uncharted visual approach procedures.

D. Demonstrates the ability to fly the aircraft during CAT II and CAT III approaches.

ARRIVAL: STABILIZED APPROACH TO LANDING ROLLOUT OR MISSED APPROACH/GO-AROUND

A. Demonstrates satisfactory use of energy management to achieve a stabilized approach.

B. Demonstrates the ability to use appropriate windshear precautions for approach and landing.

C. Demonstrates the ability to use appropriate wake turbulence precautions for approach and landing.

D. Demonstrates satisfactory use of energy management during approach to landing.

E. Demonstrates the ability to adhere to aim and touchdown point references.

ARRIVAL: MISSED APPROACH/GO-AROUND AREAS

A. Demonstrates ability to fly the aircraft during high workload ATC environments.

B. Demonstrates satisfactory use of energy management during missed approach/go-around.

3.4 AERONAUTICAL EXPERIENCE

DIFFICULT OPERATIONAL CONDITIONS

Pilots must receive aeronautical knowledge and flight proficiency training in "difficult operational conditions" that may be encountered during air carrier operations. For the purpose of the FOQ ARC, "difficult operational conditions" include—

1. Areas of convective activity[6] such as—
   a. Thunderstorm activity,
   b. Windshear conditions, and
   c. Microburst encounters,
2. Icing conditions,
3. Low visibility conditions,
4. Maximum crosswind conditions,
5. Contaminated runways,
6. Areas of clear air turbulence,
7. Areas of mountain wave activity,
8. Periods of pilot fatigue, and
9. Operations involving non-normal aircraft dispatch configurations in accordance with MEL/CDL requirements.

[6] See appendix G to this report for an example of training objectives.

In the interest of safety, flight proficiency training for items 1 through 9 should be conducted in a flight simulation training device using realistic scenario-based training. The FOQ ARC does not recommend an actual flight time requirement to acquire proficiency in items 1 through 9 beyond an existing training or licensing requirement.

The FOQ ARC also considers the operations listed below to be difficult operational conditions, but encourages pilots to gain proficiency by acquiring actual flight time experience in these conditions, although no minimum flight time requirement should necessarily be specified.

1. High pilot workload operations such as—

    a. Operations during periods of high traffic volume at primary airports located within Class B airspace.

    b. Operations within Special Air Traffic Rules Airspace described in 14 CFR part 93, and

    c. Takeoffs, landings, and instrument approaches at special qualification airports described in § 121.445.

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4.0 AIR CARRIER ANNUAL REPORTING

The FOQ ARC recommends that all part 121 air carriers subject to the provisions of H.R. 5900 provide an annual filing report to the FAA showing flight hours, education, and qualifications for each first officer hired during that past year. The qualifications would be disclosed individually and deidentified for each pilot hired.

This annual filing report would also include a report on the air carrier's first officer annual pay and benefits.

Air carriers have the option to provide additional information about enhanced training programs, and additional information that demonstrates a continuous improvement process such as a mentoring program or other safety/security initiatives.

The annual FOQ report would be filed to the FAA July 1, 2011, and annually thereafter to ensure progress toward compliance with H.R. 5900 by August 1, 2013.

5.0 MINORITY OPINIONS

5.1 MINORITY OPINIONS SUBMITTED AT THE CONCLUSION OF THE FOQ ARC

COALITION OF AIRLINE PILOTS ASSOCIATIONS

Coalition of Airline Pilots Associations

First Officer Qualifications (FOQ)—
ARC Dissent Statement

August 31, 2010

Respectfully submitted by:
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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 all 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 3 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 deicing 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.

Figure 1—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

NATIONAL AIR DISASTER ALLIANCE/FOUNDATION

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September 6, 2010

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The following is filed as a Dissent to the proposed Final Report from First Officer Qualifications Aviation Rulemaking Committee (FOQ ARC). We reserve the right to file an Amended Dissent after the Final Report is presented and that this Dissent be included in full with the Final Report.

Thank you to the FAA for recognizing the need to address this very important safety issue by making a significant investment in this Working Group. It has been a pleasure to work with Greg Kirkland, Catherine Burnett, Anne Moore and others from the FAA, who have worked very hard and professionally. Thank you also to Ryan Gibson, Wendy Stanley, and others from PAI Consulting for their excellent work.

Our Dissent is filed because the FAA Re-authorization Bill, *"Airline Safety and Pilot Training Improvement Act H.R.5900,"* clearly states the Airline Transport Pilot (ATP) certificate is the minimum level of certification for First Officer (FO) Part 121 type aircraft. The ATP certificate requires 1,500 hours of flight time. The intent of Congress is: "shall be at least 1,500 flight hours."

Any FAA regulation that would permit a 1,000 hour academic credit and only 500 flight hours drastically diminishes the statute's intent of requiring 1,500 actual flight hours.

The *NATIONAL AIR DISASTER ALLIANCE/FOUNDATION* is a grass roots advocacy organization representing family members, air crash survivors, and industry professionals, striving to improve aviation safety. We incorporated in 1995 and are true to our Founding Goals: To raise the standard of Safety, Security, Survivability and Support for victims' families.

Many CO3407 family members have been engaged proposing changes to pilot certifications and training based on lessons learned from tragic crashes such as CO3407, Comair 5191, AA4184 and others. They approach this effort with the intention to prevent other families from having to endure the painful and horrific experience of losing a loved one in an aviation crash. When the circumstances of a particular crash indicate it may have been avoidable, its effects on families and friends as well as the aviation industry are amplified exponentially.

We believe that the end result of the FOQ ARC should have been recommendations that promoted an **improved** Airline Transport Pilot (ATP), prerequisite for the Part 121 First Officer, including the 1,500 hours of actual flight time, and not relying so heavily on 1,000 hours of academics intended to serve as a substitute for actual flight experience. We do not support fulfillment of the ATP certification requirement with only 500 hours of actual flight time.

We do agree that a solid educational foundation is important and will likely produce a well trained pilot; however, it simply cannot replace or serve as a substitute for actual flight experience.

The U.S. House of Representatives and the U.S. Senate approved the 1,500 flight hours as part of the legislation, H.R.5900, and their approval for the 1,500 hours goes back to October 2009. H.R.5900 passed in Congress with strong bipartisan support in both the House and Senate and was quickly signed into law by the President. The language in this legislation clearly indicates it was Congress' intent to require all Part 121 First Officers, to achieve a minimum of 1,500 flight hours and hold an ATP, Airline Transport Pilot certificate.

H.R.5900 contains a minority provision that states, "*The Administrator **may allow** specific academic training courses beyond those required under subsection (b)(2), to be credited toward the total flight hours required under subsection (c). The Administrator may allow such credit based on a determination by the Administrator that allowing a pilot to take specific academic training courses will enhance safety more than requiring the pilot to fully comply with the flight hours requirement."*

We believe *a*cademic training in lieu of flight hours for the ATP is not appropriate:

1. The provision *"may allow"* was inserted into the bill late in the legislative process and does **not** represent the actual intent of Congress to require 1,500 hours of actual flight time
2. The statute's language states *"may allow,"* is not a mandate
3. The FOQ ARC majority opinion failed to present any statistical evidence to demonstrate "specific academic training courses" enhance safety more than "requiring a pilot to fully comply with the flight hours requirement. "
4. The FAA Charter that established the FOQ ARC states: **PUBLIC INTEREST. Forming the First Officer Qualifications ARC is determined to be in the public interest to fulfill the performance of duties imposed on FAA by law**. We believe this Charter language is specific to law, H.R.5900.

ARC majority exhausted enormous time and effort to demonstrate that pilots trained in "structured flight programs" require less retraining events during their regional airline First Officer flight training, than pilots who train through "non-structured flight programs." Because pilots in structured flight programs demonstrate greater proficiency during regional airline flight training, the FOQ ARC majority erroneously assumed that pilots in these programs will be safer pilots than those who develop aviator skills through non-structured flight programs. But this trend suggests that pilots from structured flight training programs have the ability to communicate and network with graduates of their alma mater, who are familiar with the regional airline interview and training processes, rather than a clear demonstration that they are safer pilots.

FOQ ARC majority recommendation permits a regional First Officer to possess as few as 500 actual flight hours, and offered up to 1,000 additional credit flight hours if the First Officer completed certain types of structured flight programs and academic programs. It is clear from the sub-working group effort that the FOQ ARC majority was committed to holding the line at 500 actual flight hours. It is not by coincidence that a pilot who completes an Aviation Accreditation Board International (AABI) flight school will graduate with approximately 500 flight hours.

Deciding on the 500 flight hours was a first step of the majority of the working group, and then they structured the academic program credits to enable certain AABI structured schools to fall out favorably. Interestingly, the median for hiring Part 121 First Officers (FO) was reported to be approximately 625 hours in one study, with another denoting as few hours as 250 hours. The 500 flight hour requirement is lower than the previous 625 flight hour average. Therefore, the Final Report could be viewed as a lower flight hour requirement than the median.

The recommendation of the majority opinion of the ARC raises additional issues such as: an academic institution would then be responsible for two-thirds of a pilot's training. Are the 4-year academic institutions ready to accept that corporate responsibility and potential liability?

High pilot turn-over rates between the regional and the major airlines has significantly diminished resident pilot corporate knowledge at the regional airlines. We must recognize that the current level of flight hour training for the regional First Offers is inadequate, and that the new dual requirement of an ATP and 1,500 hours of actual flight time will bring these First Officers to a level that he/she can adequately exercise command of the aircraft under all circumstances.

The Captain should have additional flight time experience, management and leadership skills, and seniority, but the First Officer, Second-in-Command (SIC), should be equally trained and qualified to act as Pilot-in-Command (PIC) and function as the aircraft deputy commander during all phases of flight. Having a lesser trained SIC is counterproductive as the potential to be exposed to challenges alone is increased. Should the SIC need to exercise command of the aircraft; it will most likely be under an already extremely stressful condition.

There is a need to raise the standard for new hiring FO's and we understand that some airlines have been pro-active in improving their training programs. That is good news, but there is much more work to do.

H.R.5900 provisions go into affect August 2013, so airlines have three years to meet the higher standards. Some Part 121 airlines may already be hiring pilots who meet the 1,500 hours and ATP standard, and for those who do not they have three years to comply.

We believe that the FOQ ARC has deviated somewhat from the scope of the following five questions, which were included in the original FAA Charter for FOQ ARC.

1. What should be the minimum certification level required of a First Officer (FO) ?

NADA/F answer:
The FO shall have an ATP with 1,500 actual flight hours as required by H.R.5900. In addition a FO shall obtain an aircraft type rating for the aircraft he/she will fly under Part 121.

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

The majority opinion is the following:
"FO shall have 1500 hours of flight time of a combined flight time and aeronautical experience credit as defined in the recommendations."

***NADA/F* Dissents with the majority opinion answer**, which is actually 500 flight hours and 1,000 hours of academic credit, including bonus academic credit.

***NADA/F* answer**:
A FO shall obtain 1,500 actual flight hours and fulfill all ATP as requirements as legislated by H.R.5900.

3. Can academic training substitute for hours of experience? If so, what subjects and how much flight experience?

NADA/F answer: No. However, we support the FOQ ARC *"Recommended Aeronautical Knowledge and Flight Proficiency for Pilots Flying in FAR 121 Operation,"* as improving the ATP, but not as a flight hour credit.

4. Should there be an air carrier endorsement on a commercial pilot certificate? If so, what kind of flight and ground training should be required?

NADA/F answer: No. The requirement for Part 121 shall be the ATP and 1,500 hours, as required by H.R.5900, not a commercial pilot certificate with only 250 hours. Early in the FOQ ARC the majority

focused on commercial pilot, 250 hours, however, the legislation passed, and the standard is ATP, 1500 flight hours.

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

NADA/F answer: Yes, however, in the interest of safety, flight training should not encourage a pilot to take an airplane deliberately into unsafe and extreme weather conditions. Increased use of training devices and simulators may substitute for such training, as well as mentoring from experienced pilots.

A pilot with 1,500 hours or more of flight time may be more likely to have experienced difficult operational conditions than one with only 500 hours. The default is not that a pilot with 1,500 hours could just fly around in a Cessna. This is not a valid argument because the ATP has specific requirements, and the ATP-SIC (Airline Transport Pilot license, Second-in-Command) could be strengthened to require additional flight skills.

The Final Report includes the following two documents:

- **Recommended Aeronautical Knowledge and Flight Proficiencies for Pilots Flying in FAR 121 Operations**

This is an excellent document and many of the recommendations should already be in place with the airlines. **We support the recommendations of this document and thank the working group members for their time and dedication to create this working document for Part 121 FO's.**

- **FAR 121 First Officer Qualifications Time and Credit**

NADA/F Dissents with the FAR 121 First Officer Qualifications Time and Credit. The document makes good points but we Dissent as we do not support the conclusion that these objectives can best be met in an academic curriculum, per this document, and we are opposed to 500 flight hours, and a scheme that gives bonus flight hours for academic time.

Cost Benefit Analysis

Cost Benefit Analysis is a requirement of FAA Rulemaking and should be considered as part of this recommendation. The financial impact of a commercial regional airline disaster could be astronomical and the personal loss is even more significant.

AA4184, Oct. 31, 1994 in Roselawn IN had pilots not trained in those conditions, and mistakes were made in the cockpit. The disaster settled 15 years ago for about $280 million, plus cost of the plane, corporate attorneys, and more. Comair 5191 (August 2006) cases have settled for $264 million so far, plus the value of the aircraft, corporate attorneys, and more. Two Comair 5191 cases are reported as not settled, and one is scheduled for a punitive damages trial. Continental Express/Colgan 3407 could settle for more.

Some airlines did not stay in business because of the economic and corporate impact of a fatal crash. **Making a relatively small safety investment before an incident occurs, with the intent of providing the highest level of training, or the pilots with the most experience, skills and knowledge, is clearly the more responsible approach**.

The Statistical Value of a Human Life (SVL) has increased to $5.8 million (from $2.7 million), and, in certain conditions, can go even higher.

To view "**Revised Departmental Guidance: Treatment of the Value of Preventing Fatalities and Injuries in Preparing Economic Analyses"** go to: **www.PlaneSafe.org**, go to **Resources**, and scroll to the last section of **LINKS**.

There is also an issue of a corporate culture, and its detrimental effect to the aviation industry when the traveling public learns of $17,000 to $19,000 pay per year for Part 121 FO's, and learns that they did not have sufficient training or experience in icing or other bad weather situations.

The American People and Traveling Public want experienced pilots in the cockpit, and we believe that higher pay will attract more experienced pilots.

The Part 121 carriers could provide the needed flight hours to gain that 1,500 flight hours of experience, and they could raise their starting pay to $40,000, or better yet, $60,000+ a year. They would have their choice of thousands of experienced and trained pilots with thousands of hours, who are retired military, and/or formerly with larger airlines, overseas experience, or a combination of flight hours and training.

No one has discussed the psychological factors that could impact someone's performance on the job, when a young pilot is burdened with low pay, student loans, fatigue, and pressure to possibly work two or more jobs. Many young pilots from the 4-year academic programs have student loans, and a $100,000 student loan is about $1,000 a month for 30 years to pay back. Young pilots take the $19,000 a year pilot job and may work second jobs just to pay their student loan and rent/food. This pathetic pay puts FO new hire pilots in a terrible personal situation, which is not conducive for the focus and energy needed to be a commercial airline pilot.

Experienced pilots cannot afford to work for $19,000 and probably know it is not safe to be a commercial airline pilot while forced to work two or more jobs.

There are many retired military pilots available today. They have a background different from flight school. In the military if you fail a proficiency test you are usually out of the flight program. Unlike non-military flight training programs they cannot transfer to another flight school and try again and again until they pass. The competition is high to qualify for military flight training, and candidates are especially fit physically and mentally, and must pass a government background check. We have also learned that retired military pilots do not become commuter airline pilots because the pay is so low, plus the major airlines are not hiring, or hiring much less the past few years.

We realize that many pilots pass all their check rides, and some regional airlines demonstrate their airline training program as disciplined, thorough working with mentors and more. Their pilots and new hires probably already qualify for ATP with 1,500 flight hours. For those who do not qualify, they have three years to raise their standards.

Yes, we support higher levels of training and knowledge, but flight hours experience in a wide variety of equipment and situations may be the most important component.

PRIA

In the case of CO3407 the Captain failed three check rides prior to being hired by Colgan, another failed check ride at Colgan (for an ATP) and required additional training after another check ride. **H.R.5900 strengthens PRIA, and all Part 121 carriers will be able to better use PRIA as a screening tool when hiring.**

***NADA/F* strongly supports all provisions of PRIA in H.R.5900** with a special acknowledgement to the CO3407 family members who worked hard to pass the recent PRIA improvement provisions, and thank you to *NADA/F* Founding Members who passed the first PRIA in 1996. With respect to national security these provisions should be on a fast track to more accurately and quickly access pilot records.

Background Checks

While discussing Background Checks *NADA/F* specifically recommended that each Part 121 carrier be required to do the following criminal background checks on each new employee:

NCIC – National Criminal Investigation Center
SCIC – State Criminal Investigation Center

Process of the FOQ ARC
NADA/F requested a document comparing the hours for the current ATP (1,500) and ATP-SIC (500 hours) as proposed by the majority of the FOQ ARC. It appears that most organizations in the FOQ ARC were provided this working spreadsheet document, which was requested by *NADA/F*. We specifically requested that ALL member organizations should have full access to Working Group documents.

Spreadsheet. Please note the table at the end of this Dissent, prepared by *NADA/F* and similar to what was requested, subject to changes if there is a better way to clarify the numbers.
We conclude that the ATP could be strengthened with more specific types of flight training per the 1,500 hours, such as multi-engine, requirement of an aircraft type rating for aircraft they will fly, and more.

Accountability - Transition
The FAA needs to have a process in place to ensure that Part 121 carriers are moving forward toward meeting the ATP 1,500 hour goals within three years. At this time the FOQ ARC has approved the following Transition Recommendation for all Part 121 air carriers to file an Annual Report with the FAA to show progress toward meeting the higher standards of H.R.5900. This also provides an option for Part 121 carriers to disclose improved training and safety initiatives.

We very much support the following *NADA/F* recommendation:

Transition to FAA Extension Act of 2010 (H.R.5900)

The FOQ ARC recommends that all Part 121 air carriers subject to the provision of H.R.5900 provide an Annual Filing to the FAA showing flight hours, education, and qualification, for each First Officer hired during that past year. The qualifications would be disclosed individually, de-identified for each pilot hired.

This Annual Report would also include a report on the airline's First Officer annual salary and benefits.

Airlines have the option to provide additional information about enhanced training programs, and provide additional information that demonstrates a continuous improvement process such as a mentoring program, or other safety/security initiatives.

Request the Annual FOQ report be filed to the FAA July 1, 2011 and annually thereafter to ensure progress toward compliance with H.R.5900 by August 1, 2013.

Respectfully submitted,

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NADA/F Dissent: ATP actual requirements, versus FOQ ARC Recommendations

	ATP Requirements	ATP-SIC recommendations from the majority of the FOQ ARC
Total Flight Hours	**1,500**	**500**
Cross Country	500	100
Pilot in Command	250	250
Instrument Training – Simulator	75	50
Training for Commercial – night	100	50
Multi-Engine	10	50
Specific Hours Required	935	500
Other actual flight hours	565	
Total Flight Hours	**1,500**	**500**
Academic aeronautical experience		**1,000**

NADA/F recommends the following improvements to the ATP:

Increase the multi-engine hours requirement,
Require aircraft type rating, for aircraft the pilot will be flying, 14 CFD 61.31
Strengthen the ATP with additional aeronautical education, but not in lieu of actual flight hours.

MISSION: To raise the standard of Safety, Security and Survivability for aviation passengers and to Support victims' families.

NATIONAL BUSINESS AVIATION ASSOCIATION

NBAA DISSENTING POSITION ON PAY AND BENEFITS FOR ANNUAL REPORT

NBAA supports the recommendation of an annual report from Part 121 air carriers that documents certain qualifications of newly hired first officers. This information could assist the FAA with monitoring compliance across wide range of operators. With the exception of the data related to pay and benefits, the data identified for inclusion within the report measures elements that Congress believes contribute to increased pilot qualifications.

Requiring 121 air carriers to submit pay and benefits in a report designed to show compliance with HR 5900 attempts to capture information not relevant in determining a pilot's qualification. Additionally, the requirement raises significant privacy questions that have not been fully explored and no safety benefit has been offered for the use of pay and benefit data.

NBAA supports the additional supporting rationale offered by the Regional Airline Association and recommends that the report not include data related to pay and benefits.

REGIONAL AIRLINE ASSOCIATION

RAA DISSENTING OPINION ON PAY AND BENEFITS FOR ANNUAL REPORT

The Regional Airline Association (RAA) fully supports the First Officer Qualification Aviation Rulemaking Committee's recommendation that air carriers make an annual report to the FAA Administrator detailing the flight hour experience, education background and qualifications of each First Officer hired during that prior year. However, the RAA does not support reporting pay and benefits to the Federal Aviation Administration (FAA) for the following reasons:

- The ARC recommendations provide no link between airmen pay and benefits and operational safety, and therefore no reason to publically report this sensitive information.
- Airmen pay and benefits are collectively bargained under Railway Labor Act (RLA) rules residing outside the FAA Administrator's authority.
- Airmen pay and benefits are determined in the context across a range of factors that are largely unique to each air carriers, such as: schedules, productivity, pay guarantees, airmen group size, aircraft size, etc. Meaningful comparisons between carriers thus cannot be made from such data.
- The FAA also does not track pay and benefits for any other air carrier employee group.
- While general information about pilot pay and benefit is available on the Internet, this information is competitive, and therefore proprietary in nature.

RAA and our 32[1] member airlines have a wealth of experience in the qualification of professional airmen conducting air carrier operations. Regional airline pilots have experience and training far exceeding the standards established by the FAA. On average, flight time of captains from RAA member airlines exceeds 8500 hours while our first officers have more than 3200 hours. Our veteran management teams, training professionals and pilot cadres understand that good training improves safety. Our pilots, both new pilots and senior pilots, are trained and routinely tested to the FAA's Air Transport Pilot (ATP) standards – the agency's highest standard of flying skill. New pilots are also supervised by the industry's most experienced check pilots and mentored by our more veteran captains as they gain valuable experience. Regional airlines have been at the forefront of industry efforts to continually improve training, especially in the areas of unexpected events and in our understanding of how human factors and enhanced leadership skills can reduce safety risks. As demonstrated by the results of the FAA's Call to

[1] Regional Airline Association members are: Aerolitoral, Air Canada Jazz, Air Wisconsin Airlines Corporation, AirNet Systems, American Eagle Airlines, Atlantic Southeast Airlines, Cape Air, Chautauqua Airlines, Colgan Air, Comair, CommutAir, Empire Airlines, Era Aviation, ExpressJet, Flight Options LLC, Go-Jet, Grand Canyon Airlines, Great Lakes Aviation, Gulfstream International Airlines, Horizon Air, Hawaiian Island Air, Mesaba Aviation, New England Airlines, Pinnacle Airlines, PSA Airlines, Piedmont Airlines, Republic Airlines, Shuttle America, SkyWest Airlines, and Trans States Airlines.

Action audits last summer -- when the FAA inspectors observed 2,419 training and checking events – our highest priority is to continually improve safety.

In conclusion, the RAA recommends that all other provisions of the recommended annual report be considered by the Administrator but strongly opposes the inclusion of pay and benefits inclusion as a part of the report.

5.2 Minority Opinions Submitted after the Report is Completed

Aircraft Owners and Pilots Association

AOPA DISSENTING POSITION ON CREDIT AMOUNTS IN THE UPPER PORTION OF TABLE 1

The Aircraft Owners and Pilots Association supports the concept of a credit system that recognizes the value of academic courses, training and additional certificates completed in pursuit of a position as a first officer at a part 121 Air Carrier. These courses increase the knowledge and competencies of all professional pilots. Although we recognize the benefit of such courses, we must disagree on the amount of credit recommended for the "structured" training paths relative to the amount of credit given, or not given at all, to the general aviation training paths of part 141 schools or part 61 individual flight instructors. AOPA recommends an increase in the amount of credit given to students of part 61 training and part 141 flight schools.

The effectiveness of a flight training course, depends in great part to the competencies of the individual flight instructor, whether that flight instructor is training under a university program, a flight academy, a part 141 flight school or through individual flight instruction. Many flight instructors giving training under part 61 are actually full time crew members of part 121 air carriers and as such may be more qualified to train pilots wishing to pursue a professional pilot career than any other flight instructors. We believe this point is overlooked in the offering of "0" credit through the part 61 training path.

Also, important to keep in mind is that, regardless of the training path taken, all pilots are required to pass the exact same FAA administered written knowledge exams and must meet the same Practical Test Standards for certificates earned. The core competencies that must be met are exactly the same.

Although there is definite benefit of additional academic courses taken in aviation, AOPA believes that a 350 hour split between pilots who received training through a university 4 year degree program and those that earned their certificates through a part 61 school (or 300 hour split for part 141 schools) puts the individual flight instructor and part 141 schools at a great financial disadvantage. Many of the flight instructors who offer training through a part 141 school or individually are the instructors who have dedicated their professional careers to flight training. With the credits currently offered through this recommendation, potential students are faced with the choice of enrolling at a university or flight academy or face a 350 hour disadvantage. That 350 hour disadvantage (at an average of $175 / hour of aircraft rental) equates to over $61,000. Many of professional flight instructors and part 141 schools would likely go out of business as a result of this disparity.

AOPA supports the idea of a credit system for academic training; however we recommend a more equitable split between credits earned through part 61, part 141 schools and other training paths.

5.3 STATEMENTS IN SUPPORT OF THE FOQ ARC REPORT

AVIATION ACCREDITATION BOARD INTERNATIONAL

AABInternational

Aviation Accreditation Board International (AABI)
Response to Coalition of Airline Pilots Associations (CAPA)
FOQ ARC Minority Opinion

September 20, 2010

AABI supports the FOQ ARC majority report and respects the motives of the CAPA Minority Opinion filed with the report. We offer, for consideration by the Administrator, the following facts and observations on content of the CAPA minority opinions, Section 5.1 of the FOQ ARC report, using references to specific page numbers of the report.

Respectfully submitted,

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Coalition of Airline Pilots Associations (CAPA) Minority Opinion

Page 26, Allegation: *"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."*
Facts: There are two choices: accept experience ("quantity of logged flight hours"), or adopt scientifically proven design ("quality of pedagogy") to the training and education of Part 121 first officers. The former approach relies on a statistical probability that exposure to difficult operating conditions will with certainty accrue with 1,500 hours of experience. Undoubtedly, there exists some number of flight hours for which this is true; however, no data have been compiled to demonstrate that 1,500 flight hours distributed as per ATP qualification requirements will accomplish that objective. Indeed, if success in the indoctrination process for employment is any sort of proxy for qualification, it was the 1,500-hour-or-more cohort of the *2010 Pilot Source Study* that performed *least* effectively. In contrast, the science of education has created a pedagogical application of a "systematic approach to training," originally developed in aviation and now practiced in many areas where public safety is at stake, such as in the nuclear industry, hydrogen fuel handling, emergency response teams, and in the military. In aviation, this design has reached a mature practice, using purposeful, integrated academic and laboratory learning, based on plausible scenarios, and applying part-task, whole-task, and integrated simulation training and education, designed to maximize both knowledge and skill acquisition in a continuum. Contrary to the allegation, judgment and decision-making, as well as critical thinking and crew resource management principles, are better learned in planned scenarios than in an idiosyncratic acquisition of unstructured flight time.

Page 28, Allegation: *"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."*
Facts: There is no disagreement that flight instructing, particularly when the student also has a career goal to be a Part 121 first officer, adds perspective, judgment, and valuable experience. This is precisely why the FOQ ARC formula for flight hour requirements gives so much credit to acquisition of flight instruction credentials and hours of dual given. In addition, flight instruction involves a quasi-crew activity; in which shared decision-making and critical thinking skills are developed. However, single pilot operation towing banners, crop dusting, supporting fire fighters, inspecting pipelines, observing traffic, etc., are all focused away from CRM and crew-based decision-making. These experiences would not have a transfer of skills relevant to Part 121 flying, when compared to the same dedication of time and study in a structured academic program designed to expose candidates to airline situations, and high fidelity hands-on simulations of difficult operating conditions.

Page 28, Allegation: *"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."*
Facts: This is an unfortunate perspective that suggests a lack of understanding about how humans learn, about modern pedagogical programs for teaching, and even about how airline transition training is structured. In a well-designed program, the student prepares broadly for a lesson and is examined on a subset of that preparation, and that is a good, not a harmful process. The fear of jeopardy is not an effective motivator for learning, and instances in single-pilot flying that are hazardous can lead to hyper focus on a predetermined hypothesis of a situation, do not stimulate critical thinking and application of sound aeronautical judgment, and are counterproductive to learning. Moreover, although airline flying involves unpredictability, there is a prescribed corridor of variation for which a good program prepares a future first officer. This holds true in the design of the air traffic system and the airplane, and in the operational standards of an airline. Only rarely are these boundaries exceeded, as in the case of the US Airways Hudson River ditching, and it is the practice of aviation systems to capture such rare events and codify them back into training so that there are ever-diminishing probabilities of new and disastrous outcomes. The use of scenario-based simulation in a CRM environment is far more productive in preparing pilots to confront hazardous conditions than reliance on happenstance activity in single pilot operations.

Page 28, Allegation: *"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."*
Facts: There are two ways of looking at the resulting flight hour requirements from the formula suggested by the ARC. CAPA is seeing it as a two-thirds reduction. Seven of the nine ARC members see it as a two-fold increase, at a minimum, over current first officer requirements. The FOQ ARC report acknowledges that it is time to go beyond commercial pilot certificate minima as the basis for first officer qualification and to do so through the development of competencies additional to the commercial pilot certificate specifically related to the Part 121 first officer career path. AABI supports this ARC position even though performance benchmarks around the world suggest that past practice has produced satisfactory first officer candidates. These include: past U.S. successful practice with commercial certificate qualification, our own military training programs, emergent Multi-crew Pilot License (MPL) programs promulgated by ICAO, and many airlines in Europe that utilize company-sponsored programs to place first officers with 250 hours in mainline commercial passenger service, flying in environments that are as complex or more than those that prevail in the U.S.

Page 28 Allegation: *"The flight time credit system derived from the* 2010 pilot source study *(sic) data does not support or warrant a reduction to ATP flight experience requirements."*
Facts: AABI agrees with, and the ARC supported, the need to enter an on-going data-gathering program to validate and refine the ARC-suggested flight time credit formulas. As an inception model, it seems logical to apply the ARC recommendations during the initial period in which the new first officer qualification rules are implemented, and then learn through additional studies and airline-supplied data to refine the formulas. The current formula seems conservative since its initial impact is to more than double the minimum flight time requirements from present-day practice, and to apply specified competencies, both academic and flight, to the qualification.

Page 28 and 32, Allegations: *"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."*
And: *"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."*
Facts: AABI asserts there is no foundation for speculating that the intention of Congress was different from the actual language passed by the House and Senate, and signed by the President. The allowance for the Administrator to credit academic training [1] has been part of the evolution of this legislation since it first appeared in HR3371, and bears the proviso "that allowing a pilot to take specific academic training courses *will enhance safety more than requiring the pilot to fully comply with the flight hours requirement*." *(Italics emphasis by AABI)* Therefore, we believe the allegation is misinformed, without foundation, and the use of the words "flight time credit scheme," if intended as a pejorative, is uncalled-for given the professional character of the ARC membership.

Page 29, Allegation: *"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

[1] CREDIT TOWARD FLIGHT HOURS. —The Administrator may allow specific academic training courses, beyond those required under subsection (b)(2), to be credited toward the total flight hours required under subsection (c). The Administrator may allow such credit based on a determination by the Administrator that allowing a pilot to take specific academic training courses will enhance safety more than requiring the pilot to fully comply with the flight hours requirement.

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."

Facts: Crew Resource Management, while a dynamic and evolving practice, was introduced over twenty years ago as acknowledged by CAPA. The challenges for first officers were more difficult in CRM inception years because CRM principles changed decades of aviation tradition. Not all captains, freshly-trained in CRM, abided by its principles, whereas today it is the exception to find a captain reluctant to share situational awareness with the first officer and the rest of the crew, or unwilling to accept advice and input from the first officer. It is erroneous to paint the CRM challenge for today's new first officers as more difficult than the past. New first officers will always receive mentoring and input from their captains, as their own skills and experience migrate toward those of a "seasoned veteran." Students in structured programs are immersed in airline quality processes from the beginning of their aviation education, and understand the value and impact of that information on their professional career. Today's academic programs utilize complex avionics systems and include understanding of the behavior of high-altitude, technologically advanced, and turbine-powered aircraft. AABI understands that the environment in which the commercial pilot certificate was created involved a different generation of aircraft. However, slower, propeller-driven airplanes such as the Convair 340 were taken out of service at least one, and possibly two, crew-generations ago, and there has been no data shown to suggest that first officers qualified in that period through the commercial pilot certificate have contributed to adverse trends in accidents or safety.

Page 30, Allegation: *"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, (sic) like airmanship skills, it is only practiced and enhanced with exposure in aircraft."*

Facts: Pedagogy that is structured around scenarios is a superb tool for developing judgment. It is, in fact, the basis for transition and recurrent training practice in airline operations, and its adoption to ab-intio education and training has proven to be exceptionally productive and useful in developing aeronautical judgment and critical thinking skills. Relying on situations that arise idiosyncratically as a trigger for developing professional judgment is statistically unlikely to be relevant to the role of a first officer. We have shown through scientifically gathered data that the truth is exactly opposite to this allegation, and have demonstrated student performance data that show superior performance from scenario-based education and training. The academic environment today is far richer than a "text book," as implied in the allegation, and the training device simulation experiences approach actual aircraft fidelity. Structured education programs

are focused on developing critical thinking, in contrast to reactionary responses to aircraft malfunctions. Challenging air traffic scenarios have high realism and also form the basis for evolving judgment in first officer candidates. An FAA *International Journal of Applied Aviation Studies*[2] article published on this subject concludes that "Teaching pilots judgment, decision-making, and critical thinking involves teaching higher-order thinking skills...The cognitive skills needed to make good judgments and decisions are teachable."

Page 31, Allegation: *"Issue Background, Pilot Experience" suggests that*[3] *pilots with a large number of flight hours have always supplied the air carrier labor pool.*
Facts: CAPA is apparently unfamiliar with air carrier history in the U.S. The number of hours required for employment has historically varied with the supply and demand for pilots. In today's labor market, regional airlines are hiring with an average of 637 flight hours. As recently as three years ago, there was a period during which regional airlines were hiring pilots with 250 to 300 flight hours and the academic institutions convened conferences to discuss the issue under the tag line that employer airlines "were eating the industry seed corn" and precluding universities from using their graduates as instructors for the next generation of students. In fact, history shows that the pilot labor market has occasionally experienced such an extreme demand that the major airlines were also hiring at very low flight hour experience levels.

Page 30 & 31, Allegations: *"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."*
And: *"Recent tragic events have shown the need to revisit the training and experience level requirements of pilots employed in Part 121 service."*
Facts: There are no published accident reports that correlate SIC flight hours experience with recent regional airline accidents. A study conducted by the AOPA Air Safety Foundation in May 2010 found that "Since 2005, flight crew errors have caused 14 regional airline accidents, two of them fatal. The first officers on nine of these flights had more than 2,000 hours of total flight experience, airline transport pilot certificates, or both; these include both of the fatal accidents. In the remaining five, the captain was operating the aircraft at the time."

To place the Part 121 regional airline accidents into an appropriate context, since 1990 there have been 22 fatal aircraft accidents (combined major and regional airlines) in which there was some flight crew causality. Sixteen of these (73 percent) involved the major carriers while only six (27 percent) involved regional carriers. The average flight time for PICs in all of these accidents was in excess of 10,000 hours. For SICs the average flight time

[2] Robertson, Charles L, *Teaching Pilots Judgment, Decision-Making, & Critical Thinking* International Journal of Applied Aviation Studies, 4, Number 2, 2004, FAA Academy.

[3] Historically, airlines could choose from a highly experienced pilot applicant pool and have require (sic) many thousands of hours of flying experience to meet their safety standards.

was in excess of 5,000 hours. Clearly there is no correlation between flight time and accident causation.

Page 31, Allegation: *"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."*
Observation: There is indeed a demographic and compensation challenge to attracting the best and brightest young people to this career as a professional pilot. Increasing the number of hours to an arbitrary quantity that does not add value to competencies or safety to operations; or worse, setting up a system that encourages students to take the lowest cost route to 1,500 hours, is a terrible disincentive to impose on the future professionals of our industry. This is one of the reasons that AABI advocates structured, scenario-based education of future aviation professionals, and sees the ARC report as a first step to inspire capable youth to an aviation career as a professional pilot.

AABInternational

Aviation Accreditation Board International (AABI)
Response to National Air Disaster Alliance/Foundation (NADA/F)
FOQ ARC Minority Opinion

September 20, 2010

AABI supports the FOQ ARC majority report and respects the motives of the NADA/F Minority Opinion filed with the report. We offer, for consideration by the Administrator, the following facts and observations on content of the NADA/F minority opinions, Section 5.1 of the FOQ ARC report, using references to specific page numbers of the report.

Respectfully submitted,

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National Air Disaster Alliance/Foundation (NADA/F) Minority Opinion

Page 33 & 34 Allegations:

Page 33: *"Our Dissent is filed because the FAA Re-authorization Bill, 'Airline Safety and Pilot Training Improvement Act H.R.5900,' clearly states the Airline Transport Pilot (ATP) certificate is the minimum level of certification for First Officer (FO) Part 121 type aircraft. The ATP certificate requires 1,500 hours of flight time. The intent of Congress is: 'shall be at least 1,500 flight hours.'*

"Any FAA regulation that would permit a 1,000 hour academic credit and only 500 flight hours drastically diminishes the statute's intent of requiring 1,500 actual flight hours."

Page 34: *"H.R.5900 contains a minority provision that states, 'The Administrator **may allow** specific academic training courses beyond those required under subsection (b)(2), to be credited toward the total flight hours required under subsection (c). The Administrator may allow such credit based on a determination by the Administrator that allowing a pilot to take specific academic training courses will enhance safety more than requiring the pilot to fully comply with the flight hours requirement.'"*

"We believe academic training in lieu of flight hours for the ATP is not appropriate:

1. *The provision 'may allow' was inserted into the bill late in the legislative process and does **not** represent the actual intent of Congress to require 1,500 hours of actual flight time*
2. *The statute's language states 'may allow,' is not a mandate*
3. *The FOQ ARC majority opinion failed to present any statistical evidence to demonstrate "specific academic training courses" enhance safety more than 'requiring a pilot to fully comply with the flight hours requirement.'"*

Facts: AABI asserts there is no foundation for speculating that the intention of Congress was different from the actual language passed by the House and Senate, and signed by the President. The allowance for the Administrator to credit academic training [1] has been part of the evolution of this legislation since it first appeared in HR3371, and bears the proviso "that allowing a pilot to take specific academic training courses *will enhance safety more than requiring the pilot to fully comply with the flight hours requirement*." *(Italics emphasis by AABI)* Section 217 in HR5900 that includes this language is a section within the law and is not a "minority provision." This section was not "inserted into the bill late in the legislative process;" rather it was a part of the HR3371 language created nearly a year ago. It is not accurate to say that this Section "does not represent the actual intent of Congress." The intent of Congress is specified by the entire bill HR5900 including Section 217. Therefore, we believe the allegations are misinformed and without foundation.

[1] CREDIT TOWARD FLIGHT HOURS. —The Administrator may allow specific academic training courses, be- yond those required under subsection (b)(2), to be credited toward the total flight hours required under subsection (c). The Administrator may allow such credit based on a determination by the Administrator that allowing a pilot to take specific academic training courses will enhance safety more than requiring the pilot to fully comply with the flight hours requirement.

Page 33, Allegations: *"Many CO3407 family members have been engaged proposing changes to pilot certifications and training based on lessons learned from tragic crashes such as CO3407, Comair 5191, AA4184 and others. They approach this effort with the intention to prevent other families from having to endure the painful and horrific experience of losing a loved one in an aviation crash. When the circumstances of a particular crash indicate it may have been avoidable, its effects on families and friends as well as the aviation industry are amplified exponentially."*

Facts: AABI supports the concept that lessons learned from past accidents should be analyzed and that all aspects of aviation operations, aircraft and support systems design should be improved, based on objective findings in the investigations of these accidents. In point of fact, the official accident reports contain no suggestions that pre-employment education and training of the first officers was a contributing factor to any of the three accidents cited. In all three cited accidents, the first officer had substantially more than 1,500 flight hours, and one of the three held an ATP certificate. The accident circumstances in all three reinforce the concept that integrated academic and laboratory education and training using scenario-based education typical of AABI-accredited programs would have more effectively prepared these first officers for the conditions they encountered, compared to the random acquisition of flight hours advocated by NADA/F. In the AA4184 accident, the first officer had more than 5,000 flight hours and over 3,000 hours in type. The FOQ ARC recommends competencies that cover the situations associated with crew knowledge, skill, behavior, and discipline that were cited as deficits in the respective accident reports. There are no published accident reports that correlate SIC flight hours experience with recent regional airline accidents. A study conducted by the AOPA Air Safety Foundation in May 2010 found that "Since 2005, flight crew errors have caused 14 regional airline accidents, two of them fatal. Each of the first officers on nine of these flights had more than 2,000 hours of total flight experience, airline transport pilot certificates, or both; these include both of the fatal accidents. In the remaining five, the captain was operating the aircraft at the time."

To place the Part 121 regional airline accidents into an appropriate context, since 1990 there have been 22 fatal aircraft accidents (combined major and regional airlines) in which there was some flight crew causality. Sixteen of these (73 percent) involved the major carriers while only six (27 percent) involved regional carriers. The average flight time for PICs in all of these accidents was in excess of 10,000 hours. For SICs, the average flight time was in excess of 5,000 hours. Clearly there is no correlation between flight time and accident causation.

Page 34, Allegations: *"ARC majority exhausted enormous time and effort to demonstrate that pilots trained in "structured flight programs" require less retraining events during their regional airline First Officer flight training, than pilots who train through "non-structured flight programs." Because pilots in structured flight programs demonstrate greater proficiency during regional airline flight training, the FOQ ARC majority erroneously assumed that pilots in these programs will be safer pilots than those who develop aviator skills through non-structured flight programs. But this trend suggests that pilots from structured flight training programs have the ability to communicate and network with graduates of their alma mater, who are familiar with the regional airline interview and training processes, rather than a clear demonstration that they are safer pilots."*

And: *"It is clear from the sub-working group effort that the FOQ ARC majority was committed to holding the line at 500 actual flight hours. It is not by coincidence that a pilot who completes an Aviation Accreditation Board International (AABI) flight school will graduate with approximately 500 flight hours.*

"Deciding on the 500 flight hours was a first step of the majority of the working group, and then they structured the academic program credits to enable certain AABI structured schools to fall out favorably."

And: *"The recommendation of the majority opinion of the ARC raises additional issues such as: an academic institution would then be responsible for two-thirds of a pilot's training. Are the 4-year academic institutions ready to accept that corporate responsibility and potential liability?"*

Observation: AABI finds these comments to be an unfortunate and unwarranted negative reflection on the integrity of the *2010 Pilot Source Study*, and its results. Moreover, the comment inappropriately questions the ethics, behaviors, and motives of graduates from structured flight training programs, implying that they network with each other and their universities in order to complete their curricula and secure employment. Finally, the allegation is unfounded and reflects poorly on the ethics of members of the FOQ ARC, implying that the majority members had a predetermined goal and manipulated the factors so as to achieve it. In fact, the average graduate from university accredited programs has substantially less than 500 hours (typically 250 to 300 hours) and during time periods for which the employment labor market was aggressively hiring, performed well in indoctrination and during IOE and initial service as Part 121 first officers. AABI fails to understand the comment regarding "corporate responsibility and potential liability" since this circumstance has prevailed among university and other structured programs for decades without causing adverse legal actions to training providers. Universities take very seriously their duty to create and administer their education programs with integrity and accept responsibility for doing so.

Page 35, Allegations: "*High pilot turn-over rates between the regional and the major airlines has significantly diminished resident pilot corporate knowledge at the regional airlines. We must recognize that the current level of flight hour training for the regional First Offers is inadequate, and that the new dual requirement of an ATP and 1,500 hours of actual flight time will bring these First Officers to a level that he/she can adequately exercise command of the aircraft under all circumstances."*

"The Captain should have additional flight time experience, management and leadership skills, and seniority, but the First Officer, Second-in-Command (SIC), should be equally trained and qualified to act as Pilot-in-Command (PIC) and function as the aircraft deputy commander during all phases of flight. Having a lesser trained SIC is counterproductive as the potential to be exposed to challenges alone is increased. Should the SIC need to exercise command of the aircraft; it will most likely be under an already extremely stressful condition."
And "*H.R.5900 provisions go into affect August 2013, so airlines have three years to meet the higher standards. Some Part 121 airlines may already be hiring pilots who meet the 1,500 hours and ATP standard, and for those who do not they have three years to comply."*
Observation: These comments reflect observations on the flight crew labor market dynamics that exist in the U.S. airline system. Transfers of experienced pilots from regional to major airlines has been a long-standing phenomenon, and has been a source of increased opportunity for growth in the flight crew profession. Imposing arbitrary and unfounded flight hour requirements for entry to the profession would be a profound discouragement in attracting the most talented young pilots into the airline profession.
Facts: There are no data to indicate a deficiency in the model of captain (PIC) serving as a more experienced mentor to the first officer (SIC) and thereby causing an adverse effect on flight safety. The FOQ ARC developed a unanimous outcomes-oriented list of competencies and the means to acquire them as part of its deliberations and recommendations, to which AABI completely subscribes. These competencies will be better acquired in a formal structured environment. Candidates who acquire their education through an unstructured process may also gain entry to the profession, though current data suggest that they will not perform at 1,500 hours as well as their peers who graduate from, at the best, AABI-accredited programs.

Page 35, Allegation: *"We believe that the FOQ ARC has deviated somewhat from the scope of the following five questions, which were included in the original FAA Charter for FOQ ARC."*
Observation: AABI believes that the FOQ ARC followed a disciplined, collegial, and respectful process to arrive at its majority opinions. We respect the NADA/F right to dissent, and to repeat the dissent in their official minority opinion. The FOQ ARC did not deviate from the scope of the questions, nor the process by which they were considered, debated, and brought to closure.

Page 36, Allegation: "*AA4184, Oct. 31, 1994 in Roselawn IN had pilots not trained in those conditions, and mistakes were made in the cockpit. The disaster settled 15 years ago for about $280 million, plus cost of the plane, corporate attorneys, and more. Comair 5191 (August 2006) cases have settled for $264 million so far, plus the value of the aircraft, corporate attorneys, and more. Two Comair 5191 cases are reported as not settled, and one is scheduled for a punitive damages trial. Continental Express/Colgan 3407 could settle for more.*

"Some airlines did not stay in business because of the economic and corporate impact of a fatal crash. Making a relatively small safety investment before an incident occurs, with the intent of providing the highest level of training, or the pilots with the most experience, skills and knowledge, is clearly the more responsible approach."

Facts: Safety investments in airline operations are clearly warranted, based on the facts and determination of accident causes and contributions. In the cases cited, pre-employment training and education of the pilots are not cited as a contributing cause. Therefore, adding arbitrary flight time requirements to first officer education and experience does not address the specific contributing factors to these accidents. On the contrary, the recommendations of the FOQ ARC, when implemented, represent a large "safety investment" that will have an immediate and positive impact on the safety of the entire Part 121 air carrier system.

PILOT CAREER INITIATIVE

Pilot Career Initiative

Dissent to CAPA Dissent of September 6, 2010

September 11, 2010

Pilot Career Initiative (PCI) is an Ad Hoc group of aviation professionals formed in October 2009. PCI is comprised of representatives of higher education, airline executives as well as training experts, aviation academy representatives, and other dedicated aviation professionals. Because of this diversity, PCI is able to draw on the training as well as safety resources and expertise of airlines, universities, academies and manufacturers. The group was formed due to there mutual concerns for the image of the career of a professional pilot and lack of educational funding. At the time the group was forming, H.R. 3379 was being pushed through congress by what appeared to special interest groups and non-aviation groups responding to sensational journalistic reporting in the wake of CO3407 and other regional aircraft accidents prior to that. While well intended, PCI believed H.R. 3379, as written, would fall short of the objectives of congress.

PIC fully supports the premise that minimum regulatory standard for CFR Part 121 carriers must be raised, as evidenced by PCI's support of the ARC's recommendations. PCI did and still does believe that the proposed requirements of H.R.3379 would fail to achieve the enhanced safety standards sought. The bill did, and two dissenting members of the FOQ ARC including the dissenting member pertinent to this document continues to call for higher number of flight hours even though there is no evidence that any of the previous accidents involved or was caused by lack of experience. In fact, both pilots of CO3407 had far in excess of 1,500 flight hours.

Following are PCI's dissents of CAPA's specific statements:

CAPA

"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."*

PCI

PCI does not agree with the first two bullet points above for the following reason: In a modern structured primary training program, with a properly written curriculum written under the FAA Industry Training Standards (FITS), each lesson is scenario-based, including elements of aeronautical decisionmaking, Risk Assessment, CRM, and SRM.

CAPA

"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."

PCI

PCI disagrees with this statement. The ARC's proposal more than doubles the minimum flight time currently required and adds levels of knowledge and skill far in excess of today's requirements.

CAPA

"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."

PCI

PCI disagrees with this statement on several levels. First, it runs counter to everything PCI believes in to put the personal safety of passengers or crew in jeopardy in order to provide "exposure" to pilots. Airline flying is perhaps the most structured, process and procedure-driven environment currently utilized in industry. Pilots spend countless hours in flight training devices learning how to deal with abnormalities and emergencies. Even the most "unpredictable", such as loss of power all power is practiced from the earliest days of training. It is the opinion of PCI that once immersed in a simulator of proper quality, emergencies can be introduced significantly, effectively, and just as realistically as can be done in any aircraft.
We also belive that is not in the professional pilot's mindset to fail, whether in a training device or real airplane or when ones "personal safety" may be at risk.. PCI advocates manning our nation's airliners with well trained pilots, not "survivors".

CAPA

"CAPA also contends that the "flight time credit scheme" goes beyond what HR 5900 permits, and certainly beyond the laws intention."

PCI

Paragraph 217 of H.R. 5900 states, in pertinent part, "The Administrator may allow specific academic training courses, beyond those required by subsection (b) (2), to be credited toward the total flight hours required under subsection (c).

One can't use "intention" in an argument without documented clarification. This is especially true when this presumed "intention" could easily have been written into the law. PCI argues that the law's silence on this issue would be an indication that congress had no more specific intent except to allow the Administrator make this determination.

CAPA

"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."

PCI

PCI contends that the majority has produced two data sets supporting their position. The dissenter's position is not supported by any data. Neither is it supported by accident history.

It also has to be emphasized that the ARC's recommendations do not propose a reduction of flight hours, knowledge requirements, or skills. To the contrary, it proposes a significant enhancement of all three aforementioned areas.

PCI's experts, comprised of airline executives, airline pilots, distinguished leaders of higher education in the field of aviation, and flight instructors disagree with CAPA's statement.

CAPA

"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."

PCI

PCI agrees that the concept of CRM was formalized almost thirty years ago. As mentioned previously, modern structured primary training programs incorporate the elements of CRM, SRM, Risk Assessment, and aeronautical decision making in each lesson.

CAPA

"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.*

PCI

PCI obviously disagrees with the above requirements but, in particular, wants to point out that turbine engine flying is of questionable value. Turbine engines are easier to manage than reciprocating engines. Also, it would be difficult for aspiring pilots to obtain turbine time,

With regard to the last underlined sentence, PCI believes these procedures are better practiced in a simulator. The fidelity of today's simulators allow far better training than actual aircraft.

CAPA

- ***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.*

PCI

PCI fails to understand exactly what the significance of the additional 25 hours would be.

CAPA

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

PCI

PCI is uncertain of what CAPA refers to related to "FAA approved simulator time". Also, PCI disagrees, based on our collective experience that experiential learning is limited to just vull motion and visual simulator systems.

CAPA

"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."

PCI

PCI finds this a misleading statement. It is meant to infer that the accidents involved pilots with less experience than proposed by CAPA and that lack experience was casual. This is untrue on both counts.

CAPA

"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."

PCI

PCI started on October 9, 2001 with three objectives:

1. To influence what was then H.R. 3379 in the House of Representative to result in rule making that would, in fact, enhance airline safety,
2. To make the profession of an airline pilot more attractive
3. To find solutions to the lack of financial funding for pilot training

PCI does not find itself in disagreement with CAPA's above statement. It is PCI's opinion that the solutions do not lie with any one entity and cannot be legislated. It will require the devoted focus of a wide range of professional disciplines, as is the PCI membership, to chart the course.

Finally, PCI did wish to respond to this statement by CAPA because we are passionately in agreement. Having said that, we find it out of the scope of the FOQ ARC.

CAPA

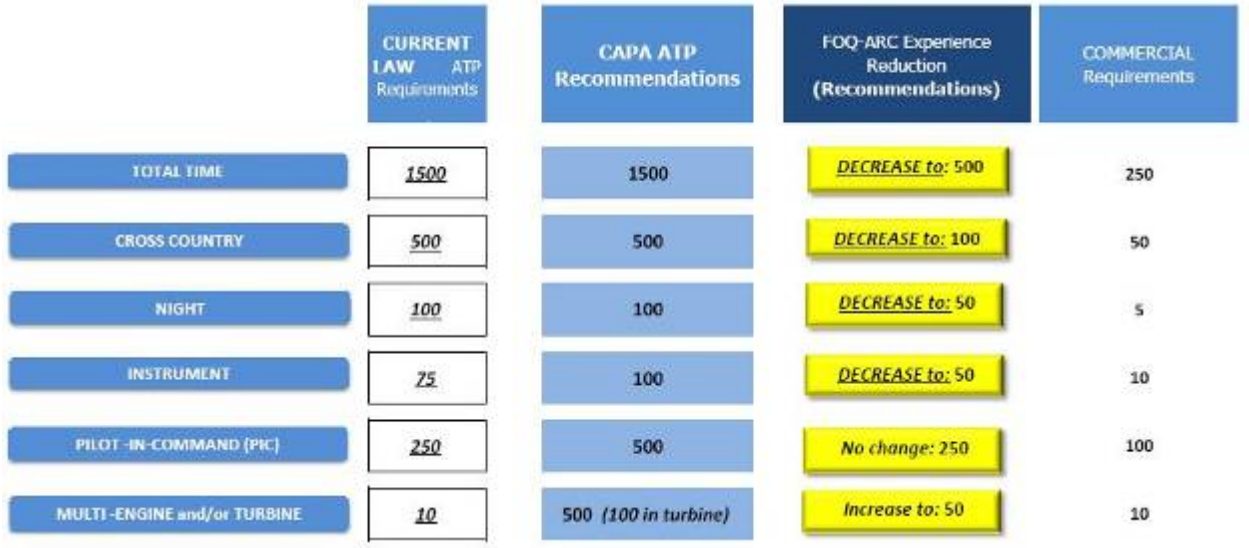
"Recent tragic events have shown the need to revisit the training and experience level requirements of pilots employed in Part 121 service."

PCI

As previously illustrated, dissenters of the qualification recommendations of the ARC continue to ignore and fail to answer to the fact that recent accidents did not involve pilots with low time.

CAPA

Figure 2—Comparison of Current Requirements vs. Recommendations



PCI

This chart, by design, is misleading. It gives the optical illusion that the ARC is proposing lowering the requirements to act as SIC in CFR FAR Part 121 operations. The opposite is true. The first column should reflect current requirements not current ATP requirements. PCI wishes again to emphasize that the ARC is recommending at a minimum doubling actual flight time requirements from current (in some cases multiplying it by a factor of 6) with a significant increase in knowledge and skill requirement.

Respectfully Submitted
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PCI
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Pilot Career Initiative

Dissent to NADA/F Dissent of September 6, 2010

September 11, 2010

Pilot Career Initiative (PCI) is an Ad Hoc group of aviation professionals formed in October 2009. PCI is comprised of representatives of higher education, airline executives as well as training experts, aviation academy representatives, and other dedicated aviation professionals. Because of this diversity, PCI is able to draw on the training as well as safety resources and expertise of airlines, universities, academies and manufacturers. The group was formed due to there mutual concerns for the image of the career of a professional pilot and lack of educational funding. At the time the group was forming, H.R. 3379 was being pushed through congress by what appeared to special interest groups and non-aviation groups responding to sensational journalistic reporting in the wake of CO3407 and other regional aircraft accidents prior to that. While well intended, PCI believed H.R. 3379, as written, would fall short of the objectives of congress.

PIC fully supports the premise that minimum regulatory standard for CFR Part 121 carriers must be raised, as evidenced by PCI's support of the ARC's recommendations. PCI did and still does believe that the proposed requirements of H.R.3379 would fail to achieve the enhanced safety standards sought. The bill did, and two dissenting members of the FOQ ARC including the dissenting member pertinent to this document continues to call for higher number of flight hours even though there is no evidence that any of the previous accidents involved or was caused by lack of experience. In fact, both pilots of CO3407 had far in excess of 1,500 flight hours.

Following are PCI's dissents of NADA/F's specific statements:

NADA:

"Our Dissent is filed because the FAA Re-authorization Bill, "Airline Safety and Pilot Training Improvement Act H.R.5900," clearly states the Airline Transport Pilot (ATP) certificate is the minimum level of certification for First Officer (FO) Part 121 type aircraft. The ATP certificate requires 1,500 hours of flight time. <u>The intent</u> of Congress is: "shall be at least 1,500 flight hours."

Any FAA regulation that would permit a 1,000 hour academic credit and only 500 flight hours drastically diminishes the statute's <u>intent</u> of requiring 1,500 actual flight hours.

PCI:

Paragraph 216 calls for the ATP but, as evidenced by paragraph 217, it was not the "intent" to require 1,500 hours of "actual" flight time. Further more, the use for the word "intent" is presumptuous unless one is speaking of their own intent.

NADA:
*We believe that the end result of the FOQ ARC should have been recommendations that promoted an **improved** Airline Transport Pilot (ATP), prerequisite for the Part 121 First Officer, including the 1,500 hours of actual flight time, and not relying so heavily on 1,000 hours of academics intended to serve as a substitute for actual flight experience. We do not support fulfillment of the ATP certification requirement with only 500 hours of actual flight time.*

PCI:
PCI believes that the ARC is proposing an improved ATP, given the enhanced knowledge and competencies which will be required. We also believe that since such knowledge and competencies exceed those currently required for the PIC in airline operations. We believe that the PIC ATP requirements should also be enhanced. However, that issue is out of scope for this ARC.

NADA:
*The U.S. House of Representatives and the U.S. Senate approved the 1,500 flight hours as part of the legislation, H.R.5900, and their approval for the 1,500 hours goes back to October 2009. H.R.5900 passed in Congress with strong bipartisan support in both the House and Senate and was quickly signed into law by the President. The language in this legislation clearly indicates it was **Congress' intent** to require all Part 121 First Officers, to achieve a minimum of 1,500 flight hours and hold an ATP, Airline Transport Pilot certificate.*

PCI:
Again, this speaks to "intent" which is speculation and certainly is contradicted by paragraph 217.

NADA:
*"The provision "may allow" was inserted into the bill late in the legislative process and does **not** represent the **actual intent** of Congress to require 1,500 hours of actual flight time"*

PCI:
Again, NADA/F is speculating as to congress's intent while paragraph 217 clearly illustrates the intent of congress as it relates to the issue of reduction of hours by credit.

NADA:
"The statute's language states "may allow," is not a mandate."

PCI:
PCI agrees that "may allow" is not a mandate. It is rather an indication that congress believes that the administrator should have the latitude to do so, as proposed by the ARC.

NADA:
"The FOQ ARC majority opinion failed to present any statistical evidence to demonstrate "specific academic training courses" enhance safety more than "requiring a pilot to fully comply with the flight hours requirement"

PCI:
PCI finds this statement without basis. The FOQ presented two studies or sets of data clearly demonstrating that pilots trained as recommended by the ARC have a higher success rate than others. NADA/F ignores the data presented as well as ignoring the facts related to experience of pilots in recent accidents.

NADA:
*"**It is not by coincidence** that a pilot who completes an Aviation Accreditation Board International (AABI) flight school will graduate with approximately 500 flight hours."*

PCI:
PCI agrees with this statement – it is not a coincidence. Data presented indicates those pilots have a higher success rate at the airline level. Also, a significant number of AABI-accredited program graduates complete their education with a number of hours far less than 500, and usually gain extra time as flight instructors.

NADA:
"Deciding on the 500 flight hours was a first step of the majority of the working group, and then they structured the academic program credits to enable certain AABI structured schools to fall out favorably."

PCI:
Published data presented clearly indicates that a 500 hour pilot coming out of an accredited, structured training organization such as AABI was most successful in initial airline training. That appears to be the logical place to start since, unlike the 1500 hour level, it is supported by data. It is of note that of the 7 organizations in favor, only 1 is representing AABI.

NADA:
"The 500 flight hour requirement is lower than the previous 625 flight hour average. Therefore, the Final Report could be viewed as a lower flight hour requirement than the median."

PCI:
PCI agrees that 500 is less than 625 but is confused as to the point here. The ARC has proposed a system which, at a minimum, would double current hour requirements, not to mention increased knowledge and competencies.

NADA:
"The recommendation of the majority opinion of the ARC raises additional issues such as: an academic institution would then be responsible for two-thirds of a pilot's training. Are the 4-year academic institutions ready to accept that corporate responsibility and potential liability?"

PCI:
PCI will speak for itself on this. Our members take "responsibility" and "liability" seriously, but the use of those words do not change our beliefs. As stated, we view those words as written to to be inflammatory.

NADA:
*"We must recognize that the current level of flight hour training for the regional **First Officers is inadequate**, and that **the new dual requirement of an ATP and 1,500 hours of actual flight time** will bring these First Officers to a level that he/she can adequately exercise command of the aircraft under all circumstances"*

PCI:
PCI does not recognize this and in fact points out that in the case of the two accidents cited by NADA (CO3074 and Comair 5191) each crewmember had flight hours well in excess of current ATP requirements.

NADA:
*"The FO **shall** have an ATP with 1,500 actual flight hours **as required** by H.R.5900."*

PCI:
PCI is concerned with the use of the word "shall" because that would indicate that the dissenter views their organization as a rule-making body. PCI is also concerned with the phrase "as required" because that would indicate, since it is not required by H.R. 5900, that NADA/F either has not read paragraph 217 of the bill or assumes that the reader has not and will not.

NADA:
"The default is not that a pilot with 1,500 hours could just fly around in a Cessna. This is not a valid argument because the ATP has specific requirements, and the ATP-SIC (Airline Transport Pilot license, Second-in-Command) could be strengthened to require additional flight skills."

PCI:
NADA's statement is not a valid statement because under the current requirements of CFR FAR Part 61, one could receive an ATP with 100% of his or her time in a Cessna 172.

NADA:
*"**Making a relatively small safety investment before an incident occurs, with the intent of providing the highest level of training, or the pilots with the most experience, skills and knowledge, is clearly the more responsible approach**.*

***The Statistical Value of a Human Life** (SVL) has increased to $5.8 million (from $2.7 million), and, in certain conditions, can go even higher."*

PCI:
PCI does not agree that one can assign a financial value to a human life. Financial considerations have no bearing on the importance of safety in our hearts and minds. Human life does. PCI members put safety as the first priority in all our actions. Having said this, it is important to put into prospective that among PCI members are airline executives, university educators (including some accredited by AABI) and organizations such as NAFI. PCI members put safety ahead of all financial considerations.

NADA:
"There is also an issue of a corporate culture, and its detrimental effect to the aviation industry when the traveling public learns of $17,000 to $19,000 pay per year for Part 121 FO's, and learns that they did not have sufficient training or experience in icing or other bad weather situations.

The American People and Traveling Public want experienced pilots in the cockpit, and we believe that higher pay will attract more experienced pilots.

The Part 121 carriers could provide the needed flight hours to gain that 1,500 flight hours of experience, and they could raise their starting pay to $40,000, or better yet, $60,000+ a year. They would have their choice of thousands of experienced and trained pilots with thousands of hours, who are retired military, and/or formerly with larger airlines, overseas experience, or a combination of flight hours and training.

No one has discussed the psychological factors that could impact someone's performance on the job, when a young pilot is burdened with low pay, student loans, fatigue, and pressure to possibly work two or more jobs. Many young pilots from the 4-year academic programs have student loans, and a $100,000 student loan is about $1,000 a month for 30 years to pay back. Young pilots take the $19,000 a year pilot job and may work second jobs just to pay their student loan and rent/food. This pathetic pay puts FO new hire pilots in a terrible personal situation, which is not conducive for the focus and energy needed to be a commercial airline pilot.

Experienced pilots cannot afford to work for $19,000 and probably know it is not safe to be a commercial airline pilot while forced to work two or more jobs."

PCI:
PCI finds this statement subjective, out of scope, and unbalanced. PCI agrees that as agreed between senior pilots and the company, the junior F/O pay is unattractive. PCI strongly believes the discussion, while important, has no place in the scope of the FOQ ARC and would prefer not to see a seat on the ARC to be used to further an agenda not specifically within the boundaries of the scope of the ARC.

Respectfully Submitted:
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REGIONAL AIRLINE ASSOCIATION

REGIONAL AIRLINE ASSOCIATION (RAA) DISSENT

REGARDING CERTAIN MINORITY OPINION STATEMENTS IN THE

FIRST OFFICER QUALIFICATIONS AVIATION RULEMAKING COMMITTE REPORT

Introduction

The Regional Airline Association[1] (RAA) is honored to have been provided the opportunity to participate in the recent deliberations of the First Officer Qualification Aviation Rulemaking Committee (FOQ ARC). The questions placed before the FOQ ARC are important issues requiring resolution both to better ensure airline safety and to provide the traveling public with assurance of that safety. With one minor exception as noted in Section 5.1 of the First Officer Qualification Aviation Rulemaking Committee Report (Report), the RAA fully supports the Majority positions offered in the Report that was submitted to the FAA Associate Administrator for Aviation Safety on Friday, September 10th.

It is therefore unfortunate that the RAA finds it necessary to submit this RAA Dissent in response to portions of the Dissent Statements made by two FOQ ARC members, the Coalition of Airline Pilots Associations (CAPA) and the National Air Disaster Alliance/Foundation (NADA/F), and presented in Section 5.1 of the Report. There are simply too many misstatements and unsupported inferences in these two Dissent Statements with regard to the implications/mandates of the "Airline Safety and Federal Aviation Administration Extension Act of 2010 (H.R. 5900)", the FOQ ARC's adherence or non-adherence to its charter in light of H.R. 5900, and the deliberations and resulting Majority recommendations of the FOQ ARC, to let them go unchallenged.

The FOQ ARC's Charter and H.R. 5900

In their separate Dissent Statements, both CAPA and NADA/F essentially make the argument that President Obama's August 1, 2010 signing of H.R 5900 (Public Law 111-216) mandated the answers to a number of the questions directed to the FOQ ARC under its July 10, 2010 Charter (see Report Appendix C), and that the FOQ ARC Majority (Majority) chose to ignore those mandated answers in the Majority recommendations. Based on the dissenters' reading of H.R. 5900, both groups rejected the Majority

[1] Regional Airline Association members are: Aerolitoral, Air Wisconsin Airlines Corporation, AirNet Systems, American Eagle Airlines, Atlantic Southeast Airlines, Cape Air, Chautauqua Airlines, Colgan Air, Comair, CommutAir, Empire Airlines, Era Aviation, ExpressJet, Flight Options LLC, Go-Jet, Grand Canyon Airlines, Great Lakes Aviation, Gulfstream International Airlines, Horizon Air, Hawaiian Island Air, Jazz Air, Mesaba Aviation, New England Airlines, Pinnacle Airlines, PSA Airlines, Piedmont Airlines, Republic Airlines, Shuttle America, SkyWest Airlines, and Trans States Airlines.

recommended minimum flight hour experience requirement and the Majority recommendation for creation of an aeronautical experience credit system designed for use in conjunction with that minimum flight hour experience requirement. NADA/F also suggested that the Majority failed in its legal responsibility as an ARC in making its Majority recommendations in these two areas.

Clearly, having H.R. 5900 signed into law midway through the FOQ ARC deliberations raised a number of questions with regard to its potential impact on the FOQ ARC Charter Tasking and on the recommendations that would remain within the FOQ ARC's purview to make. Upon first learning of the passage of H.R. 5900, the FOQ ARC Committee Chair immediately discussed these questions with the FOQ ARC Designated Federal Official and further with FAA legal staff. Following a review of the H.R. 5900 language, it was determined that H.R. 5900 placed no limits on the FOQ ARC's deliberations and recommendations, allowing the process to continue.

Among other considerations underlying this determination were the following:

- The ongoing efforts of the FOQ ARC with regard to Knowledge and Skill Competencies (see Report Section 3) were an appropriate initial step toward ultimately meeting the H.R. 5900 Section 217(a) directive that *"The Administrator of the Federal Aviation Administration shall conduct a rule-making proceeding to amend part 61 of title 14, Code of Federal regulations, to modify requirements for the issuance of an airline transport pilot certificate."*
- The ongoing efforts of the FOQ ARC with regard to an Academic Credit System (see Report Section 2) were an appropriate initial step in the development of an academic training valuation system to ultimately validate the Administrator's authority under H.R. 5900 section 217(d) to *"… allow specific academic training courses … to be credited toward the total flight hours required … based on a determination … [that this] will enhance safety more than requiring the pilot to fully comply with the flight hours requirement."*

It has long been accepted that effective rule-making requires pooling the collected expertise and involvement of many industry subject matter experts in the rule-making process and, as chartered, the FOQ ARC was a readymade forum for collecting and considering input – studies, practices, public opinion, etc. and recommendations that would support the processes directed by H.R. 5900.

The FOQ ARC's activities and recommendations are consistent with Administrator Babbitt's direction, both as initially presented in the July 10, 2010 document that established the FOQ ARC and latterly after review of the implication of passage of the Airline Safety and Federal Aviation Administration Extension Act. The Majority recommendations of the FOQ ARC are fully consistent with and appropriate to the language in H.R. 5900.

<u>The Majority Recommended Academic Credit System</u>

In their Dissent Statements, both CAPA and NADA/F reject offering credit for academic training courses that are determined by the Administrator to enhance the knowledge and skill of a prospective airline pilot toward meeting ATP "total time as a pilot" requirements, this despite clear language in H.R. 5900 section 217(d) authorizing such a concept. The two Minority Dissent Statements label the Majority's recommendations for providing such credits as a "scheme" when, in fact, these are data-driven recommendations based both on the most current hiring and training studies available and on significant

learned input and weeks of deliberations within the FOQ ARC. NADA/F goes so far as to make the rather interesting argument that the language in H.R. 5900 providing the Administrator with authority to establish such a credit system is somehow a "minority provision" in that law that "does **not** [emphasis in the original] represent the actual intent of Congress." The RAA is not familiar with any aspect of U.S. law that makes the words voted on by both houses of Congress and signed into law by the President to be anything less than a law that means what its words say.

As fully presented in section 2.7 of the Report, the Majority applied significant professional experience and science in developing the Majority recommended "Aeronautical Experience Credit System" (not "scheme"). In reaching its recommendation, the FOQ ARC considered earlier Advanced Notice of Proposed Rulemaking (ANPRM) comments, available studies on training and training program successes and failures, and the considerable expertise and experience of the FOQ ARC members, all of which input fueled lengthy and rigorous discussion during the many small group and plenary sessions held between July 19 and September 7. The diversity of the group and the way that its deliberations were managed assured that no single perspective would prevail without first having been tested by the full group and that all thoughts and concerns would be shared and addressed to ultimately reach a consensus position. This strengthened the Majority's Aeronautical Experience Credit System recommendation and led to it being supported by seven of the nine FOQ ARC members. With all due respect to the objections raised in the two minority member Dissent Statements, in group discussions those members offered no alternative to the academic crediting system developed collaboratively and painstakingly by the remaining FOQ ARC representatives representing the flight universities, flight academies, general aviation, business aviation, major and regional airlines, and the largest participating pilot safety organization.

Validity of the Majority Recommended ATP SIC Certificate

In its Dissent Statement, CAPA improperly represents the Majority recommendation requiring all pilots serving as a first officer (second-in-command) in FAR part 121 airline operations to hold an ATP SIC certificate. CAPA variously presents the ATP SIC certificate as having been "established for the purpose of bypassing flight experience requirements necessary to qualify for an ATP", "allow[ing] a lesser degree of training or preparedness which is not the purpose of this ARC, the FAA or the intent of Congress", and as not being "in the spirit of the law". None of these statements are true.

As the title clearly indicates, the FOQ ARC was chartered to consider the qualifications necessary for a pilot to serve as a first officer (second-in-command) in FAR part 121 airline operations. Very early in the FOQ ARC's deliberations, there was extensive discussion of the name that should be given to the certification that would attest to a pilot having met the qualifications that the FOQ ARC would be recommending. Ultimately, it was determined that the FAA would have to make a final determination in that regard, but it was still necessary for the FOQ ARC to put a "placeholder name" to that certification if for no other reason than to provide a degree of clarity within the Report.

ATP SIC was chosen as the placeholder name for its being descriptive of that which the FOQ ARC was chartered to present – a set of qualification standards necessary for service as a first officer (second-in-command) in FAR part 121 air carrier operations. The ATP half of the name was a given, since much of the discussion was reasonably centered on existing FAR part 61 ATP requirements. The SIC half of the name was also reasonable since that is the cockpit seat that the FOQ ARC was chartered to review.

The FOQ ARC deliberations regarding qualifications to be associated with an ATP SIC certification did not arise from an attempt to "allow a lesser degree of training", as CAPA alleges – rather the deliberations began with acceptance of the current ATP requirement under FAR part 61.159(a) for "1,500 hours total time as a pilot" and then proceeded with in-depth and sometimes heated discussions of the appropriate credits that might be awarded towards this requirement for various levels of academic accomplishment and aviation experience. Both the starting point of 1,500 hours and the Majority recommended academic credits are consistent with the directions and the authority granted to the Administrator by H.R. 5900.

A not surprising ancillary outcome of the FOQ ARC discussions with regard to ATP SIC qualification standards was recognition that the FOQ ARC's ATP SIC recommendations had implications for current FAR part 61.159 ATP qualification standards. In a real sense, the Majority recommendations for first officer qualification standards in many areas exceed current ATP requirements, another reason for coining the term ATP SIC as a placeholder name for presentation of the Majority recommendation to the FAA.

It is important to note that there are a number of important steps between the FOQ ARC presenting its recommendations and the FAA enacting a rule reflecting all, some or none of those recommendations. That rulemaking process will involve the issuance of proposed new first officer qualifications rules followed by careful FAA review of the FOQ ARC recommendations in light of comments received in response to those rules. This process will provide ample opportunity for the FAA to consider and determine if the academic credit values assigned in the Report need to be adjusted or if additional credited academic programs might appropriately be added. It will be up to the FAA to make such determinations before enacting a final rule. But, importantly from the perspective of the FOQ ARC and its meeting the responsibilities assigned to it under its charter, the Report presents recommendations to the FAA that have largely withstood the test of industry subject matter expert involvement and scrutiny.

<u>Majority Recommendation Regarding Minimum Flight Hour Experience – A Part of an Important Whole</u>

The Majority recommendation regarding the minimum flight experience necessary to hold an ATP SIC is stated as follows in the answer to Question B presented in Section 1.2 of the Report:

> *"First officers will have 1,500 hours of flight time or of combined flight time and aeronautical experience credit as defined in the recommendations."*

This recommendation sets the current ATP "1,500 hours of total time as a pilot" standard from FAR part 61.159 as the starting point for ATP SIC certification, but makes allowance for aeronautical experience credits in accordance with the Majority recommended Academic Credit System detailed in Section 2 of the Report. Separately, as detailed in Section 2.7 of the Report, the Majority further recommends setting an absolute floor of 500 actual hours of total flight time for award of ATP SIC certification. As shown in the ATP SIC Qualification Pathway examples presented in Appendix F of the Report, the minimum number of actual hours of total flight time required for ATP SIC certification will range between 1,500 and 500 hours, depending on the manner in which an individual pilot elects to accomplish the necessary training and experience.

Only those individuals who invest in a high quality aviation college education will be able to achieve ATP SIC certification with 500 actual hours of total flight time. Candidates choosing a less intense academic and training experience for achieving the necessary qualifications for ATP SIC certification will

require a greater number, and in some cases a very much greater number, of actual hours of total flight time before being qualified for award of an ATC SIC. In all cases, no matter what the number of hours flown, ATP SIC certification will not be awarded without the candidate first passing a rigorous written and practical test administered against FAA-established test standards and further meeting the FAA standards set for obtaining an Aircraft Type Rating in the aircraft that the individual will be operating in FAR part 121 service.

In their Dissent Statements, both CAPA and NADA/F focus on the part of the Majority recommendation that sets an absolute floor of 500 actual hours of total flight time for award of an ATP SIC certification, giving little recognition to the other integral parts of the Majority's recommended standards for ATP SIC certification. Neither do they mention the strength of the Majority recommendations in totality compared to current minimum requirements for serving as a first officer in FAR part 121 air carrier operations, which requirement is only to hold a commercial pilot license that can be awarded to pilots having as few as 250 of total flight time.

The Majority recommendations for a new ATP SIC certification standard multiply the current actual hour requirement from two to six times, depending on the quality of the learning pathway taken. The Majority recommendations further add aeronautical knowledge and skills requirements that exceed current ATP requirements and include FAA testing to confirm pilot compliance. Further still, the Majority recommendations include the requirement for an Aircraft Type Rating in the aircraft that will be operated, which entails passing a further FAA-administered practical test. Taken together, these Majority recommendations represent a significant strengthening of the standards currently required for FAR part 121 first officers. Were it not for the recommended enhanced aeronautical knowledge and skill requirement, and the recommended Aircraft Type Rating requirement, and the two recommended FAA test requirements, the RAA might well have found itself in agreement with the CAPA and NADA/F Dissent Statements regarding the adequacy as a minimum requirement of an absolute floor of 500 actual hours of total flight time. But given the totality of the Majority recommendations and the training, learning and testing environment that they create, RAA is confident that an absolute floor of 500 actual hours of total flight time for award of ATP SIC certification is appropriate to the highest level of airline safety.

Experience as an Effective Approach to Training

In their Dissent Statements, both CAPA and NADA/F emphasize the importance of experience in actual aircraft operations to the making of a qualified and professional airline pilot, leading to their joint support for 1,500 actual flight hours as the minimum certification standard for FAR part 121 airline pilots. The RAA agrees that experience in the air provides an important learning benefit, but experience also can be acquired through a solid academic education and scenario-based training in modern simulators and flight training devices. The most serious problem with a heavy training dependence on experience in the air is that experience comes along in its own time and at its own pace and there are far from guarantees that the conditions required to gain particular required pieces of experience will present themselves and be learned in a regularly reproducible schedule or fashion. It is also very hard in an experience-based training environment to ensure standardization of the lessons being taught and of the learning that results, as well as to ensure training program safety.

That is why the Majority recommendations placed so much emphasis on academic aviation learning programs and on new aeronautical knowledge and skills requirements and additional FAA testing and quality assurance oversight as core parts of ensuring that FAR part 121 pilots are qualified for their jobs. Advances in the science of simulators and flight training devices now make possible scenario-based training that realistically simulates most of the flight experiences necessary for training an FAR part 121 airline pilot. This training can be readily standardized, repeated, critiqued and evolved under programs such as Advanced Qualification Program (AQP) training. Simulators are effective and provide absolute safety in scenario-based training of flight into icing conditions and stall onset and recovery. High level simulators are also effective in upset recovery training and in training for any number of the more difficult operating condition regimes potentially encountered by FAR part 121 airline pilots. The RAA supports actual experience in aircraft operations as an important teacher, but believes that it should not be depended upon as the primary teacher of all that an FAR part 121 airline pilot needs to know. The RAA therefore fully supports the Majority recommendations regarding first officer qualification standards as providing a proper mix of the experience and academic/training approaches that will best ensure safety.

The Importance of Factual Support for Positions Taken by the FOQ ARC

Throughout the many weeks of meetings, deliberations, analysis and report and recommendation writing, the members of the FOQ ARC stayed focused on the facts and issues brought before them. When there were questions that needed to be answered before forward progress could be made, FOQ ARC members were directed by the Chairman to find those answers and provide the necessary factual backup to support the questioned positions before returning to the flow of the discussions. While it was not always possible to find in-depth scientific answers to the issues that were raised or the questions that needed to be answered, that did not prevent the members of the FOQ ARC from finding whatever was available and sharing that information to support the strongest and most unified possible response to the questions presented to the FOQ ARC in its Charter tasking.

In this light, it is disappointing to find statements in a Dissent Statement such as those below that mischaracterize the deliberations of the FOQ ARC and the manner in which its recommendations, both Majority and Minority, were reached:

"But this trend suggests that pilots from structured flight training programs have ability to communicate and network with graduates of their alma mater, who are familiar with the regional airline interview and training processes, rather than a clear demonstration that they are safer pilots."

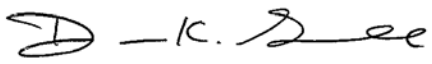
"It is clear from the sub-working group effort that the FOQ ARC Majority was committed to holding the line at 500 actual flight hours. "

"Deciding on the 500 flight hours was a first step of the majority working group, and then they structured the academic program credits to obtain certain AABI structured schools to fall out favorably"

From the RAA's vantage point and perspective on the deliberations and decision-making processes of the FOQ ARC, none of the above is true. The professional aviation and public advocacy group participants on the FOQ ARC worked mightily and openly to come up with the best possible answers to the serious questions that they were charged with answering in the limited time that they were given to develop those answers. In the end, it is less surprising that several differences of opinion/dissents arose from this

intensive effort than it is that there was so much agreement on so many of the recommendations presented in the FOQ ARC Report.

Respectfully Submitted,



Captain Darrin Greubel

RAA FOQ ARC Representative

APPENDIX A—FIRST OFFICER QUALIFICATIONS AVIATION RULEMAKING COMMITTEE MEMBERS AND SUPPORT STAFF

FOQ ARC MEMBERS

Scott Foose, Regional Airline Association (RAA), *Committee Chair*

Greg Kirkland, Federal Aviation Administration (FAA), *Designated Federal Official (DFO)*

Dr. Tim Brady, Aviation Accreditation Board International (AABI)

Steve Brown, National Business Aviation Association (NBAA)

John Cane, National Air Disaster Alliance/Foundation (NADA/F)

Doug Carr, NBAA

J.J. Greenway, Aircraft Owners and Pilots Association (AOPA)

Darrin Greubel, RAA

Kristine Hartzell, Aircraft Owners and Pilots Association

Chuck Hogeman, Air Line Pilots Association, International (ALPA)

Gary Kiteley, AABI

Bill Lange, RAA

Russ Leighton, The Coalition of Airline Pilots Associations (CAPA)

Gary Morrison, Pilot Career Initiative (PCI)

Leja Noe, ALPA

John O'Brien, PCI

Paul Railsback, Air Transport Association of America, Inc. (ATA)

Jeff Skiles, CAPA

David Ward, ATA

Matt Ziemkiewicz, NADA/F

SUPPORT STAFF

Barbara Adams, FAA

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David Binswanger, PAI Consulting

Robert Burke, FAA

Catherine Burnett, FAA

Emily Dziedzic, PAI Consulting

Ryan Gibson, PAI Consulting

Keith Hagy, ALPA

Scott Harper, PAI Consulting

Katie Lewek, PAI Consulting

Robin Meredith, PAI Consulting

Wendy Stanley, PAI Consulting

APPENDIX B—DEFINITIONS

Ab initio—Ab initio means "from the beginning." In the United States, the term refers to the training of professional pilots who have little or no flight experience upon entry into a flight training program. The training of a professional pilot usually includes earning the private pilot, instrument pilot, and the commercial pilot certificates and ratings. Ab initio training may be conducted at a college or university, fixed-base operator, pilot training academy, or the military.

In Europe, ab initio training is conducted under the authority of the European Aviation Safety Agency, for pilots destined to the air carrier pilot position. It is constructed as an integrated course where the student gets a commercial pilot's license, instrument rating, multiengine rating, multicrew cooperation training and the passage of all theoretical tests for the European Aviation Safety Agency airline transport pilot's license before completing the course. The ab initio courses are intended for selected full−time students.

The multicrew pilot license as defined by the International Civil Aviation Organization is an approved ab initio method for pilot entry into air carrier first officer service. This method may be considered by the Administrator.

Accreditation—In the United States, accreditation is a system for recognizing educational programs that meet a defined set of standards. Accreditation is voluntary and is granted by private organizations.

There are two types of accreditation sought by most institutions of higher education: regional accreditation and specialized accreditation. Regional accreditation accredits entire institutions. There are six regional accreditation associations in geographic regions around the country. A university in California, for example, would seek accreditation from the Western Association of Schools and Colleges.

Specialized accrediting accredits specific programs within institutions, provided that institution has received regional accreditation. For example, aviation programs are accredited by the Aviation Accreditation Board International (AABI), business programs are accredited by the Association to Advance Collegiate Schools of Business, and engineering programs are accredited by the Accreditation Board for Engineering Technology. The process by which an institution gains specialized accreditation involves: (1) applying to the appropriate accrediting agency for the program accreditation is being sought; (2) conducting and submitting a self-assessment of the program; (3) submitting to visitation by a team of peers; and (4) receiving final judgment on the accreditation application by the accrediting association's board of directors. The process takes 2 to 3 years and is repeated periodically. For example, the AABI accreditation cycle is 5 years.

Regional and specialized accrediting agencies in the United States are recognized by the Council on Higher Education Accreditation. It has a 2-year process to determine eligibility and evaluate the procedures and processes of each accrediting agency.

There are other types of agencies that accredit non-university institutions of learning, such as vocational schools, training institutes, career schools, and training academies. These accrediting agencies accredit entire institutions rather than specific programs. The Accrediting Commission of Career Schools and Colleges is typical of these.

Academic Training—Academic training refers to classroom instruction, flight-training device and/or simulator training, and flight instruction for which credits may be allowed by H.R. 5900. This definition also includes specific credit for those flight experiences the FOQ ARC has determined to be of the highest quality and complexity and that provide the greatest value in a pilot's preparation for part 121 operations (see tables 1 and 2 of this report for more information about these flight experiences).

Advanced Jet Training (AJT)—An advanced jet training course is designed to give instruction in air carrier flightcrew operations in a multiengine aircraft, emphasizing the transition of the professionally qualified pilot to a highly skilled member of an air carrier flight management team. Course topics include crew resource management, flightcrew training techniques, high speed and high altitude programming of automatic flight control systems, transport aircraft flight techniques, turbojet operations in all flight regimes and in difficult operating conditions, and use of advanced avionics. AJT courses should be approved by the FAA to ensure a structured quality training experience.

Pilots who attend an AJT course need to possess a minimum of a commercial pilot certificate with multiengine and instrument ratings. AJT course graduates may or may not receive a type rating for the aircraft type used in their training, depending on the program and the simulator or training device used by that program. An AJT course must employ a level 5 or greater flight training device for students to receive the aeronautical experience credit offered in table 1.

Aeronautical Experience—Aeronautical experience is the combination of flight time and time spent in a flight simulator or flight-training device to meet the appropriate training and flight time requirements for an airman certificate, rating, flight review, or recency of flight experience requirement.

Aeronautical Experience Credit—Credit earned through the successful completion of approved academic training courses and certain categories of flight experience that can be applied toward the total flight hours required for certification as a part 121 first officer. Section 217 of H.R. 5900 provides authority for the Administrator to approve such credits based on a determination that "allowing a pilot to take specific academic training courses will enhance safety more than requiring the pilot to fully comply with the flight hours requirement."

ATP SIC Certificate—The task of the FOQ ARC was to recommend to the FAA the minimum qualification level for an individual to serve as an SIC pilot in part 121 operations. In reviewing current training, qualification, and certification regulations, the FOQ ARC recognized a new license, rating, endorsement, or restriction would have to be established to distinguish between the current licenses, ratings, and endorsements and the result of the new SIC minimum qualification level. The FOQ ARC did not feel comfortable in identifying which method (license, rating, endorsement, or restriction) would be most appropriate and

decided to refer to this new license, rating, endorsement, or restriction as an ATP SIC certificate as a placeholder. It is a certification that entitles the pilot to act as an SIC in part 121 operations.

First Officer Gap Program—The First Officer Gap Program is a set of academic modules designed to impart to commercial pilots the knowledge and skills required to become a part 121 first officer. Each candidate for the first officer qualification must complete all of the modules and successfully complete an FAA-administered FOQ written exam.

Flight Academy—A flight training organization that provides the training and education necessary to obtain private and commercial pilot certificates with airplane single-engine land, airplane multiengine land, and instrument ratings, as well as flight instructor certificates with airplane single- and multiengine land ratings and instrument ratings. While training is normally accomplished under part 141 or part 142, it may also be accomplished under part 61. In all cases, lessons at a flight academy are conducted under a syllabus and the conduct of training is monitored and continuously evaluated by the organization. Students at a flight academy are completely immersed in a full-time program. Training accomplished within a flight academy is considered structured training.

Flight Time—Flight time refers to time logged in an aircraft in accordance with 14 CFR part 1. Any reference to flight time in this document means "flight hours" as described in H.R. 5900.

Flight Training Device—At the time this document was created (September 10, 2010), a flight training device means a replica of aircraft instruments, equipment, panels, and controls in an open flight deck area or an enclosed aircraft cockpit replica. It includes the equipment and computer programs necessary to represent aircraft (or a set of aircraft) operations in ground and flight conditions having the full range of capabilities of the systems installed in the device as described in 14 CFR part 60 and the qualification performance standard for a specific flight training device qualification level.

Nonstructured Training—Nonstructured training is flight training, typically at a fixed-base operator or by an independent instructor, that is led by an instructor and proceeds at the student's pace. It may not involve supplemental background academic courses, such those as found in colleges, universities, and flight academies. It also may not follow a set curriculum or structure.

Structured Training—Structured training is composed of courses designed to integrate classroom, self-study, practical/laboratory, flight training devices or simulators, and flight training experiences to optimize the pilot's acquisition of the patterns, knowledge, skills, attitudes, and competencies needed to meet the standards required for FAA and industry certificates, ratings, and endorsements.

Transfer of Training—The concept of transfer of training is derived from learning theory. Researchers have shown that learning and skill acquisition can be transferred from one setting to another similar setting, such as from an aircraft simulation device to the actual aircraft (Gerathewohl, Mohler, & Siegel, 1969). Positive transfer means the skill learned in the simulation device transfers to the aircraft. Negative transfer means the skill did not transfer from the simulation device and the pilot must then acquire the correct skill in the actual aircraft.

APPENDIX C—FOQ ARC TASKING

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Effective Date: July 16, 2010

SUBJ: First Officer Qualifications Aviation Rulemaking Committee

1. PURPOSE. This document establishes the First Officer Qualifications 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. On February 8, 2010, the Federal Aviation Administration (FAA) issued the New Pilot Certification Requirements for Air Carrier Operations Advanced Notice of Proposed Rulemaking (75 FR 6164, Docket No. FAA-2010-0100; Notice No. 10-02). This ANPRM requested public comment on possible changes to regulations relating to certifying pilots conducting domestic, flag, and supplemental operations. The purpose of this ANPRM was to gather information on whether current eligibility, training, and qualification requirements for commercial pilot certification are adequate for engaging in such operations. The ANPRM asked questions concerning First Officer certification level, additional training and experience needed to perform as a First Officer, if specific ground training can substitute for flight experience, and the need for additional carrier specific training. As of April 29, 2010, we received 8,227 comments from 1,299 commenters.

b. To carry out the FAA's safety mandate, the FAA is chartering an ARC that will develop recommendations regarding rulemaking on flight experience and training requirements prior to operating as a First Officer in a Part 121 air carrier operation.

3. OBJECTIVES AND SCOPE OF THE COMMITTEE. The First Officer Qualifications ARC will provide a forum for the U.S. aviation community to discuss flight experience and training requirements to fly as a First Officer in a part 121 air carrier operation. The ARC will also evaluate the comments received in response to the ANPRM. Specifically, the ARC should consider and address:

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

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

c. Can academic training substitute for hours of experience? If so, what subjects and how much flight experience?

d. Should there be an air carrier endorsement on a commercial pilot certificate? If so, what kind of flight and ground training should be required?

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

Within ninety (90) days, the ARC will develop recommendations and submit them to the Associate Administrator for Aviation Safety for rulemaking consideration.

4. COMMITTEE PROCEDURES.

a. The committee provides advice and recommendations to the Associate Administrator for Aviation Safety. The committee acts solely in an advisory capacity.
b. The committee will discuss and present information, guidance, and recommendations that the members of the committee consider relevant in addressing the objectives.

5. ORGANIZATION, MEMBERSHIP, AND ADMINISTRATION.

a. The FAA will establish a committee representing the various parts of the industry and Government.

i. The ARC will consist of no more than 15 individuals.

ii. The FAA will invite selected organizations and individuals to participate as a member in the ARC. The ARC will include representatives from the aviation community, including pilot associations, universities, as well as a representative from family members of victims of aviation accidents.

iii. 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.

iv. Active participation and commitment by members will be essential for achieving the committee objectives and for continued membership on the ARC.

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

(1) Determine, in coordination with the other members of the committee, when a meeting is required.

(2) Arrange notification to all committee members of the time and place for each meeting.

(3) Draft an agenda for each meeting and conduct the meeting.

e. A Record of Discussions of committee meetings will be kept.
f. Although not required, committee meeting quorum is desirable.

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

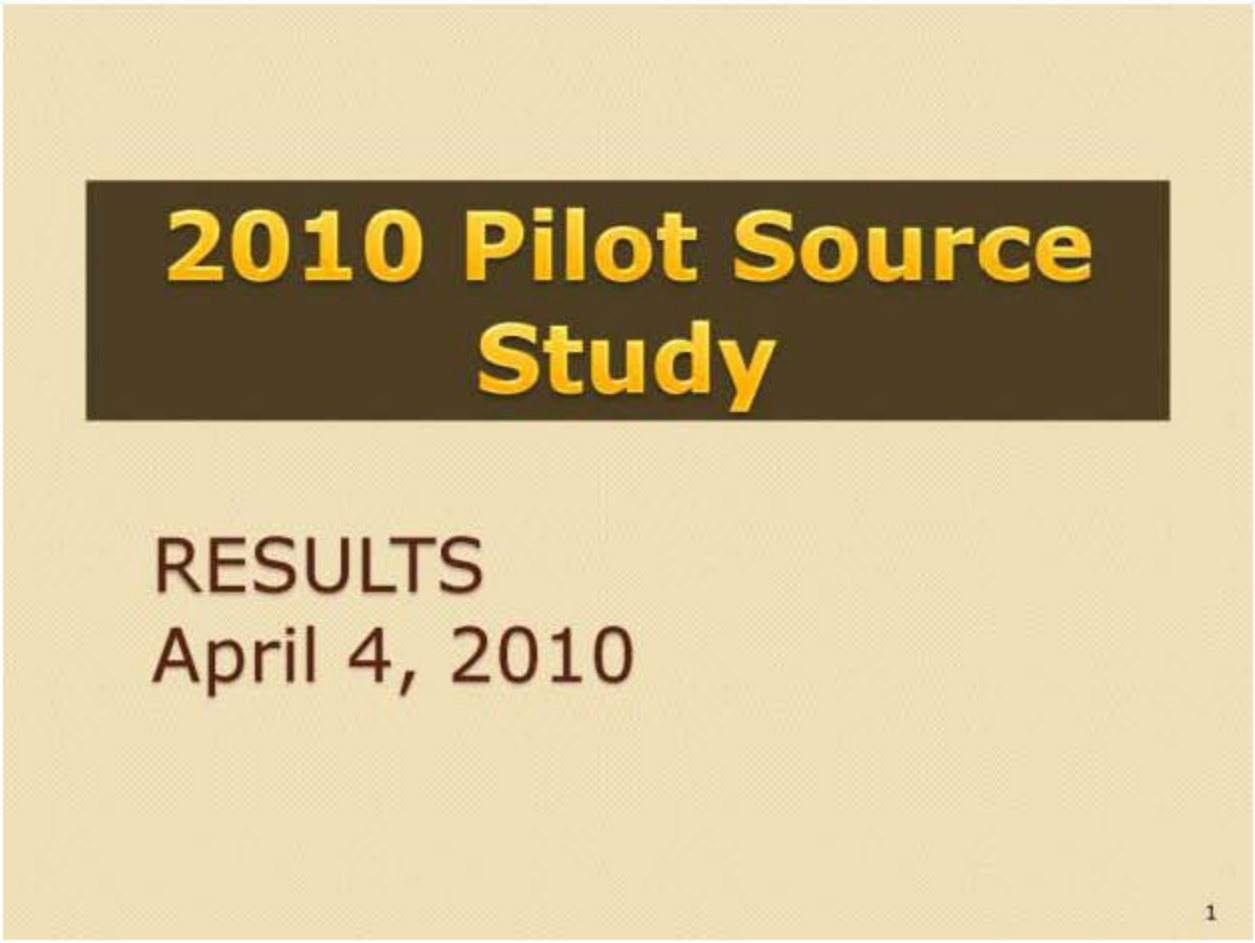
7. AVAILABILITY OF RECORDS. Under the Freedom of Information Act, 5 U.S.C. § 522, records, reports, agendas, working papers, and other documents that are made available to or prepared for or by the committee will be available for public inspection and copying at the FAA Flight Standards Service, Air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

8. PUBLIC INTEREST. Forming the First Officer Qualifications ARC is determined to be in the public interest to fulfill the performance of duties imposed on FAA by law.

9. EFFECTIVE DATE AND DURATION. This committee is effective upon issuance. The committee will remain in existence 90 days from July 19, 2010 unless sooner terminated or extended by the Administrator.

J. Randolph Babbitt
Administrator

APPENDIX D—PILOT SOURCE STUDY



2010 Pilot Source Study

CHARTER

- COMMISSIONED: February 20, 2010 at Auburn, AL in a meeting/conference call among a consortium of educators, regional airlines, and interested parties to discuss a response to the Advance Notice of Proposed Rulemaking (ANPRM), entered into the Federal Register on February 8, 2010.
- RESEARCH QUESTION: What were the characteristics of pilots who were hired by the US regional airlines between 2005 and 2009, and how did these characteristics relate to their success in regional airline training?
- ANPRM QUESTION 2A: *Are aviation/pilot graduates from accredited aviation university degree programs likely to have a more solid academic knowledge base than other pilots hired for air carrier operations? Why or why not?* **The 2010 Pilot Source Study provides an answer to this question.**


2010 Pilot Source Study
PARTICIPANTS
Mesa Air Group
ASU Arizona State University
Alaska Airlines Horizon Air
UND The University of North Dakota
Cape Air
North Shore Community College
ASA atlantic southeast
Auburn University
TSA Trans States Airlines
American Eagle
Embry-Riddle Aeronautical University
Purdue University
University Aviation Association
AAB International
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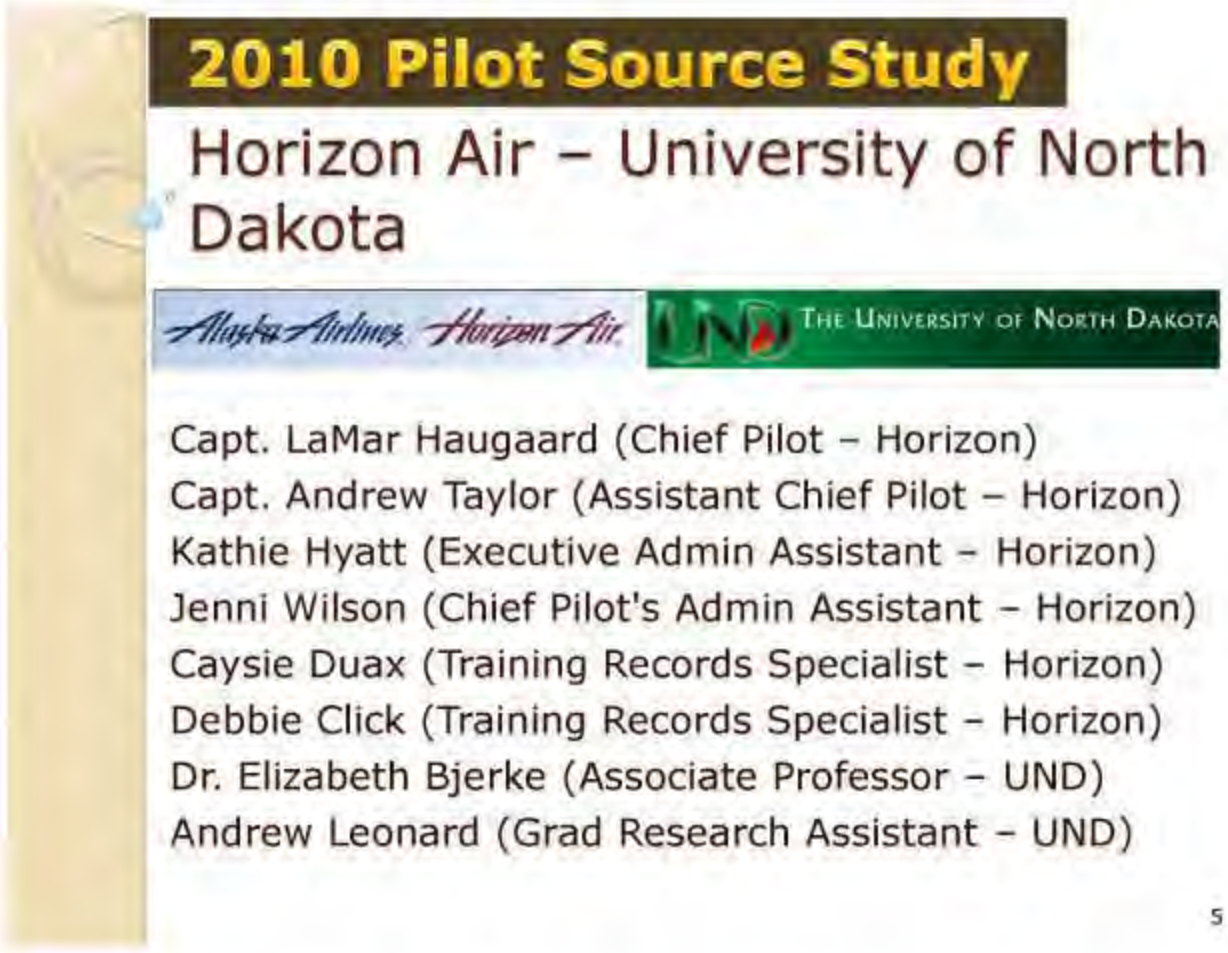
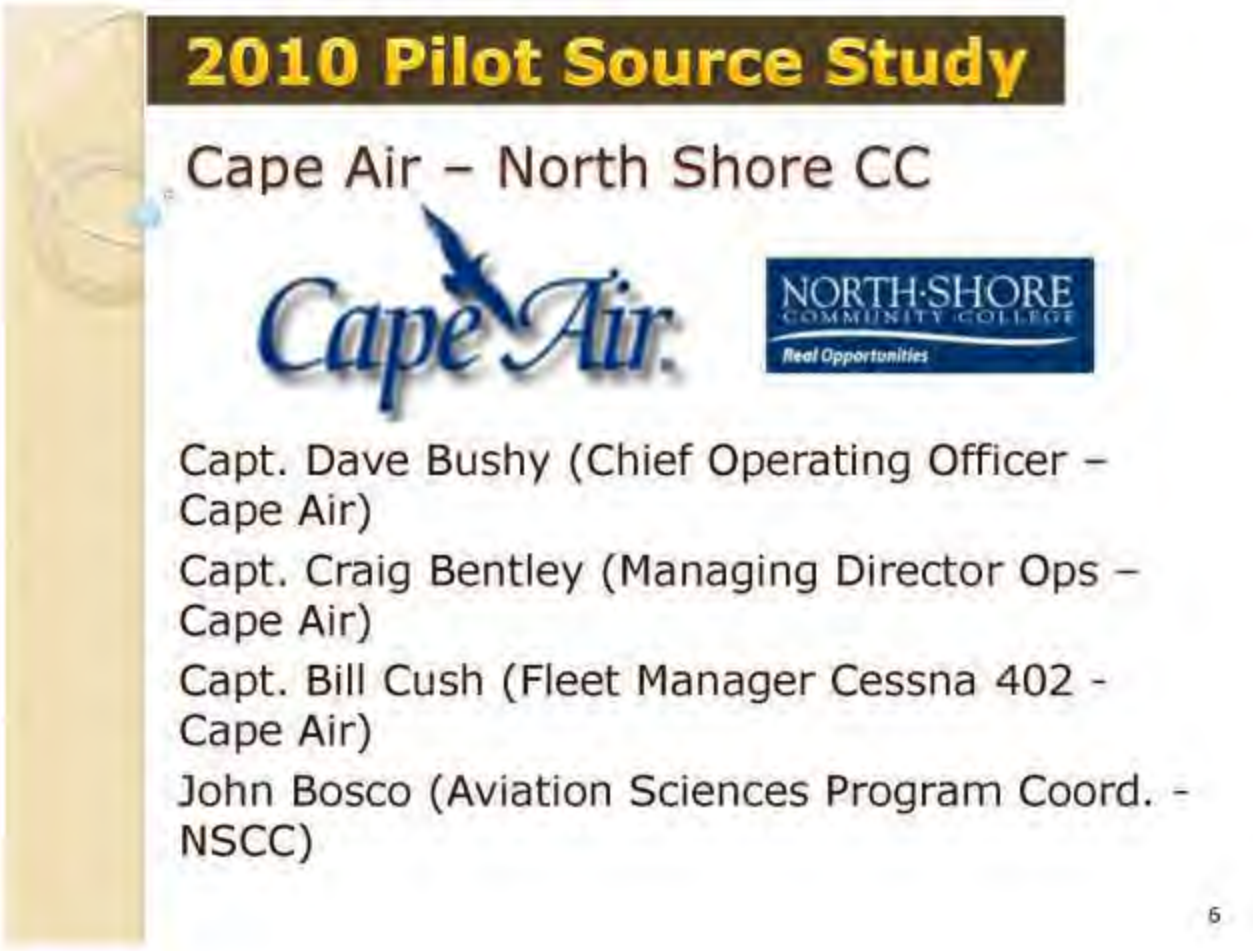
2010 Pilot Source Study
Mesa Airlines – Arizona State University
Mesa Air Group
ASU Arizona State University
Captain Michael Ferverda – Senior VP of Operations – Mesa)
Robert Gibbs (Training Records Supervisor – Mesa)
Dr. William McCurry (Professor, Aviation Programs Coordinator – ASU)
Dr. Mary Niemczyk (Assistant Professor – ASU)
Trevor J. Smith (Graduate Research Assistant – ASU)
4


2010 Pilot Source Study
Horizon Air – University of North Dakota
Alaska Airlines Horizon Air
UND THE UNIVERSITY OF NORTH DAKOTA
Capt. LaMar Haugaard (Chief Pilot – Horizon)
Capt. Andrew Taylor (Assistant Chief Pilot – Horizon)
Kathie Hyatt (Executive Admin Assistant – Horizon)
Jenni Wilson (Chief Pilot's Admin Assistant – Horizon)
Caysie Duax (Training Records Specialist – Horizon)
Debbie Click (Training Records Specialist – Horizon)
Dr. Elizabeth Bjerke (Associate Professor – UND)
Andrew Leonard (Grad Research Assistant – UND)
5


2010 Pilot Source Study
Cape Air – North Shore CC
Cape Air
NORTH·SHORE
COMMUNITY COLLEGE
Real Opportunities
Capt. Dave Bushy (Chief Operating Officer – Cape Air)
Capt. Craig Bentley (Managing Director Ops – Cape Air)
Capt. Bill Cush (Fleet Manager Cessna 402 - Cape Air)
John Bosco (Aviation Sciences Program Coord. - NSCC)
5

2010 Pilot Source Study

Atlantic Southeast Airlines – Auburn University

Capt. Charles Tutt (VP-Flight Operations – ASA)

Capt. Darrin Greubel (Manager, Flight Ops & Standards – ASA)

FO Grayson Cash (Flight Operations – ASA)

Dr. Ray Hamilton (Associate Professor – Auburn)

Dale Watson (Director of Aviation Education – Auburn)

7

2010 Pilot Source Study

Trans States Airlines – Southern Illinois University

David Hayes , VP & General Counsel (Trans States)

Craig M. Tompkins, VP Safety/Regulatory Compliance (Trans States)

Caren Blake, Supervisor, Crew Records (Trans States)

Jennifer Ray (Trans States)

Dr. David A. NewMyer (Professor – SIU)

John K. Voges (Asst. Professor, Chief Instructor – SIU)

Michael F. Robertson (Assistant Professor – SIU)

Dora Asingo (Grad Research Assistant – SIU)

Joseph Carlini (Grad Research Assistant – SIU)

8

2010 Pilot Source Study

American Eagle – Purdue University & Embry-Riddle Aeronautical University

EMBRY-RIDDLE Aeronautical University

American Eagle

PURDUE UNIVERSITY

Capt. Jim Winkley (VP of Operations – AA)

Capt. Allen Hill (Director of Flight Training – AA)

Dr. Tom Carney (Professor of Aviation Technology - Purdue)

Dr. Guy M. Smith (Associate Professor – ERAU)

Professor Chris Meigs (Assistant Professor – ERAU)

Stephanie Henderson (Graduate Research Assistant ERAU)

Westley Thompson (Graduate Research Assistant ERAU)

9

2010 Pilot Source Study

EMBRY-RIDDLE Aeronautical University

Dr. Tim Brady (Dean – College of Aviation)
Dr. Dan Macchiarella (Chair – Aeronautical Science Department)
Dr. Guy M. Smith (Principal Investigator – 2010 Pilot Source Study)
Professor Chris Meigs (Principal Investigator – Pilot Yield/Training Study)
Professor Antonio Cortés (Principal Investigator – 2008 Pilot Yield Study)

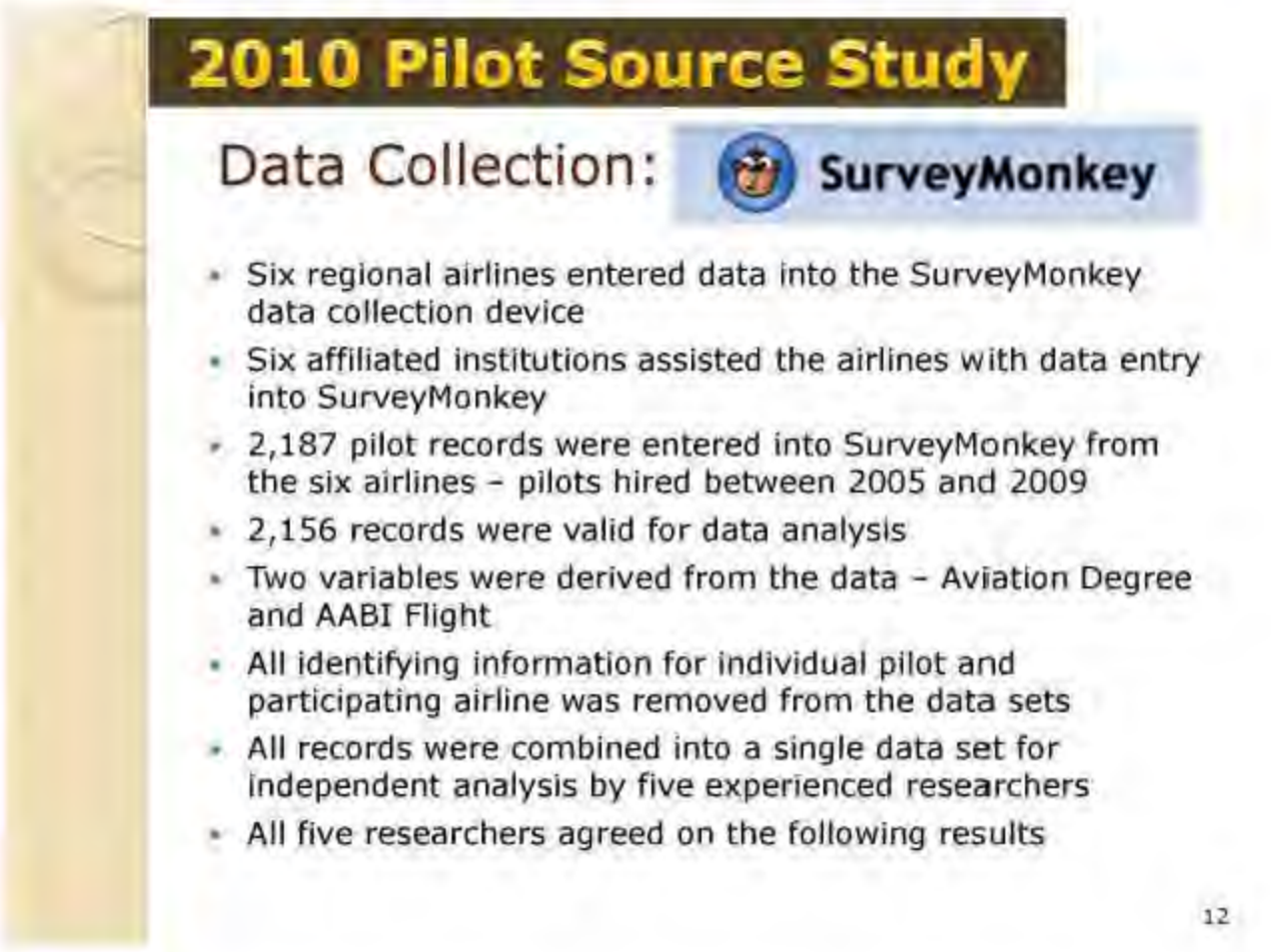
AABInternational

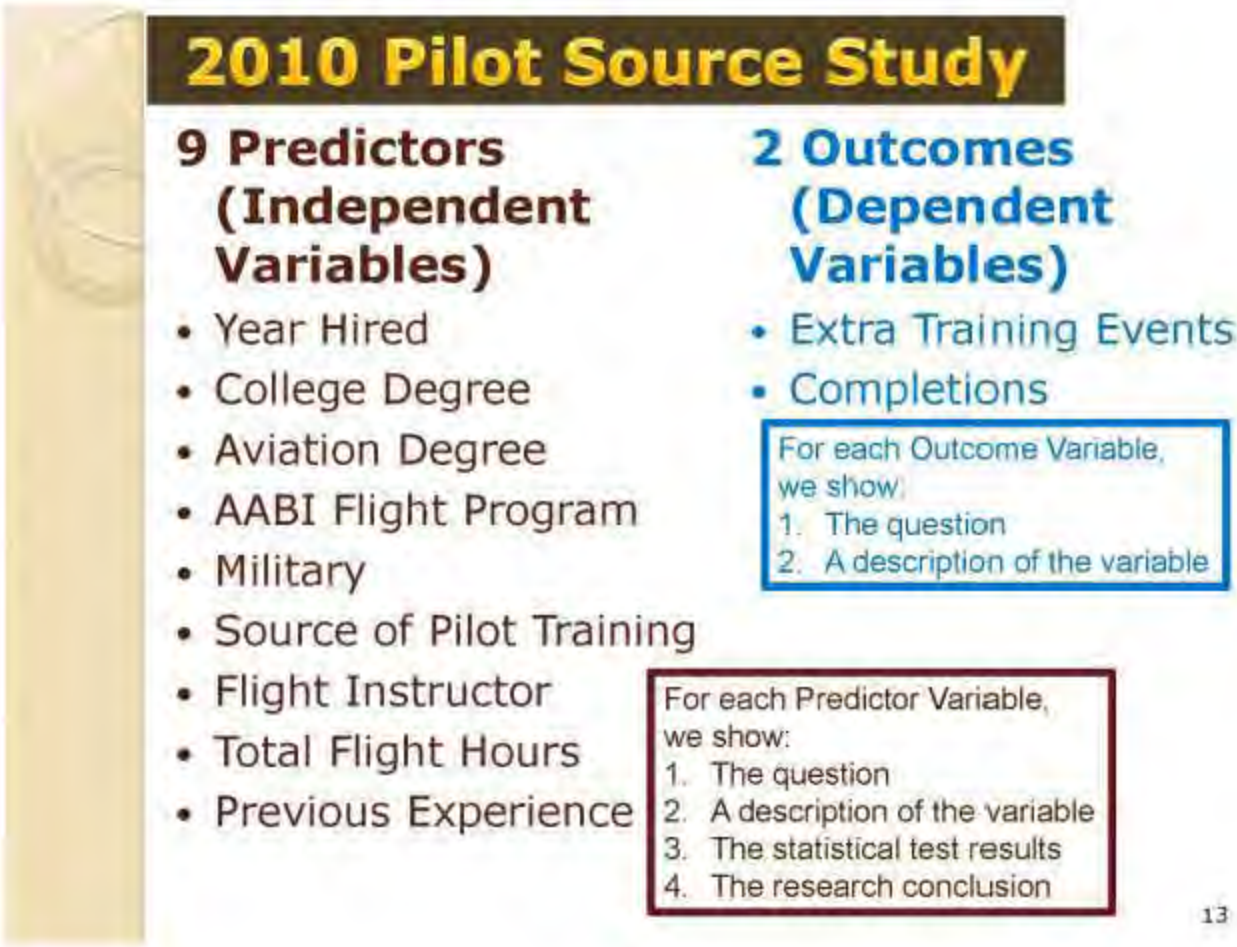
University Aviation Association

Peter Morton (President, Peter M. Morton Consulting Inc.)
Dr. Tom Carney (President, AABI)
Gary W. Kiteley (Executive Director, AABI)
Ceci Shirley (Accreditation & Meeting Services Manager, AABI)
Vic Bayens (Administrative Assistant, AABI)
Dr. David NewMyer (President, UAA)
Carolyn Williamson (Executive Director, UAA)

10


2010 Pilot Source Study
Research Team
Arizona State University – Dr. Mary Niemczyk (Assistant Professor, Air Transportation Management)
Auburn University – Dr. Raymond A. Hamilton II (Associate Professor of Aviation Policy)
Embry-Riddle Aeronautical University – Dr. Guy M. Smith (Associate Professor of Aeronautical Science)
Southern Illinois University – Dr. David A. NewMyer (Professor of Aviation Management & Flight)
University of North Dakota – Dr. Elizabeth Bjerke (Associate Professor of Aviation)
11

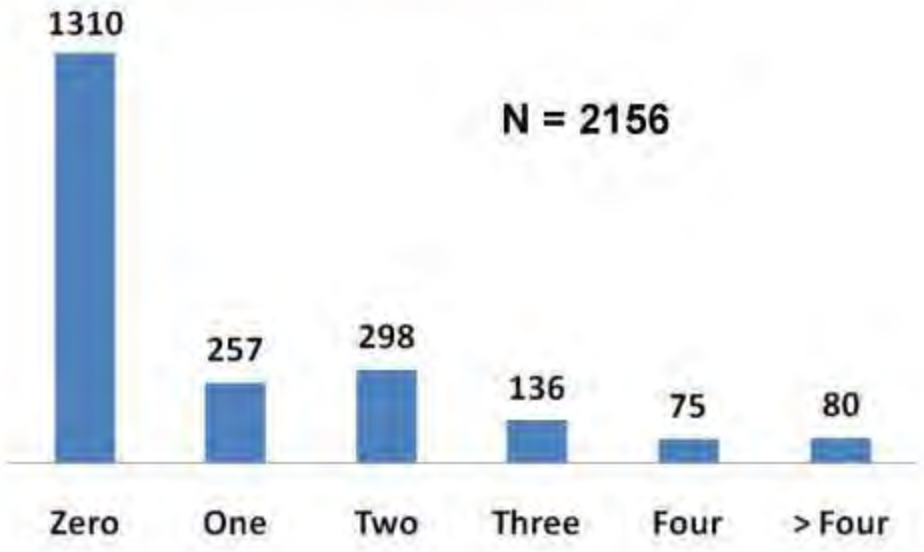

2010 Pilot Source Study
Data Collection:
SurveyMonkey
Six regional airlines entered data into the SurveyMonkey data collection device
Six affiliated institutions assisted the airlines with data entry into SurveyMonkey
2,187 pilot records were entered into SurveyMonkey from the six airlines – pilots hired between 2005 and 2009
2,156 records were valid for data analysis
Two variables were derived from the data – Aviation Degree and AABI Flight
All identifying information for individual pilot and participating airline was removed from the data sets
All records were combined into a single data set for independent analysis by five experienced researchers
All five researchers agreed on the following results
12


2010 Pilot Source Study
9 Predictors (Independent Variables)
• Year Hired
• College Degree
• Aviation Degree
• AABI Flight Program
• Military
• Source of Pilot Training
• Flight Instructor
• Total Flight Hours
• Previous Experience
2 Outcomes (Dependent Variables)
• Extra Training Events
• Completions
For each Outcome Variable, we show:
1. The question
2. A description of the variable
For each Predictor Variable, we show:
1. The question
2. A description of the variable
3. The statistical test results
4. The research conclusion
13

2010 Pilot Source Study

OUTCOME #1: EXTRA TRAINING EVENTS:

How many repeat training events at your airline did this pilot require BEFORE IOE?



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2010 Pilot Source Study

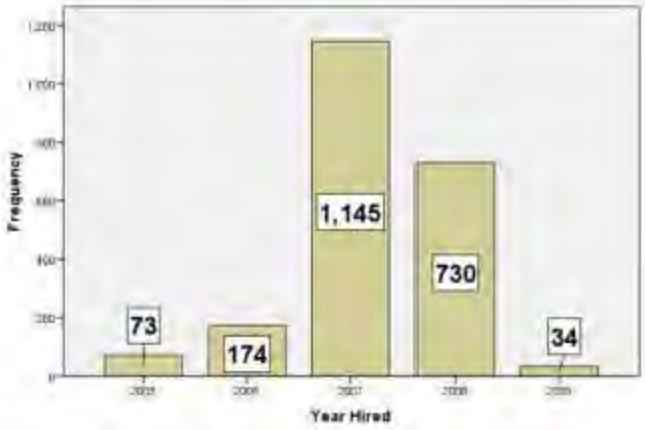
OUTCOME #2: COMPLETIONS:

Did this pilot complete the training with your airline-including IOE? (N = 2156)

15

2010 Pilot Source Study

YEAR HIRED:
In what year was this pilot hired?
2005-2009



Did Not Analyze
WHY? Incomplete data sets for three airlines

16

2010 Pilot Source Study

INSTRUCTOR:

Was this pilot an FAA certificated flight instructor? (CFI, CFII, MEI, etc.)
N = 2156

Predictor Variable	Outcome Variable	Statistical Test	Test Statistic	Significant?
Flight Instructor	Extra Training Events	*t*-Test	$t = 3.987^{***}$	Yes $^{***}p < .001$
Flight Instructor	Completions	Chi-Square	$\chi^2 = 9.884^{**}$	Yes $^{**}p < .01$

- Pilots who were flight instructors had **fewer extra training events** than pilots who were not flight instructors.
- Pilots who were flight instructors had comparatively **fewer incompletes**

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2010 Pilot Source Study

AABI Flight

Derived Variable (Only those programs in the data set that meet the AABI Program Accreditation Criteria for Flight Education)

Predictor Variable	Outcome Variable	Statistical Test	Test Statistic	Significant?
AABI Flight Programs	Extra Training Events	*t*-Test	$t = 6.09^{***}$	Yes ***$p < .001$
AABI Flight Programs	Completions	Chi-Square	$\chi^2 = 16.43^{***}$	Yes ***$p < .001$

- AABI flight programs produced **fewer extra training events**
- AABI flight programs produced comparatively **fewer incompletes**

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2010 Pilot Source Study

PILOT TRAINING:

Where did this pilot get Advanced Pilot Training (beyond Private Pilot)? (N = 2156)

Predictor Variable	Outcome Variable	Statistical Test	Test Statistic	Significant?
Source of Pilot Training	Extra Training Events	ANOVA	$F = 10.39^{***}$	Yes ***$p < .001$
Source of Pilot Training	Completions	Chi-Square	$\chi^2 = 30.16^{***}$	Yes ***$p < .001$

- Pilots trained in college had **fewer extra training events** than non-college pilots
- Pilots trained in college had comparatively **fewer incompletes**

19

2010 Pilot Source Study

Aviation Degree:

Derived Variable (any degree that contained words like aviation, flight, airport, pilot, etc. - these are **not all flight degrees**)

Predictor Variable	Outcome Variable	Statistical Test	Test Statistic	Significant?
Aviation Degrees	Extra Training Events	*t*-Test	$t = 1.71^{*}$	Yes $^{*}p < .05$
Aviation Degrees	Completions	Chi-Square	$\chi^2 = 8.13^{**}$	Yes $^{**}p < .01$

- Aviation Degrees produced **fewer Extra Training Events**
- Aviation degrees produced comparatively **fewer incompletes.**

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2010 Pilot Source Study

TOTAL HOURS:

How many Total Hours did the pilot have at the beginning of training with your airline? (N = 2150)

Predictor Variable	Outcome Variable	Statistical Test	Test Statistic	Significant?
Total Flight Hours	Extra Training Events	ANOVA	$F = 3.31^{*}$	Yes $^{*}p < .05$
Total Flight Hours	Completions	Chi-Square	$\chi^2 = 17.24^{**}$	Yes $^{**}p < .01$

- Pilots with **501 to 1000 hours** had the **fewest extra training events.**
- Pilots with **501 to 1000 hours** had comparatively **fewer incompletes**.

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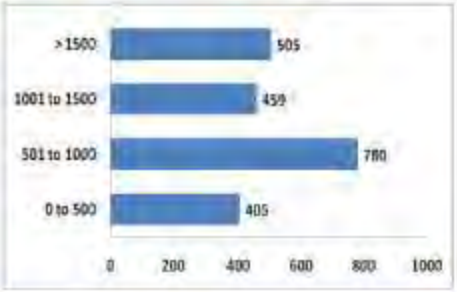
2010 Pilot Source Study

TOTAL HOURS: (Continued)



- Effect of pre-employment total flight hours, in order of performance:
- Group 1: **501 to 1,000 hours**
- Group 2: 178 to 500 hours
- Group 3: 1,001 to 1,500 hours
- Group 4: > 1,500 hours

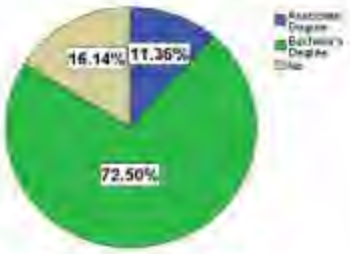
Note: The most significant difference was between Group 1 and Group 4 for both Extra Training Events and Completions.

22

2010 Pilot Source Study

COLLEGE DEGREE:

Did this pilot have a college degree (any discipline) at the beginning of training with your airline?



Predictor Variable	Outcome Variable	Statistical Test	Test Statistic	Significant?
College Degree	Extra Training Events	ANOVA	$F = 1.16$	No
College Degree	Completions	Chi-Square	$\chi^2 = 2.408$	No

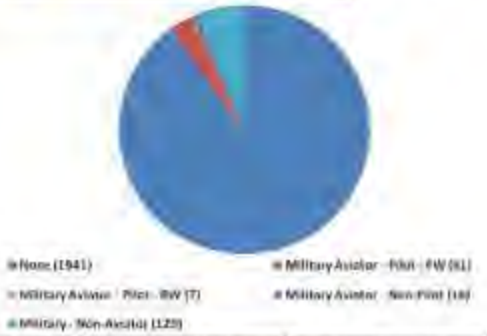
- Having a college degree **did not produce a difference** in extra training events.
- There was **no relationship** between the number of incompletes and whether pilots had a college degree

23

2010 Pilot Source Study

MILITARY: What prior military experience did this pilot have? (N = 2156)

Note: The small # of military pilots (68) suggests that most military pilots go directly to the major airlines



Predictor Variable	Outcome Variable	Statistical Test	Test Statistic	Significant?
Military	Extra Training Events	*t*-Test	$t = 0.42$	No
Military	Completions	Chi-Square	$\chi^2 = 0.84$	No

- Prior military experience had **no effect** on the number of extra training events
- There was **no relationship** between the number of incompletes and prior military experience.

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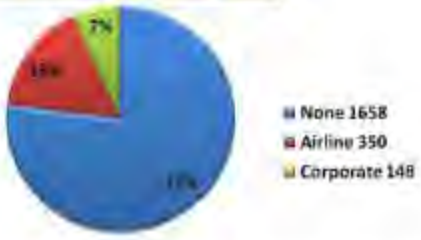
2010 Pilot Source Study

PREVIOUS EXPERIENCE:

What previous corporate or airline pilot experience did this pilot have? (N = 2156)



Predictor Variable	Outcome Variable	Statistical Test	Test Statistic	Significant?
Previous Experience	Extra Training Events	ANOVA	$F = 2.51$	No
Previous Experience	Completions	Chi-Square	$\chi^2 = 4.76$	No

- Pilots with previous airline or corporate experience had the **same number of extra training events** as pilots with no previous experience.
- Pilots with previous airline or corporate experience had the **same proportion of incompletes** as pilots with no previous experience.

2010 Pilot Source Study –RESULTS (v2)

INDEPENDENT (Predictor) VARIABLE	DEPENDENT (Outcome) VARIABLE	Statistical Tests	Test Statistic	Statistically Significant?	Conclusions
FLIGHT INSTRUCTOR (Yes, No) N = 2156	EXTRA TRAINING EVENTS (Range 0-12)	*t*-Test	$t(974) = 3.497$, $p < .001$	YES ***	Pilots who were flight instructors had fewer extra training events than pilots who were not flight instructors.
FLIGHT INSTRUCTOR (Yes, No) N = 2156	COMPLETION (Yes, No)	Chi-Square	$\chi^2(1,1) = 9.889$, $p = .01$	YES **	Pilots who were flight instructors had comparatively fewer incompletes.
AABI FLIGHT PROGRAM (Yes, No, or No Degree) N = 2156	EXTRA TRAINING EVENTS (Range 0-12)	*t*-Test	$t(1545) = 6.39$, $p < .001$	YES ***	AABI flight programs produced fewer extra training events.
AABI FLIGHT PROGRAM (Yes, No, or No Degree) N = 2156	COMPLETION (Yes, No)	Chi-Square	$\chi^2(1,1) = 19.42$, $p < .001$	YES ***	AABI flight programs produced comparatively fewer incompletes.
SOURCE OF PILOT TRAINING (Military, College Degree, Non-College - Part 141 or Part 142, Non-College - Part 61) N = 2156	EXTRA TRAINING EVENTS (Range 0-12)	ANOVA	$F(3,2152) = 10.36$, $p < .001$	YES ***	Pilots trained in college had fewer extra training events than non-college pilots.
SOURCE OF PILOT TRAINING (Military, College Degree, Non-College - Part 141 or Part 142, Non-College - Part 61) N = 2156	COMPLETION (Yes, No)	Chi-Square	$\chi^2(3,1) = 20.16$, $p < .001$	YES ***	Pilots trained in college had comparatively fewer incompletes.
AVIATION DEGREE (Yes, No, or No Degree) N = 2156	EXTRA TRAINING EVENTS (Range 0-12)	*t*-Test	$t(2047) = -2.71$, $p < .05$	YES *	Aviation Degrees produced fewer Extra Training Events.
AVIATION DEGREE (Yes, No, or No Degree) N = 2156	COMPLETION (Yes, No)	Chi-Square	$\chi^2(1,1) = 8.13$, $p < .01$	YES **	Aviation degrees produced comparatively fewer incompletes.
TOTAL FLIGHT HOURS (0-500 Hours, 501-1000 Hours, 1001-1500 Hours, >1500 Hours) N = 2150	EXTRA TRAINING EVENTS (Range 0-12)	ANOVA	$F(3,2146) = 3.31$, $p = .05$	YES *	Pilots with 501 to 1000 hours had the fewest extra training events.
TOTAL FLIGHT HOURS (0-500 Hours, 501-1000 Hours, 1001-1500 Hours, >1500 Hours) N = 2150	COMPLETION (Yes, No)	Chi-Square	$\chi^2(3,1) = 17.24$, $p < .01$	YES **	Pilots with 501 to 1000 hours had comparatively fewer incompletes.

1

2010 Pilot Source Study –RESULTS (v2)

INDEPENDENT (Predictor) VARIABLE	DEPENDENT (Outcome) VARIABLE	Statistical Tests	Test Statistic	Statistically Significant?	Conclusions
COLLEGE DEGREE (Associate, Bachelor's, or None) N = 2156	EXTRA TRAINING EVENTS (Range 0-12)	ANOVA	$F(2,2153) = 1.16$	NO	Having a college degree did not produce a difference in number of extra training events.
COLLEGE DEGREE (Associate, Bachelor's, or None) N = 2156	COMPLETION (Yes, No)	Chi-Square	$\chi^2(2,2) = 2.41$	NO	There was no relationship between the number of incompletes and whether pilots had a college degree.
MILITARY (None, Military Pilot [FW], Military Pilot [RW], Military Aviator [Non-Pilot], Military [Non-Aviator]) N = 2156	EXTRA TRAINING EVENTS (Range 0-12)	*t*-Test	$t(262) = 0.42$	NO	Prior military experience had no effect on extra training events *Note: The small # of military pilots (68) suggests that most military pilots go to directly to the major airlines.*
MILITARY (None, Military Pilot [FW], Military Pilot [RW], Military Aviator [Non-Pilot], Military [Non-Aviator]) N = 2156	COMPLETION (Yes, No)	Chi-Square	$\chi^2(1,1) = 0.84$	NO	There was no relationship between the number of incompletes and prior military experience. *Note: The small # of military pilots (68) suggests that most military pilots go to directly to the major airlines.*
PREVIOUS EXPERIENCE (None, Previous corporate pilot, Previous airline pilot) N = 2156	EXTRA TRAINING EVENTS (Range 0-12)	ANOVA	$F(2,2153) = 2.51$	NO	Pilots with previous airline or corporate experience had the same number of extra training events as pilots with no previous experience.
PREVIOUS EXPERIENCE (None, Previous corporate pilot, Previous airline pilot) N = 2156	COMPLETION (Yes, No)	Chi-Square	$\chi^2(2,1) = 4.76$	NO	Pilots with previous airline or corporate experience had the same proportion of incompletes as pilots with no previous experience.

* = Significant
** = Very Significant
*** = Exceptionally Significant

2

Arizona State University – Dr. Mary Niemczyk (Assistant Professor of Aeronautical Management)
Auburn University – Dr. Raymond A. Hamilton II (Associate Professor of Aviation Policy)
Embry-Riddle Aeronautical University – Dr. Guy M. Smith (Associate Professor of Aeronautical Science)
Southern Illinois University – Dr. David A. Newhyer (Professor of Aviation Management & Flight)
University of North Dakota – Dr. Elizabeth Bjerke (Associate Professor of Aviation)

APPENDIX E—ASA HIRING AND TRAINING DATA

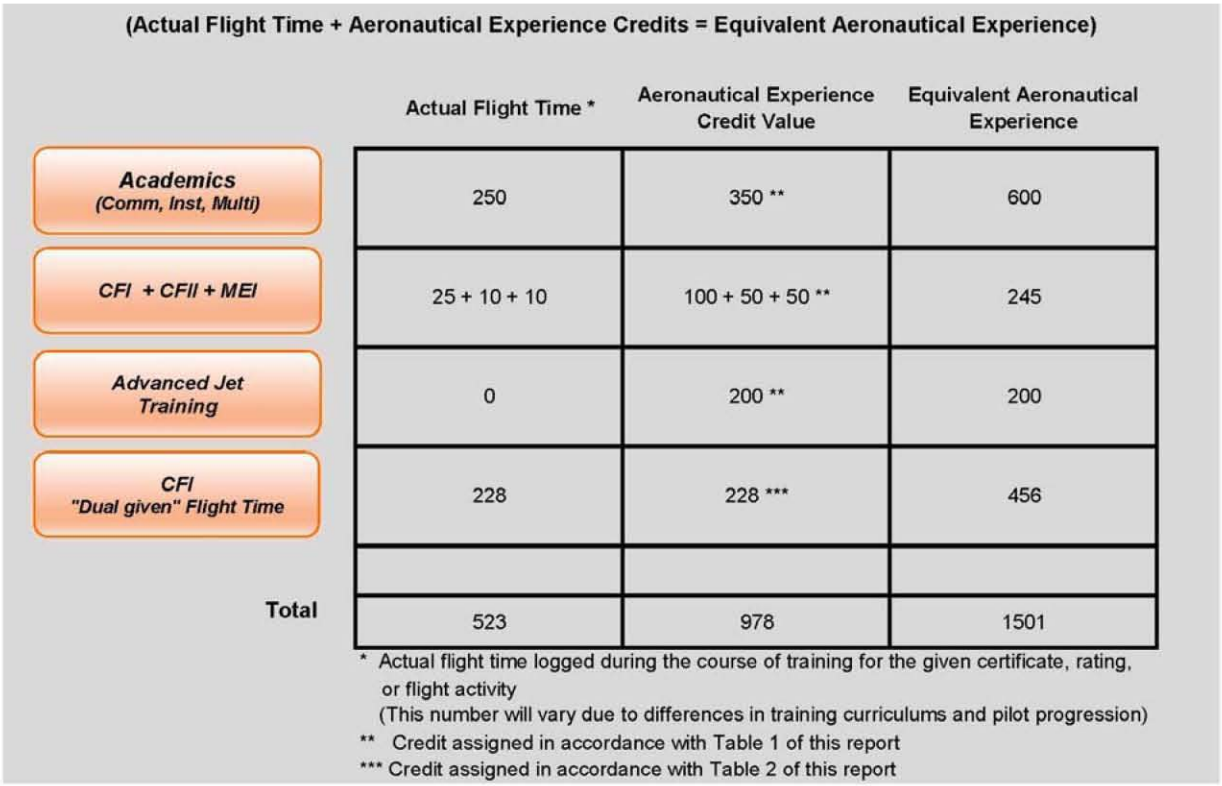
Table 3—ASA Hiring and Training Data

Hiring Analysis 1/1/2007 to 5/5/2008				
	Structured Training		Nonstructured Training	
Interviewed	555		502	
Median hours	625		855	
Rejected by recruiter	48	8.6%	123	24.5%
Rejected by simulator	52	9.4%	125	24.9%
Rejected by human resources	18	3.2%	31	6.2%
Reviewed or no determination	4	0.7%	21	4.2%
Hired into class	417	75.1%	135	26.9%
Median hours	630		910	
Terminated from training	17	4.1%	10	7.4%
Required any extra training	200	48.0%	98	72.6%
Required extra simulators only	96	23.0%	34	25.2%
Required extra IOE only	40	9.6%	13	9.6%
1 extra simulator and <15 IOE	70	16.8%	19	14.1%
2 extra simulators and <15 IOE	44	10.6%	20	14.8%
>2 extra simulators and <15 IOE	25	6.0%	11	8.1%
1 extra simulator and ≥15 IOE	8	1.9%	2	1.5%
2 extra simulators and ≥15 IOE	4	1.0%	0	0.0%
>2 extra simulators and ≥15 IOE	7	1.7%	2	1.5%
1 extra simulator (no extra IOE)	54	12.9%	13	9.6%
2 extra simulators (no extra IOE)	26	6.2%	14	10.4%
>2 extra simulators (no extra IOE)	16	3.8%	7	5.2%
<15 hours extra IOE (no extra simulators)	30	7.2%	10	7.4%
≥15 hours extra IOE (no extra simulators)	10	2.4%	3	2.2%

Additional Data					
Pilots Successful		Pilots Terminated from Training		Pilots Not Hired	
Median Simulator Score	95	Median Simulator Score	91	Median Simulator Score	74
Median GPA	3.20	Median GPA	3.07	Median GPA	3.00
Median Total Time	676.5	Median Total Time	890	Median Total Time	863

APPENDIX F—ATP SIC QUALIFICATION PATHWAYS

Figure 3—4-Year Accredited Aviation Program Example



(Actual Flight Time + Aeronautical Experience Credits = Equivalent Aeronautical Experience)

	Actual Flight Time *	Aeronautical Experience Credit Value	Equivalent Aeronautical Experience
Academics (Comm, Inst, Multi)	250	350 **	600
CFI + CFII + MEI	25 + 10 + 10	100 + 50 + 50 **	245
Advanced Jet Training	0	200 **	200
CFI "Dual given" Flight Time	228	228 ***	456
Total	523	978	1501

* Actual flight time logged during the course of training for the given certificate, rating, or flight activity
(This number will vary due to differences in training curriculums and pilot progression)

** Credit assigned in accordance with Table 1 of this report

*** Credit assigned in accordance with Table 2 of this report

Figure 4—Flight Academy Training Example

(Actual Flight Time + Aeronautical Experience Credits = Equivalent Aeronautical Experience)

	Actual Flight Time *	Aeronautical Experience Credit Value	Equivalent Aeronautical Experience
Flight Academy Training (Comm, Inst, Multi)	250	100 **	350
CFI - CFII - MEI	25 + 10 + 10	100 + 50 + 50 **	245
NO Advanced Jet Training	0	0	0
CFI "Dual given" Flight Time	453	453 ***	906
Total	748	753	1501

* Actual flight time logged during the course of training for the given certificate, rating, or flight activity
(This number will vary due to differences in training curriculums and pilot progression)

** Credit assigned in accordance with Table 1 of this report

*** Credit assigned in accordance with Table 2 of this report

Figure 5—Military Training Example (Rotary)

(Actual Flight Time + Aeronautical Experience Credits = Equivalent Aeronautical Experience)

	Actual Flight Time *	Aeronautical Experience Credit Value	Equivalent Aeronautical Experience
Selection Training and Rated Pilot Qualification	250	500 **	750
Designated Pilot Instructor	45	200 **	245
Mission Flight Time	455	0	455
Transition	50	0	50
Total	800	700	1500

* Actual flight time logged during the course of training for the given certificate, rating, or flight activity
(This number will vary due to differences in training curriculums and pilot progression)
** Credit assigned in accordance with Table 1 of this report
*** Credit assigned in accordance with Table 2 of this report

Figure 6—Military Training Example (Fixed-wing)

(Actual Flight Time + Aeronautical Experience Credits = Equivalent Aeronautical Experience)

	Actual Flight Time *	Aeronautical Experience Credit Value	Equivalent Aeronautical Experience
Selection Training and Rated Pilot Qualification	250	750 **	1000
Designated Pilot Instructor	45	200 **	245
Mission Flight Time	300	0	300
Total	595	950	1545

* Actual flight time logged during the course of training for the given certificate, rating, or flight activity
(This number will vary due to differences in training curriculums and pilot progression)
** Credit assigned in accordance with Table 1 of this report
*** Credit assigned in accordance with Table 2 of this report

Figure 7—Non-structured Training Example

(Actual Flight Time + Aeronautical Experience Credits = Equivalent Aeronautical Experience)

	Actual Flight Time *	Aeronautical Experience Credit Value	Equivalent Aeronautical Experience
Non-structured Training ***(Comm, Inst, Multi)***	250	0	250
NO CFI - CFII - MEI	0	0	0
NO Advanced Jet Training	0	0	0
Part 91	750	0	750
Multiengine Part 135	250	250 ***	500
Total	1250	250	1500

* Actual flight time logged during the course of training for the given certificate, rating, or flight activity
(This number will vary due to differences in training curriculums and pilot progression)
** Credit assigned in accordance with Table 1 of this report
*** Credit assigned in accordance with Table 2 of this report

Figure 7—Non-structured Training Example (Continued)

(Actual Flight Time + Aeronautical Experience Credits = Equivalent Aeronautical Experience)

	Actual Flight Time *	Aeronautical Experience Credit Value	Equivalent Aeronautical Experience
Non-structured Training (Comm, Inst, Multi)	250	0	250
CFI + CFII	25 + 10	100 + 50 **	185
Advanced Jet Training	0	200 **	200
CFI "Dual given" Flight Time	300	300 ***	600
Multiengine Part 135	150	150 ***	300
Total	735	800	1535

* Actual flight time logged during the course of training for the given certificate, rating, or flight activity
(This number will vary due to differences in training curriculums and pilot progression)
** Credit assigned in accordance with Table 1 of this report
*** Credit assigned in accordance with Table 2 of this report

APPENDIX G—EXAMPLE TRAINING OBJECTIVES

These are examples of training objectives that will need to be defined by the Administrator.

EXAMPLE 1

General Meteorology and Principles of Radar

A. Classroom Planned Time: 4:00 Hours (Abbreviated 30 Minutes)

B. Computer Based Training Seat Time: 3:00 Hours

C. Knowledge Objectives:

The pilot candidate will—

1) Accurately interpret aviation routine weather reports.

2) Accurately interpret aerodrome forecast and RAMTAF reports.

3) Describe the air carrier weather packet format and interpret its contents.

4) Identify normal weather patterns common to the air carrier route structure.

5) Identify and describe the various types of airframe icing the aircraft may encounter.

6) Describe the parameters for the possibility of icing conditions to exist.

7) Be able to recognize windshear potential and describe how to avoid it.

8) Use air traffic control, Automatic Terminal Information Service, flight service station, and weather computer to obtain weather information during planning.

9) Analyze a weather radar picture and interpret the presentation.

10) Recognize and describe the various cell shapes.

11) Recognize radar shadows and describe methods to avoid them.

12) Calculate TIP, zero tilt, and describe the “parked position.”

13) Describe the function of the weather radar’s GAIN feature.

14) Describe the purpose of the weather radar’s TARGET mode.

EXAMPLE 2

I. Perform Stall Recovery Procedures

A. Phase of Flight: Flight

B. Applicable Duty Position: PIC and SIC

C. Criticality: Yes

D. Currency: No

E. Training Strategy

1) Qualification

2) Continuing Qualification

F. Supporting Proficiency Objectives

1) Participate in Crew Resource Management (CRM) During Stall Recovery Procedures

2) Perform Stall Recovery Procedures

3) Perform Stall Recovery Non Automated Tasks

G. Validation/Evaluation Strategy

1) Maneuver Validation – Level D Full Flight Simulator

H. Conditions

1) IMC

I. Contingencies

1) Takeoff Configuration Stall

2) 20 Degree Bank Angle

3) Landing Configuration Stall

4) Cruise Configuration Stall

5) Low Altitude

6) High Altitude

J. Task Standards

1) Crew initiates stall recovery smoothly and timely at the first indication of a stall.

2) Crew returns the aircraft to a normal flight condition exhibiting smooth and positive aircraft control.

II. Participate in CRM during Stall Recovery Procedures

A. Performance Elements

1) Retain full responsibility and exercise final authority for the safe operation of the aircraft.

2) Exercise assertiveness with respect.

3) Use communication strategies such as briefings, clearly communicating decisions, encouraging participation, and seeking information from others.

4) Use workload management strategies such as distributing tasks, prioritizing tasks, and managing time.

5) Identify and communicate potential safety threats to other crewmembers.

6) Identify and effectively manage errors.

7) Pilot flying (PF) verbalizes action plan.

8) Pilot monitoring (PM) verifies and monitors critical phases of flight.

9) PM performs secondary tasks only while primary tasks are not occurring.

10) PM backs up the PF, timely identifies and communicates operational errors to the PF and when appropriate, and suggests appropriate response.

11) During periods of high workload, crewmembers are alert to distraction and effectively prioritize tasks in order of importance and remain focused on the primary tasks.

III. Perform Stall Recovery Non-Automated Tasks

A. Performance Elements

1) The PF will make precise and timely control inputs to maintain the desired pitch attitude.

2) The PF will make precise and timely control inputs to maintain the desired bank angle and heading.

3) The PF will make precise and timely yaw control inputs to maintain the desired heading/course.

4) The PF will make timely corrections to aircraft control and will respond to deviation calls caused by environmental conditions.

5) The PM will make appropriate deviation calls and will expect a response from the PF.

6) The PF will make timely corrections to aircraft control in response to deviation calls made by the PM.

APPENDIX H—REFERENCES

Gerathewohl, S. J., Mohler, S. R., & Siegel, P.V. (1969). *Fidelity of simulation and transfer of training: A review of the problem* (No. AM 69–24). Federal Aviation Administration, Office of Aviation Medicine.

Hunt, L. M. (1997). Influences on the learning process and learning outcome: Practical implications for the instructor. In G. J. F. Hunt (Ed.), *Designing instruction for human factors training in aviation*. Aldershot, United Kingdom: Avebury Aviation.

McDade-Morrison, L. (2004). Experiential learning. In J. S. Stein & S. Farmer (Eds.), *Connotative learning; The trainer's guide to learning theories and their practical application to training design* (pp. 117–128). Dubuque, Iowa: Kendall Publishing.

Wickens, C. D. (1992). *Engineering psychology and human performance* (2nd ed.), Upper Saddle River, New Jersey: Prentice Hall.

FEDERAL REGISTER

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Part III

Department of Transportation

Federal Aviation Administration

14 CFR Parts 61, 121, 135, et al.
Pilot Certification and Qualification Requirements for Air Carrier Operations; Final Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 61, 121, 135, 141, and 142

[Docket No. FAA–2010–0100; Amdt. Nos. 61–130; 121–365; 135–127; 141–1; 142–9]

RIN 2120–AJ67

Pilot Certification and Qualification Requirements for Air Carrier Operations

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This action creates new certification and qualification requirements for pilots in air carrier operations. As a result of this action, a second in command (first officer) in domestic, flag, and supplemental operations must now hold an airline transport pilot certificate and an airplane type rating for the aircraft to be flown. An airline transport pilot certificate requires that a pilot be 23 years of age and have 1,500 hours total time as a pilot. Pilots with fewer than 1,500 flight hours may qualify for a restricted privileges airline transport pilot certificate beginning at 21 years of age if they are a military-trained pilot, have a bachelor's degree with an aviation major, or have an associate's degree with an aviation major. The restricted privileges airline transport pilot certificate will also be available to pilots with 1,500 flight hours who are at least 21 years of age. This restricted privileges airline transport pilot certificate allows a pilot to serve as second in command in domestic, flag, and supplemental operations not requiring more than two pilot flightcrew members. This rule also retains the second-class medical certification requirement for a second in command in part 121 operations. Pilots serving as an air carrier pilot in command (captain) must have, in addition to an airline transport pilot certificate, at least 1,000 flight hours in air carrier operations. This rule also adds to the eligibility requirements for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate obtained concurrently with a type rating. To receive an airline transport pilot certificate with a multiengine class rating a pilot must have 50 hours of multiengine flight experience and must have completed a new FAA-approved Airline Transport Pilot Certification Training Program. This new training program will include academic coursework and training in a flight simulation training device. These requirements will ensure that a pilot has the proper qualifications, training, and experience before entering an air carrier environment as a pilot flightcrew member.

DATES: *Effective Date:* July 15, 2013.

This final rule will be effective immediately upon publication in the **Federal Register**. Section 553(d)(3) of the Administrative Procedure Act provides that publication of a rule shall be made not less than 30 days before its effective date, except ''for good cause found and published with the rule.'' 5 U.S.C. 553(d)(3). Consistent with section 553(d)(3), and for reasons discussed in Section III.H.6, the FAA finds good cause exists to publish this final rule with an immediate effective date.

Compliance Date: Unless otherwise noted in the regulatory text, compliance with the provisions of this rule is required by August 1, 2013.

FOR FURTHER INFORMATION CONTACT: For technical questions concerning this final rule contact Barbara Adams, Air Transportation Division, AFS–200, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; telephone (202) 267–8166; facsimile (202) 267–5299, email *barbara.adams@faa.gov*.

For legal questions concerning this final rule contact Anne Moore, Office of the Chief Counsel—International Law, Legislation, and Regulations Division, AGC–240, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; telephone (202) 267–3123; facsimile (202) 267–7971, email *anne.moore@faa.gov*.

SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The Airline Safety and Federal Aviation Administration Extension Act of 2010 (Pub. L. 111–216) directed the FAA to conduct a rulemaking to improve the qualifications and training for pilots serving in air carrier operations. Specifically, section 216 of the Act focused on the qualifications of air carrier pilots and directed the FAA to issue a rule that would require all pilots serving in part 121 air carrier operations to hold an ATP certificate by August 2, 2013. Section 217 of the Act directed the FAA to amend 14 CFR part 61 to modify ATP certification requirements to prepare a pilot to function effectively in a multipilot (multicrew) environment, in adverse weather conditions, during high altitude operations, and in an air carrier environment, as well as to adhere to the highest professional standards. Section 217 also directed the FAA to ensure pilots have sufficient flight hours in difficult operational conditions that may be encountered in air carrier operations and stated that the minimum total flight hours to be qualified for an ATP certificate shall be at least 1,500 flight hours. Notwithstanding the stated minimum, the section gave the FAA discretion to allow specific academic training courses to be credited toward the 1,500 total flight hours, provided the academic training courses will enhance safety more than requiring the pilot to comply fully with the flight hour requirement.

In addition to the authority provided in the Act, the FAA has authority under Title 49 of the United States Code. Subtitle I, Section 106 to issue rules on aviation safety. This rulemaking is consistent with the authority described in Subtitle VII, Part A, Subpart III, Section 447—Safety Regulation. Under § 44703, the FAA is charged with prescribing regulations for the issuance of airman certificates when the Administrator finds, after investigation, that an individual is qualified for, and physically able to perform the duties related to, the position authorized by the certificate. This rulemaking is intended to ensure that flightcrew members have training and qualifications that will enable them to operate aircraft safely. For these reasons, the regulation is within the scope of our authority and is a reasonable and necessary exercise of our statutory obligations.

List of Abbreviations and Acronyms Frequently Used In This Document

ANPRM Advance Notice of Proposed Rulemaking
ARC Aviation Rulemaking Committee
ATP Airline Transport Pilot
ATP CTP Airline Transport Pilot Certification Training Program
FFS Full Flight Simulator
FOQ ARC First Officer Qualifications Aviation Rulemaking Committee
FSTD Flight Simulation Training Device
FTD Flight Training Device
NPRM Notice of Proposed Rulemaking
PIC Pilot in Command (Captain)
R–ATP Restricted Privileges Airline Transport Pilot
SIC Second in Command (First Officer)

Table of Contents

I. Overview of Final Rule

This rulemaking modifies requirements for pilots who fly in part 121 air carrier operations. It changes requirements for all pilots seeking an airline transport pilot (ATP) certificate with an airplane category multiengine class rating or an ATP certificate obtained concurrently with an airplane type rating. These new requirements will ensure that all pilots entering air carrier operations have a background of training and experience that will allow them to adapt to a complex, multicrew environment in a variety of operating conditions.

Those most affected by these changes will be pilots applying for an ATP certificate with an airplane category multiengine class rating or an ATP certificate concurrently with an airplane type rating. The changed requirements will also affect anyone wanting to serve as pilot in command (PIC) in part 121 air carrier operations and anyone wanting to serve as PIC in part 91 subpart K operations or part 135 operations as defined by § 91.1053(a)(2)(i) or § 135.243(a)(1).[1] Those wanting to serve as second in command (SIC) in part 121 air carrier operations will also be affected by this final rule. Certificate holders approved under parts 121, 135, 141, or 142 will be affected if they choose to offer the ATP Certification Training Program (ATP CTP).

A general summary of the previous pilot certification requirements versus the pilot certification requirements as defined by this final rule is included in the following table.

TABLE 1—HOW PREVIOUS REQUIREMENTS ARE CHANGED BY THIS FINAL RULE

Previous requirements	Requirements in final rule
Scenario: (1) Receive an ATP certificate with an airplane category and multiengine class rating	
(1) Be at least 23 years old; (2) Hold a commercial pilot certificate with instrument rating; (3) Pass the ATP knowledge test and practical test; and (4) Have at least 1,500 hours total time as a pilot.	(1) Meet all of the previous requirements; (2) Prior to taking the ATP knowledge test successfully complete an ATP CTP;[2] and (3) have a minimum of 50 hours in class of airplane. (Ref. §§ 61.153, 61.156 and 61.159)

[1] These operations currently require the pilot in command to hold an ATP certificate.

TABLE 1—HOW PREVIOUS REQUIREMENTS ARE CHANGED BY THIS FINAL RULE—Continued

Previous requirements	Requirements in final rule
Scenario: (2) Receive an ATP certificate with restricted privileges (restricted to serving as SIC in part 121 operations—multiengine class rating only)	
None.	(1) Be at least 21 years old; (2) Hold a commercial pilot certificate with instrument rating; (3) Prior to taking the ATP knowledge test successfully complete an ATP CTP; (4) Pass the ATP knowledge test and practical test; and (5) Meet the aeronautical experience requirements of § 61.160. A pilot may be eligible if he or she was a military-trained pilot; a graduate of a four-year bachelor degree program with an aviation major; a graduate of a two-year associate degree program with an aviation major; or has 1,500 hours total time as a pilot. (Ref. §§ 61.153 and 61.160)
Scenario: (3) Serve as an SIC (first officer) in part 121 operations	
Hold: (1) An ATP certificate with appropriate aircraft type rating OR—An ATP certificate with restricted privileges and an appropriate aircraft type rating; and (2) An instrument rating; and (3) At least a second-class medical certificate. (Ref. §§ 121.436 and 61.23)	Hold: (1) At least a commercial pilot certificate with an appropriate category and class rating; (2) At least a second-class medical certificate.
Scenario: (4) Serve as SIC in a flag or supplemental operation requiring three or more pilots	
Hold: (1) An ATP certificate with appropriate aircraft type rating; and (2) A first class medical certificate.	Hold: (1) An ATP certificate[3] with appropriate aircraft type rating; and (2) A first class medical certificate. (Ref. §§ 121.436 and 61.23)
Scenario: (5) Serve as PIC in part 121 operations	
(1) Have at least 1,500 hours of total time as a pilot; (2) Hold an ATP certificate with appropriate aircraft type rating; and (3) Hold a first class medical certificate.	(1) Meet all of the previous requirements; and (2) Have a minimum of 1,000 flight hours in air carrier operations as an SIC in part 121 operations, a PIC in operations under either § 135.243(a)(1) or § 91.1053(a)(2)(i), or any combination of these.[4] (Ref. § 121.436)

The costs and benefits of this rule are best described as three major elements—statutory costs, discretionary cost savings, and additional rule provisions, which sum to the total costs and benefits. While the FAA already requires an ATP certificate with 1,500 hours total time as a pilot minimum for part 121 PICs, the statute requirement that SICs in part 121 operations have an ATP certificate is new and will take effect whether or not the FAA issues a regulation. Thus, the costs associated with the requirement for SICs to have an ATP certificate are attributable to the statute, not to this regulation. The FAA exercised its discretion permitted under the statute and reduced the mandated ATP certificate cost by establishing offsetting academic credits. To ensure the intent of increasing safety, the FAA established additional training provisions in the final rule which are justified by expected accident prevention benefits. Table 2 reflects the costs of the ATP certificate requirement for part 121 SICs as well as the discretionary cost savings. In addition, the table shows the expected costs and benefits of the remaining two primary cost drivers of the rule: the aircraft type rating and the ATP CTP.

TABLE 2—STATUTORY COSTS AND BENEFITS/ FINAL RULE COST SAVINGS, COSTS, AND BENEFITS

Statute costs	Total cost ($ mil.)	PVcost ($ mil.)
Part 121 ATP Certificate Requirement	$ 6,374.4	$ 2,213.0

[2] This requirement takes effect after July 31, 2014.

[3] In this scenario a pilot must hold an ATP certificate issued per the requirements of § 61.159. An ATP certificate issued per the reduced flight hours in § 61.160 is not sufficient.

[4] In addition, military PIC time (up to 500 hours) in a multiengine turbine-powered, fixed-wing airplane in an operation requiring more than one pilot may also be credited towards the 1,000 hours.

TABLE 2—STATUTORY COSTS AND BENEFITS/ FINAL RULE COST SAVINGS, COSTS, AND BENEFITS—Continued

Statute costs	Total cost ($ mil.)	PVcost ($ mil.)
Statute benefits	Total benefit	PV benefit
Part 121 ATP Certificate Requirement	No Identifiable Accident Benefits	

Discretionary cost savings	Total cost savings ($ mil.)	PV cost savings ($ mil.)
Academic Training and Experience Credits	$ <2,309.3>	$ <789.8>

Rule additional provision costs	Total cost ($ mil.)	PV[5] cost ($ mil.)
ATP CTP and Type Rating Total Costs	$ 312.7	$ 138.7
Rule additional provision benefits	Total benefit ($ mil.)	PV benefit ($ mil.)
All Safety Benefits[6]	$ 576.8	$ 251.7

	Total cost ($ mil.)	PV[5] cost ($ mil.)
Total Cost of Statute Cost + Cost Savings + Rule Cost	$ 4,377.8	$ 1,561.9
	Total benefit ($ mil.)	PV benefit ($ mil.)
Total Benefits from Statute + Rule	$ 576.8	$ 251.7

II. Background

A. Statement of the Problem

On February 12, 2009, a Colgan Air Bombardier DHC–8–400, operating as Continental Connection flight 3407, was on an instrument approach to the Buffalo-Niagara airport in upstate New York. About 5 nautical miles from the airport, the pilot lost control of the airplane. It crashed into a house in Clarence Center, New York, killing everyone aboard and one person on the ground. This accident focused FAA, NTSB, Congressional, and public attention on multiple aspects of pilot qualifications and air carrier training requirements.

The NTSB's investigation revealed that the pilot had not followed appropriate procedures in handling the aircraft. As the plane leveled at an assigned altitude the captain applied power to increase the airspeed, but the increase in power was insufficient. The airplane's flight displays indicated that its airspeed was slowing, but the flightcrew failed to recognize this. The airspeed continued to decrease, resulting in the stick shaker activating, and warning the pilots of a potential aerodynamic stall (insufficient airflow over the wings). The flightcrew's response to the stall warning system was incorrect and the airplane stalled. The flightcrew subsequently lost control of the aircraft resulting in the accident.

The NTSB's final accident report identified a number of safety issues, including improper handling of the airplane, a failure to adhere to sterile cockpit rules, and questions about the adequacy of flightcrew member training and qualifications. The accident raised questions about whether SICs should be held to the same training and flight hour requirements as PICs, and whether a pilot's overall academic training and quality of flight training were as important as the total number of flight hours. The accident also raised questions about pilot professionalism and whether pilots receive sufficient experience in a multicrew environment.

In early 2010, as a response to the Colgan Air accident, the FAA published an advance notice of proposed rulemaking (ANPRM) entitled ''New Pilot Certification Requirements for Air Carrier Operations'' (75 FR 6164 (February 8, 2010)), asking for input on current part 121 pilot eligibility, training, and qualification requirements for SICs. In July 2010, as a result of public response to the ANPRM, the FAA chartered the First Officer Qualification Aviation Rulemaking Committee (FOQ ARC) which was comprised of a cross section of the aviation industry.

In August 2010, before the ARC submitted its final recommendations, President Obama signed into law the Airline Safety and Federal Aviation Administration Extension Act of 2010 (Pub. L. 111–216 (August 1, 2010)) (the ''Act''). The Act included several specific provisions for modifying ATP certification requirements to prepare air

[5] Present value 7 percent discount rate over 10 years.

[6] Part 121 total safety benefits of $292.5 million are greater than part 121 total costs of $280.4 million. Part 135 total safety benefits of $284.3 million are greater than part 135 total costs of $22.4 million. The FAA does not have a quantitative estimate of benefits for part 91, subpart K. The part 91, subpart K operational rules, to include requiring the PIC of a multiengine airplane to hold an ATP certificate, were modeled after the part 135 on-demand operational rules therefore we believe there is a safety benefit due to the similarity of operations.

carrier pilots to operate more safely. Among those provisions was the requirement that by August 2, 2013, all part 121 flightcrew members hold an ATP certificate. Public Law 111–216, section 216(a)(2)(B)(i). The FAA asked the FOQ ARC to consider the provisions of sections 216 and 217 of the Act in developing its final recommendations. Those recommendations were submitted to the FAA in September 2010.

In addition to the FOQ ARC recommendations, the FAA reviewed recent accidents in parts 121 and 135 to find out whether the certification requirements were sufficient to produce pilots who can enter an air carrier environment and train and perform their duties effectively. The accident reports revealed deficiencies in—

- Training in aircraft manual handling skills,
- stall and upset recognition and recovery,
- high altitude operations,
- pilot monitoring skills,
- effective crew resource management,
- pilot leadership, professionalism, and mentoring skills,
- stabilized approaches, and
- operations in icing conditions.

The FAA considered its accident analysis, the FOQ ARC recommendations, and numerous NTSB Safety Recommendations in developing the Pilot Certification and Qualification Requirements for Air Carrier Operations NPRM (77 FR 12374), which published in the **Federal Register** on February 29, 2012. It proposed to amend the FAA's existing requirements to obtain an ATP certificate with an airplane category multiengine class rating and raise the qualifications of part 121 pilot flightcrew members.

In developing this final rule, the FAA reviewed the requirements set forth in the Act, reconsidered the FOQ ARC recommendations, conducted a new accident analysis,[7] reviewed NTSB Safety Recommendations,[8] and considered the public comments to the NPRM. The provisions of this final rule are consistent with the statutory mandates set forth in the Act. The table below outlines the provisions of sections 216 and 217 of the Act and the parts of the final rule that correspond to them.

TABLE 3—PROVISIONS OF PUBLIC LAW 111–216 AND CORRESPONDING RULE PROVISIONS

Public Law 111–216, The Airline Safety Act, Sections 216 & 217	Final rule
1. All part 121 flightcrew members must hold an ATP certificate by August 2, 2013. (216(c))	1. An SIC in part 121 operations must have one of the following: • ATP certificate • ATP certificate with restricted privileges (§§ 61.160, 61.167)
2. To be qualified to receive an ATP certificate, an individual shall have sufficient flight hours, as determined by the Administrator, to enable a pilot to function effectively in an air carrier operational environment; and have received flight training, academic training, or operational experience* * *to function effectively in an air carrier operational environment. (217(b)). Minimum number of flight hours shall be at least 1,500 flight hours. (217(c)). A pilot need not fully comply with the flight hours requirement above provided that the pilot has taken specific academic training courses, beyond those listed below, as determined by the Administrator. (217(d)).	2. ATP certificate with restricted privileges (§ 61.160).
3. All part 121 flightcrew members must have an appropriate amount of multi-engine flight experience, as determined by the Administrator. (216(a)(2)(B)(ii)).	3. (a) 50 hours of aeronautical experience in class of airplane required for an ATP certificate (§ 61.159); (b) Aircraft type rating for part 121 SICs (§ 121.436(a)(2)); and (c) 1,000-hour minimum air carrier experience to serve as a PIC in part 121 operations (§ 121.436(a)(3)).
4. To be qualified to receive an ATP certificate an individual shall have received flight training, academic training, or operational experience that will prepare a pilot to:. a. function in a multipilot environment;. b. function in adverse weather conditions (icing);. c. function during high altitude operations;. d. adhere to the highest professional standards; and. e. function in an air carrier operational environment. (217(b)(2)(A)–(E)). The total flight hours should include sufficient flight hours in difficult operational conditions. (217(c)(2)).	4. ATP CTP (§§ 61.156, 121.410, 135.336, 141.11, 142.54).
5. Prospective flightcrew members must undergo comprehensive pre-employment screening, including an assessment of the skills, aptitudes, airmanship, and suitability * * * for operating in an air carrier operational environment. (216(a)(2)).	5. (a) Revised ATP requirements (ATP CTP, increased minimum total time as a pilot, and increased minimum multiengine time); (b) Aircraft type rating for the aircraft to be flown in part 121 operations (SIC) (§ 121.436(a)(2)); and (c) 1,000-hour minimum air carrier experience to serve as a PIC in part 121 operations (§ 121.436(a)(3)).

[7] As a result of modifications to the ATP Certification Training Program and comments made regarding some of the accidents used for benefits in the NPRM the FAA conducted a new accident analysis.

[8] The FAA has placed a document in the docket for this rulemaking that provides greater detail on which aspects of the final rule—in particular which items in the curriculum for the ATP CTP—respond to specific NTSB recommendations. That supplementary material can be found at *www.regulations.gov,* Docket No. FAA–2010–0100.

B. FAA Accident Analysis and National Transportation Safety Board (NTSB) Recommendations

Human error, as evidenced in the Colgan Air accident, has been a major factor in many of the commercial airline accidents over the past 10 years. The FAA has identified 31 accidents in part 121 air carrier operations and 27 in part 135 commuter and on-demand operations from fiscal year 2001 through fiscal year 2010 that could have been prevented if the enhanced ATP qualification standards and part 121 requirements required by this final rule had been in effect. Those accidents resulted in 99 fatalities, 28 serious injuries, and 44 minor injuries. A detailed description of this analysis, and how it was conducted, is provided in Section E of the final regulatory evaluation and can also be found in Docket # FAA–2010–0100.

The NTSB investigated these accidents and the changes enacted in this rule address, at least in part, the following NTSB recommendations—

- Train flightcrews to respond to sudden, unusual, or unexpected aircraft upsets (Recommendations A–96–120, A–04–62, A–07–3, and A–09–113);
- Develop and conduct stall recovery training and provide stick pusher familiarization training for pilots of stick-pusher equipped aircraft (Recommendations A–10–22 and A–10–23);
- Enhance training syllabi for operations in high altitude (Recommendations A–07–1 and A–07–2);
- Review training for unusual and emergency situations in transport-category aircraft to make sure pilots are not trained to use the rudder in ways that could result in dangerous situations (Recommendation A–02–2);
- Require procedures and guidance for airport situational awareness (Recommendation A–07–44);
- Ensure that all carriers include criteria for stabilized approach in their flight manuals and training programs (Recommendations A–01–69 and A–08–18);
- Require operators to provide clear guidance to pilots about landing performance calculations (Recommendations A–07–59 and A–08–41);
- Require Crew Resource Management training (Recommendation A–03–52);
- Require operators to verify that their pilot monitoring duties are consistent with AC 120–71A (Recommendation A–10–10);
- Require flight crewmember academic training in leadership, professionalism, and first officer assertiveness (Recommendation A–10–15 and A–11–39);
- Require training in icing conditions (Recommendation A–07–14 and A–11–47);
- Require hypoxia awareness training (Recommendation A–00–110); and
- Require training in crosswinds with gusts (Recommendations A–10–110 and A–10–111).

C. Airline Safety and Federal Aviation Administration Extension Act of 2010 (Pub. L. 111–216)

The Airline Safety and Federal Aviation Administration Act included provisions to improve airline safety and pilot training. Specifically, section 216, Flight Crewmember Screening and Qualifications, focused on the qualifications of airline pilots operating under part 121. In section 217, Airline Transport Pilot Certification, the FAA was directed to modify the requirements for an ATP certificate to better prepare pilots for operating in an air carrier environment. Both sections of the Act are addressed in this rulemaking.

Section 216 directs the FAA to conduct a rulemaking proceeding to require:

- Part 121 air carriers to develop and implement means and methods for ensuring flightcrew members have proper qualifications and experience;
- All flightcrew members in part 121 air carrier operations to hold an ATP certificate and to have obtained appropriate multiengine flight experience, as determined by the Administrator by August 2, 2013; and
- Prospective flightcrew members to undergo comprehensive pre-employment screening, including an assessment of the skills, aptitudes, airmanship, and suitability, of each applicant for a position as a flightcrew member in terms of functioning effectively in the air carrier's operational environment.

Section 216 requires the FAA to issue an NPRM by January 28, 2011, and a final rule by August 2, 2012. Independent of any rulemaking proceeding by the FAA, this section directs that all flightcrew members in part 121 air carrier operations must hold an ATP certificate, issued under part 61, by August 2, 2013.

Section 217 of the Act requires the FAA to issue a final rule by August 2, 2013, modifying the requirements for an ATP certificate in part 61. The section establishes minimum requirements for an ATP certificate that include:

- Sufficient flight hours, as determined by the Administrator, to enable a pilot to function effectively in an air carrier operational environment;
- Flight training, academic training, or operational experience that will prepare a pilot to function effectively in a multipilot (multicrew) environment, in adverse weather conditions, during high altitude operations, and in an air carrier environment, as well as to adhere to the highest professional standards; and
- Sufficient flight hours, as determined by the Administrator, in difficult operational conditions that may be encountered by an air carrier to enable a pilot to operate safely in such conditions.

Section 217 also directs that the minimum total flight hours to be qualified for an ATP certificate shall be at least 1,500 flight hours. Notwithstanding the stated minimum, the section permits the Administrator to allow specific academic training courses to be credited toward the 1,500 total flight hours, provided the Administrator determines that specific academic training courses will enhance safety more than requiring the pilot to comply fully with the flight hours requirement.

Section 217 also requires the Administrator to consider the recommendations from an expert panel established under section 209(b) of the Act. That section focuses on part 121 and part 135 training programs. A report to Congress and to the NTSB was submitted on September 23, 2011.

D. Notice of Proposed Rulemaking (NPRM)

In the Pilot Certification and Qualification Requirements for Air Carrier Operations NPRM (77 FR 12374), the FAA proposed to amend the existing requirements to obtain an ATP certificate with an airplane category multiengine class rating and raise the qualifications of part 121 pilot flightcrew members. Specifically the NPRM proposed to—

- Require an ATP certificate for all pilots operating under part 121 consistent with the self-enacting provision in section 216 of the Act.
- Establish an aeronautical experience requirement for 50 hours in the class of airplane for the ATP certificate sought.
- Establish a requirement for all pilots operating under part 121 to obtain an aircraft type rating for the aircraft to be flown. An SIC in a part 121 flag or supplemental operation that requires three or more pilots is required by existing regulations to hold an ATP certificate with an aircraft type rating for the aircraft being flown, but SICs in

other part 121 operations are not required to have it.

• Establish a requirement for pilots seeking an ATP certificate with an airplane category multiengine class rating or an ATP certificate obtained concurrently with an airplane type rating to complete specific training before taking the ATP knowledge test. The proposed requirements would include academic training and training in a flight simulation training device [9] (FSTD). A draft advisory circular providing additional guidance as to the content of the course and how to obtain FAA-approval was placed in the docket for comment.

• Based on the discretion provided to the Administrator in section 217 of the Act, permit applicants who have completed ''specific academic training courses'' to obtain an ATP certificate with fewer than the minimum 1,500 hours.

• Allow specific academic coursework to be credited towards the total flight hours required for an ATP certificate. The proposed alternative hour requirements for a restricted privileges ATP certificate were—

○ 750 hours for a military pilot; and

○ 1,000 hours for a graduate of a four-year baccalaureate aviation-degree program who also received a commercial certificate and instrument rating from an affiliated part 141 pilot school.

• Establish a requirement that a pilot must have 1,000 hours in air carrier operations to serve as PIC in part 121 operations.

The NPRM provided for a 60-day comment period, which ended on April 30, 2012. One request for extension to the comment period was received, but the FAA declined to extend given the industry input it had received from the advanced noticed of proposed rulemaking published in February 2010, as well as the input it received from the FOQ ARC. In addition, the statutory deadlines imposed by the Act did not afford the FAA additional time to receive comments. The FAA received nearly 600 comments posted to the docket. Commenters included major air carriers, regional air carriers, part 135 operators, cargo air carriers, associations and industry groups, colleges and universities, training centers, flight schools, pilots, and private citizens.

E. Differences Between the NPRM and the Final Rule

TABLE 4—DIFFERENCES BETWEEN THE NPRM AND THE FINAL RULE

Issue	NPRM	Final rule
A. R–ATP certificate	1. Eligible pilots: ○ Military-trained; ○ Graduates of a bachelor's degree program with an aviation major; 2. Proposed minimum age is 21 years; and 3. Proposed minimum cross country time for military pilots is 250 hours; proposed minimum cross country time for graduates with a bachelor's degree is 375 hours.	1. Eligible pilots: ○ Military-trained; ○ Graduates of a bachelor's degree program with an aviation major; ○ Graduates of an associate's degree program with an aviation major; ○ Pilots with 1,500 hours total time as a pilot; 2. Minimum age is 21 years; and 3. Minimum cross country time for all eligible pilots is 200 hours.
B. Aviation Degree Program	A pilot eligible for academic credit towards a restricted privileges ATP certificate needs to have:. 1. Graduated from a four-year aviation-related degree program (bachelor's degree with an aviation major); and 2. Obtained their commercial pilot certificate and instrument rating from an affiliated part 141 pilot school.	1. Established criteria to define what coursework must be completed as part of a bachelor's or associate's degree program with an aviation major; 2. Further defined what an associated part 141 school is; 3. Created a process by which colleges and universities can obtain authority from the FAA to certify their graduates for an R–ATP certificate (new advisory circular 61-School); and 4. More clearly defined what a graduate has to present at the time of the practical test to show eligibility for a restricted privileges ATP certificate.
C. ATP CTP	1. Academic training: 24 hours; 2. FSTD training: 16 hours ○ Level C or higher FFS: 8 hours; ○ Level 4 or higher FTD: 8 hours; and 3. Draft advisory circular.	1. Academic training: 30 hours; 2. FSTD training: 10 hours ○ Level C or higher FFS: 6 hours; ○ Level 4 or higher FTD: 4 hours; and 3. Advisory circular 61–ATP.
D. ATP CTP Instructor Requirements.	1. Hold an ATP certificate with an airplane category multiengine class rating; 2. Meet the aeronautical experience requirements of § 61.159; 3. Have 2-years of air carrier experience; and 4. For training in an FSTD—have an appropriate aircraft type rating which the FSTD represents or have received training in the aircraft type from the certificate holder on those maneuvers they will teach.	1. Hold an ATP certificate with an airplane category multiengine class rating; 2. Meet the aeronautical experience requirements of § 61.159; 3. Have 2-years of air carrier experience; 4. For training in an FSTD—(a) have an appropriate aircraft type rating which the FSTD represents, (b) have received training in the aircraft type from the certificate holder on those maneuvers they will teach, and (c) received training on data and motion limitations of simulation; and 5. Hold a certified flight instructor certificate or complete training in fundamentals of instruction.

[9] A flight simulation training device (FSTD) incorporates both full flight simulators (FFS) and flight training devices (FTD).

TABLE 4—DIFFERENCES BETWEEN THE NPRM AND THE FINAL RULE—Continued

Issue	NPRM	Final rule
E. Reduction in an air carriers' initial training program for Pilots Who Have Completed the ATP CTP.	A principal operations inspector may approve a reduction to an air carrier's initial training program based on material taught by that carrier in the ATP CTP.	A principal operations inspector may approve a reduction to an air carrier's initial training program if the pilot beginning initial training has successfully completed the ATP CTP. The carrier does not have to provide the ATP CTP training to be eligible for a reduction.
F. Medical Certificate	No change proposed to medical requirements in § 61.23. Pilots exercising the privileges of an ATP certificate would be required to hold a first-class medical certificate.	Section 61.23 requires only those pilots exercising the PIC privileges of an ATP certificate and SIC privileges in flag and supplemental operations requiring three or more pilots to hold a first-class medical certificate. An SIC in part 121 may continue to hold a second-class medical certificate.
G. FFS Credit Towards 50 hours of Multiengine Aeronautical Experience.	10 hours of FFS time that represents a multiengine airplane.	25 hours of FFS training time that represents a multiengine airplane and is part of an approved training program.
H. Time Eligible for the 1,000 hours of Air Carrier Experience.	1. All time in part 121 operations; 2. PIC time in § 135.243(a)(1) operations; and 3. PIC time in § 91.1053(a)(2)(i) operations	1. All time in part 121 operations; 2. PIC time in § 135.243(a)(1) operations; 3. PIC time in § 91.1053(a)(2)(i) operations; and 4. Military PIC time in a multiengine turbine-powered, fixed-wing airplane in an operation requiring more than one pilot—up to 500 hours.

F. Related Actions

The Act led to the establishment of ARCs on additional subjects—

- Flight Crewmember Mentoring, Leadership, and Professional Development (Section 206 of the Act)
- Flight Crewmember Training Hours Requirement Review (Section 209 of the Act)
- Stick Pusher and Adverse Weather Event Training (Section 208 of the Act)
- Air Carrier Safety and Pilot Training (Section 204 of the Act)

The FAA has reviewed the recommendations provided by these ARCs and has initiated two rulemaking projects as a result: (1) Flight Crewmember Mentoring Leadership, and Professional Development; and (2) Revisions to the Qualification and Performance Standards in Part 60.

In addition, on May 20, 2011, the FAA published a supplemental notice of proposed rulemaking (SNPRM) proposing to amend the regulations for crewmember and aircraft dispatcher training programs in domestic, flag, and supplemental operations (76 FR 29336). This SNPRM, which was specifically cited in section 209 of the Act, focused solely on part 121 air carrier training program requirements. The comment period for the SNPRM closed on September 19, 2011.

Congress addressed these related topics within discrete sections of the Act, which has resulted in the related rulemaking projects identified. Drafting proposals on related topics simultaneously can give the appearance of overlapping or duplicative requirements. As the final rules are drafted and published to address the discrete sections of the Act, the FAA will minimize any overlapping or duplicative requirements.

The FAA has made regulatory decisions within this rule based upon the best currently available scientific data and information, and is confident the rule incorporates the best available information regarding the relationship between flight hours and types of training. In the future, however, FAA is likely to gather and analyze additional data in this area; for example, through safety outcomes resulting from this rule, and additional information collections associated with other rulemakings. FAA may also consider additional collections of information, and would notify the public of these collections through separate **Federal Register** Notices promulgated under the Paperwork Reduction Act. Further information collected by FAA could be used to inform future analysis.

Because of the likely availability of such data in the future, the FAA may obtain additional empirical evidence relevant to the precise relationship between flight hours and types of training. For example, Phase III of the Pilot Source Study, explained elsewhere in this preamble, suggests areas for further research. The FAA, consistent with its obligations under Executive Order (E.O.) 13563, Improving Regulation and Regulatory Review (Jan. 18, 2011), and E.O. 13610 on the retrospective review of regulations, will review this evidence and may make modifications as necessary and appropriate to improve the effectiveness of this regulatory program. The FAA will consider whether such changes would be necessary or appropriate, and therefore whether this rulemaking would represent a good candidate for a formal retrospective review under E.O. 13610.

III. Discussion of Public Comments and Final Rule

A. ATP Certificate for All Pilots Operating Under Part 121 (§ 121.436)

In the NPRM, the FAA proposed requiring that all SICs in part 121 operations hold an ATP certificate by August 2013. This proposal was meant to be consistent with section 216 of the Act, which mandates that within 3 years of enactment (August 2, 2013), all flightcrew members serving in part 121 operations must hold an ATP certificate. At the time the Act was signed into law, PICs in part 121 air carrier operations as well as SICs of a part 121 flag or supplemental operation requiring three or more pilots were already required to hold ATP certificates. All other SICs in part 121 air carrier operations, however, were not required to hold ATP certificates and were permitted to hold an instrument rating and a commercial pilot certificate with the appropriate category and class rating for the aircraft.

The FAA received more than 200 comments both in support of and in opposition to the ATP certification requirement for part 121 pilots. American Eagle Airlines, Inc., citing a lack of an identified safety benefit, specifically suggested grandfathering all incumbent SICs if they have at least 1,000 hours in the type of aircraft they are flying. American Airlines (AAL) suggested a similar grandfathering provision, but only for pilots who have

been an SIC for at least six years, accrued 1,000 hours in aircraft type as an SIC, and attended recurrent training more than three times.

While the FAA has considered and appreciates all of the comments received, the FAA was not given any discretion to allow pilots serving in part 121 operations to hold any certificate other than an ATP certificate. There is no latitude in the Act to permit a pilot with a commercial pilot certificate who is flying in part 121 today to continue flying beyond the date of this self-enacting provision without having obtained an ATP certificate. Accordingly, the FAA has removed the current certification requirements in § 121.437 and added new §§ 121.435 and 121.436. New § 121.435 contains the existing certification requirements for part 121 pilots; they will be in effect until July 31, 2013. After that date, the requirements of § 121.436 will apply.

B. Medical Certificate (§ 61.23)

Medical certificate requirements are determined by the level of pilot certificate that is required for the operation being conducted. Section 61.23 requires a pilot exercising the privileges of an ATP certificate to hold a first-class medical certificate and a pilot exercising the privileges of a commercial pilot certificate to hold at least a second-class medical certificate.

As a result of the statutory requirement for all pilots in part 121 to hold an ATP certificate, UPS and Spartan College sought clarification regarding whether all SICs in part 121 operations would be required to hold a first-class medical certificate and whether the proposed rule would affect existing SICs who hold only second-class medical certificates.

The FAA did not address medical certification requirements in the NPRM or propose any change to the first-class medical certificate requirement in § 61.23. Without a change, the statutory requirement for all part 121 flightcrew members to hold an ATP certificate would require SICs to hold first-class medical certificates after August 1, 2013.

Requiring a first-class medical certificate for all part 121 SICs could potentially remove qualified and experienced SICs who cannot hold a first-class medical certificate from part 121 air carrier operations. It would also impose additional costs on industry, individual pilots, and the FAA that were not reflected in the initial regulatory evaluation.[10] Rather than impose new requirements without a corresponding safety benefit, the FAA is modifying § 61.23(a)(1), (a)(2), (d)(1), and (d)(2) in the final rule so pilots in part 121 operations exercising SIC privileges (excluding flag or supplemental operations requiring three or more pilots) may continue to hold only a second-class medical certificate. In this regard, the amendment alleviates any increased cost and removes the possibility of inadvertently disqualifying incumbent SICs from part 121 air carrier operations.

C. Aeronautical Experience Requirement in the Class of Airplane for the ATP Certificate Sought (§ 61.159)

Prior to the issuance of this final rule, an applicant for an ATP certificate with an airplane category multiengine class rating was not required to obtain any additional multiengine flight experience above what is required for a commercial pilot certificate with an airplane category multiengine class rating. Section 216 of the Act addresses this issue by requiring all pilot flightcrew members serving in part 121 air carrier operations to have appropriate multiengine flight experience, as determined by the Administrator.

One method the FAA used to address the Act's focus on multiengine experience was by proposing a requirement that pilots obtain 50 hours of flight time [11] in the class of airplane for the ATP certificate sought. The FAA also proposed allowing an applicant to receive credit for up to 10 hours of this flight time in a full flight simulator (FFS) that replicates a multiengine airplane.

Ninety-three commenters addressed the proposed 50-hour requirement. Fifty-nine commenters, including the Airline Pilots Association (ALPA), Airlines for America (A4A), AAL, Aviation Professional Development, LLC, Cargo Airline Association (CAA), Coalition of Airline Pilots Association (CAPA), Embry-Riddle Aeronautical University (ERAU), ExpressJet Airlines, Inc. (ExpressJet), Flight Safety International (FSI), Hyannis Air Service, Inc. (Cape Air), National Air Transportation Association (NATA), Purdue University (Purdue), Saint Louis University—Parks College (Parks College), San Jose State University (SJSU), and the U.S. Airline Pilots Association (USAPA) indicated that 50 hours is adequate to be eligible for an ATP certificate.

The National Association of Flight Instructors (NAFI) added that obtaining 50 hours would not be a significant problem in the industry and would establish a minimum number of hours as a base for pilots to build upon. Farmingdale State College (FSC) added that 50 hours is adequate but it is not a good measure of competencies. The International Air Transport Association (IATA) stated that requiring these 50 hours is appropriate if they are used to develop and reinforce core competencies. Aerosim Flight Academy (Aerosim) stated the 50 hours would be ''okay'' but ''too costly and difficult to obtain.'' JetBlue Airways Corporation (JetBlue) agreed that 50 hours in the class of airplane is sufficient and pertinent and believes it is representative of quality flight experience.

Four commenters, including FSI, said that there would be no additional burden for those who obtain an ATP certificate. FSI said that most pilot candidates exceed the 50-hour requirement before obtaining an ATP certificate. An individual commenter noted that most pilots would earn this by getting a multiengine instructor rating and instructing students.

Six individual commenters did not object to having such a requirement but stated 50 hours is too high. One of them suggested 25 hours in the class of airplane as an alternative. The Ohio State University (OSU) added that current commercial certificate requirements are sufficient and suggested giving credit towards this requirement through completion of an Advanced Jet Training (AJT) program. Boeing also said that 50 hours is too high and that the structured and focused FSTD training proposed in the ATP certification training program provides any needed additional multiengine experience above that which is minimally required by the commercial pilot certificate. The Regional Air Cargo Carrier Association (RACCA) stated that 50 hours is probably adequate but may be unnecessarily high ''presuming the flight time includes adequate training, experience, and motivation by the pilot.''

[10] A first-class medical certificate must be renewed every 12 months for pilots under age 40 and every six months for pilots age 40 and over. A second-class medical certificate, on the other hand, must be renewed every 12 months for all pilots regardless of age. If first-class medical certificates are required, SICs who are age 40 and over will be required to renew their medical certificates every six months (as opposed to every 12 months for a second-class medical certificate). In addition, electrocardiography (EKG) testing is specifically required under first class medical certificate standards while EKG testing is used on a case-by-case basis for second class medical certificates. The FAA has reviewed part 121 accident and incident data dating back to 2001 and found no accidents or incidents attributable to an SIC with a medical condition that may have been detected by electrocardiography testing.

[11] The FAA notes that this 50 hours of flight time counts towards the 1,500 hours of total time required for an ATP certificate.

Three individual commenters noted that 50 hours in class is too low. Two of these commenters recommended 100 hours in class. Ameriflight, LLC (Ameriflight) added that 50 hours of multiengine experience is insufficient for part 121 operations because the remaining 1,450 hours could be in a single-engine airplane. The Allied Pilots Association (APA) recommended 100 hours of flight time in the type of aircraft before a pilot could be eligible for a restricted privileges ATP certificate, because time in the aircraft type makes for a safer pilot.

Thirteen commenters, including, Delta Airlines (Delta), Bemidji Aviation Services, Inc., the Professional Aviation Board of Certification (PABC), Prairie Air Service, Kansas State University—Salina (KSU), and the University Aviation Association (UAA), found the 50-hour requirement unnecessary. Sporty's Academy added that there is no evidence of accident rates to support the requirement. Southern Illinois University—Carbondale (SIU), Western Michigan University (WMU) and CAE, Inc. (CAE) added that the requirement should be competency based. Human Capital Management and Performance, LLC added that time gained in light twin-engine piston aircraft does not prepare pilots for high altitude, swept-wing turbojet operations. The IFL Group believes pilots will get that time in any way possible without a guarantee of receiving specific training, and this may increase the accident rate. The IFL Group also believes there will be an ''increase in the number of pilots who make fake flight time entries into their logbooks because of the cost of obtaining the additional multiengine flight time, thus offsetting any safety benefit and increasing FAA cost as a proportion of them are caught and the FAA incurs the cost of revoking their certificates.''

Six commenters, including Purdue, Spartan College, and the University of Dubuque noted the FAA should consider credit for simulation. An individual commenter stated allowance for simulators should be expanded. CAE stated 50% of the hours should be allowed in a level C or D FFS due to the numerous training advantages of that training environment. Based on hiring data and success rates in airline training and line operations, ExpressJet highly recommended that AJT simulation time (in either a level 5 flight training device (FTD) or FFS) be credited towards the 50 hours of multiengine time. JetBlue believes the capabilities and quality of training possible in an advanced simulation device far exceeds those of the actual aircraft and therefore recommends any time in an FFS should be credited towards the 50 hours.

Congress directed the FAA to ensure that all flightcrew members have an appropriate amount of multiengine experience. Since the ATP certificate is the highest level of pilot certificate currently available, the FAA has determined the minimum multiengine experience required to apply for an ATP certificate should exceed the minimum requirements for a commercial pilot certificate. Additional experience in inherently faster and more complex multiengine airplanes establishes a foundation that provides quality experience to prepare a pilot for a professional piloting career. Multiengine flight experience is essential not only for pilots serving in part 121 air carrier operations but for all pilots who apply for an ATP certificate with an airplane category multiengine class rating. The FAA concedes there are no air carrier accidents that specifically cite a lack of multiengine experience as a probable cause. However, establishing a minimum experience requirement in the class of airplane is consistent with other pilot certificates and supports the requirements of section 216 of the Act, which placed significant emphasis on increased multiengine experience. As proposed, such an hour requirement would have minimal impact on pilots seeking an ATP certificate because the hours will likely be acquired by pilots engaged in other commercial aviation activities such as flight instruction or part 135 operations. This assertion was not disputed by many of the commenters. Additionally, the FAA reviewed the hiring minimums for part 121 air carriers and found most have established hiring minimums for multiengine time which equal or exceed the proposed rule, further minimizing the cost of this provision.

In response to commenters who suggested increasing the minimum hours in class of airplane above 50 hours, the FAA accepts the recommendation of the FOQ ARC. The FAA agrees that time in the class of airplane alone may not prepare a pilot for operating a large swept-wing turbojet at high altitudes nor does it necessarily ensure competency. For that reason there are additional building block requirements in this final rule for obtaining an ATP certificate with a multiengine class rating, such as the ATP certification training program and a practical test to determine a pilot's competency prior to issuance of an ATP certificate. The FAA notes that pilots will seek opportunities to acquire time in the class of airplane, which is no different than current practice. For that reason the FAA disagrees with the IFL Group's assertion that pilots seeking experience in multiengine aircraft will result in an increase in accidents. To the extent that commenters have suggested that, as a result of the multiengine flight time requirement, pilots may be encouraged to falsify their logbooks, the FAA cautions that the regulations (14 CFR 61.59) prohibit the falsification of logbooks.

A majority of the commenters supported the proposed requirement for 50 hours in the class of airplane to obtain an ATP certificate; therefore, the FAA has retained this provision in the final rule. Based on the comments suggesting that the FAA increase the amount of FFS time that may be credited towards the 50 hours, the FAA agrees that the quality of training and experience gained from flying an FFS is valuable and additional time should count. Advanced simulation training devices readily provide additional training opportunities in turbine aircraft utilizing multicrew concepts and may include training in difficult operational conditions beyond that required of existing pilot licensing requirements. The FAA disagrees with commenters that believe all of the multiengine experience could be gained in an FFS. The FAA believes accruing multiengine experience in an airplane is important and would eliminate the possibility of a pilot carrying passengers in a multiengine airplane without previous multiengine airplane experience. Accordingly, the FAA has amended § 61.159 in the final rule. Specifically, § 61.159(a)(3) will permit pilots to credit 25 hours of flight training in an FFS that represents a multiengine airplane toward the 50 hours of flight time in the class of airplane. The 25 hours must be accomplished as part of an FAA approved training course (e.g., part 121 air carrier training program).[12] The FAA notes that an aviation training device (ATD) or an FTD cannot be substituted for the FFS in order to obtain the credit toward the 50 hours of multiengine flight time.

[12] The FAA has modified section 61.159(a)(5) to permit pilots to credit FSTD time accomplished in approved training programs under parts 121, 135, and 141 toward the aeronautical experience requirements for the ATP certificate. Under the prior rule, only FSTD time accomplished as part of an approved training course in part 142 could be credited.

D. ATP Certification Training Program for an Airplane Category Multiengine Class Rating or ATP Certificate Obtained Concurrently with an Airplane Type Rating (§ 61.156)

In Section 217 of the Act, Congress directed the FAA ''to modify requirements for the issuance of an airline transport pilot certificate'' to ensure pilots can function effectively in an air carrier/multipilot environment, in adverse weather conditions, during high altitude and icing operations while adhering to the highest professional standards. The public law stated that the FAA could consider academic training, flight training, or operational experience as a means of ensuring pilots have the skills identified in the public law.

In the NPRM, the FAA proposed to require applicants for the ATP knowledge test complete an ATP Certification Training Program (ATP CTP) comprised of academic and FSTD training. The training program, as proposed, focused on the areas set forth in the Act and a majority of the competencies identified in the FOQ ARC report. The FAA included a draft advisory circular (AC) in the docket that provided further detail on the content and the structure of the course.

1. Required Training for an ATP Certificate

The FAA received over 120 comments regarding whether the FAA should require a training course prior to taking the ATP knowledge test. More than 30 commenters, including Delta, A4A, CAPA, CAA, Parks College, and the Families of Continental Flight 3407, generally supported such a training course. An equal number of commenters including the University of Dubuque, Delaware State University (DSU), and numerous individual commenters generally stated such a course is unnecessary. Many commenters addressed specific elements of the proposal and suggested some alternatives which will be addressed later in the document.

IATA stated that the additional training for the ATP certificate is appropriate because the current requirements are inadequate and have become irrelevant. Boeing agreed with the FAA's rationale for the ATP CTP and asserted that pilots who successfully complete the program would have the needed ''foundational knowledge to operate as second in command (SIC) in part 121 operations.'' AAL echoed Boeing, indicating that the added training would provide valuable experience to future part 121 pilots. The National Air Disaster Alliance Foundation (NADA/F) was also supportive of the proposed course and highlighted the use of a standardized course of training. USAPA supports the additional training maintaining that it is more effective than just having a multiple choice exam. UAA supported pilots completing ground training prior to taking a knowledge test.

Several commenters, including Aerosim, Middle Tennessee State University (MTSU), FSC, and WMU, support additional training but disagree with it being required for the knowledge test. ERAU, KSU, and 20 individual commenters support the additional training being part of a degree program or collegiate flight training program. Spartan College suggested it be part of an overall collegiate curriculum rather than a single course.

Purdue, OSU, and the University of North Dakota (UND) suggested allowing the academic and FSTD portions of the proposed course to be completed at separate times enabling students to complete the academic portion as part of their degree program. The universities added that many of the topics are already covered as part of the degree program and graduates should get credit for the academic portion of the proposed course and therefore only have to complete the FSTD portion at a later time. They also suggested allowing the knowledge test to be completed following the academic portion, which falls more in line with how knowledge areas for other FAA pilot certificates are tested.

ExpressJet supported imbedding the ATP CTP training into an air carrier's initial training program. The Aircraft Owners and Pilots Association (AOPA) equated the ATP CTP to the AJT course the FOQ ARC recommended for pilots entering part 121 service and therefore disagrees that the ATP CTP should apply to all pilots required to have an ATP certificate. AOPA suggested the FAA ''reword the AJT requirement so it is required only of individuals employed by part 121 air carriers, prior to flying in revenue service and not as a prerequisite to all ATP certificates.''

OSU generally agreed with the academic portion of the course but believed the FSTD portion of the course ''represents an overwhelming financial burden'' to ATP certificate applicants. Many other individual commenters disagreed with imposing additional training requirements on pilots seeking an ATP certificate, in part due to the additional cost. The General Aviation Manufacturers Association (GAMA) stated an ATP applicant has already gone through ample training and this course would just be an extra cost burden and was unlikely to provide any additional safety benefit. GAMA, however, expressed support for the proposed FSTD portion of the training course, indicating that such training can be ''extremely beneficial.'' NATA believes the course as proposed is too costly. NATA is supportive of modifications to the ATP certification regulations, but indicated the delivery of any new training should be made available through lower cost methods, such as on-line course delivery.

Based on the support for additional training expressed by many of the commenters, the FAA has decided to require academic and FSTD training for the ATP certificate multiengine class rating and the ATP certificate when obtained concurrently with an airplane type rating.[13] This training, required at the ATP certification level, will address the gap in knowledge between a commercial pilot certificate and the knowledge a pilot should have prior to entering an air carrier environment. In addition, the FAA has decided that the safest and most effective way to ensure that applicants for an ATP certificate have met the requirements of section 217 of the Act is to establish specific training requirements and evaluate the pilot's understanding of those areas of instruction consistent with the regulatory framework for other pilot certificates.

To the extent that several commenters suggested that the coursework in university aviation degree programs already may satisfy the academic training requirements of the ATP CTP, the FAA does not agree. Many colleges and universities teach ground school for other certificates and ratings as part of their academic curriculum that include a general overview of topics for which the collegiate program has comprehensive standalone courses. For example, despite most collegiate programs having a separate aerodynamics course, this topic remains a component of private pilot ground school and is generally reinforced in a concurrent flight training lab. The aerodynamics training for private pilots generally applies to small, single-engine, piston-powered aircraft—the type of airplane most people initially learn to fly. Similarly, the academic portion of the ATP CTP (essentially

[13] The FAA notes that a pilot is not required to take the ATP CTP for a type rating added to any other pilot certificate. The requirement only applies to pilots obtaining an ATP certificate concurrently with an airplane type rating. In addition, subsequent airplane type ratings added to an ATP certificate that already has a multiengine class rating would not require taking the ATP CTP.

ground training for ATP certification) will focus on the aerodynamic principles for large turbine aircraft—the type of aircraft flown in part 121 operations as well as many operations in part 135 and subpart K of part 91. The ATP CTP will then incorporate those concepts learned in the academic portion of the course into practical scenarios during the FSTD training to reinforce the critical concepts of operating at high altitudes and its effects on the airplane and the importance of stall recognition and recovery. The FAA supports colleges and universities with FAA certificated part 141 pilot schools teaching the ATP CTP but as a standalone course, just as they do with ground schools and flight labs for other pilot certificates and ratings.

The FAA also maintains that the academic training requirements cannot be separated from the FSTD training. The FAA has acknowledged the value of structured university aviation degree programs in other parts of this final rule; however, the design of the ATP CTP ensures the knowledge gained in the academic portion of the course is directly applicable to air carrier operations and operating sophisticated, high performance, large, turbine aircraft. The training in the FSTD portion of the course consolidates the academic concepts with scenario-based training, practical applications, demonstrations, and multiengine experience. The course will consolidate many broader topics and focus on its applicability to air carrier-like operations. For many pilots who take the ATP CTP, it will likely be their first exposure to large turbine aircraft and how those aircraft perform at high altitude, how they perform in low energy states, and in adverse weather phenomena, like thunderstorms and icing conditions. Combining the academic training requirements with the FSTD experience is the most effective method to consolidate the learning and deliver the training and experience mandated by the Act.

Additionally, the FAA has determined that students must complete both the academic and FSTD training prior to taking the knowledge test. By separating the academics and flight training, possibly by years since a pilot may wait until he or she is further in a professional career, the learning objectives are less likely to be achieved. In light of that fact, the knowledge test cannot be taken following completion of only the academic portion of the course. The FAA is retaining the requirement that a pilot complete all of the ATP CTP to be eligible to take the knowledge test.

To those commenters that suggested the ATP CTP be incorporated into air carrier initial training because the subjects are already taught or because the training only applies to pilots in part 121 operations, the FAA disagrees. The ATP CTP is the base upon which a pilot must build. The concepts in the course will apply to any pilot who flies a large turbine aircraft regardless of operating rule part and therefore has value to pilots flying outside of part 121. The ATP CTP will cover topics the air carrier is not required to teach. For those general knowledge areas that are currently part of a part 121 initial training program, the FAA has modified subpart N to remove those requirements and reduce ground training for those pilots who have completed the ATP CTP. A pilot in an air carrier training program receives training specific to the air carrier's operation and the specific aircraft that pilot is going to fly. Even if the subjects are offered by an air carrier in initial training, the pilot is focused primarily on learning the company operation and the specific type of aircraft they will fly, not on broader, foundational concepts that the ATP CTP is designed to provide.

The FAA recognizes commenters' concerns regarding the cost of the proposed ATP CTP and considered these costs when establishing the requirements for the course. Section 217 of the Act directed the FAA to modify the requirements for ATP certification to include ensuring that applicants for the ATP certificate have sufficient flight hours in difficult operational conditions ''that may be encountered by an air carrier.'' The FAA sought input from the FOQ ARC on how to define difficult operational conditions and how a pilot can best obtain experience in those conditions. As indicated it its report, the FOQ ARC ''extensively discussed the issue of difficult operating conditions and determined that simulator training is an important tool by which to provide flight experience to the pilot for recognition and appropriate response in the difficult environments experienced by air carriers.'' Because of safety concerns, the FOQ ARC did not recommend that pilots be intentionally placed in these difficult conditions in actual aircraft. The FOQ ARC recommended scenario-based training to address difficult operating conditions including thunderstorms, icing, low visibility, maximum crosswinds for takeoff and landing, and contaminated runways.

Generally, pilots from their earliest training are taught to avoid thunderstorms and icing conditions. Even when flying an airplane approved for flight in icing conditions, a pilot is cautioned to minimize time flying in icing conditions. The FAA will not encourage pilots to seek experience in hazardous conditions for the purpose of meeting the aeronautical experience requirements for the ATP certificate required by the Act. The FAA has long recognized that flight simulators and flight training devices provide a safe flight training environment that can reduce the number of training accidents by allowing training for emergency situations, such as fire, total loss of thrust, and systems failures, that cannot be safely conducted in flight. 61 FR 34508 (July 2, 1996). Therefore, the FAA has determined that many of the difficult operational conditions can be most safely demonstrated to students through simulation. Simulation will be discussed in greater detail later in this section.

Although the Act permitted the FAA to consider operational experience as a means of ensuring that a pilot has received adequate flight hours in conditions such as adverse weather, high altitude operations, and an air carrier operational environment, the FAA has determined that it is not appropriate to encourage pilots to seek such conditions in an aircraft. In addition it would be difficult to validate experience in those conditions. Moreover, it would be difficult for pilots to obtain experience in the complex aircraft that would be required to replicate an air carrier operational environment.

Therefore, the FAA has determined that academic and FSTD training, followed by an evaluation through a revised knowledge test that includes the content of the course and subsequent completion of a practical test will meet the requirements of the Act and provide valuable training for the ATP certificate.

2. Training Providers

Due to the FSTD requirement in the ATP CTP, the FAA proposed that the course be conducted only by the following certificate holders who are approved to sponsor an FSTD under 14 CFR part 60: A part 141 pilot school, a part 142 training center, or a part 119 certificate holder authorized to conduct operations under parts 121 or 135.

AOPA was concerned that the FAA ''did not consider the negative impact on independent part 61 flight schools, other training providers who conduct ATP certification training or [designated pilot examiners] who currently conduct ATP certificate testing.'' NAFI commented the proposal completely excludes ''the very broad base of part 61 training providers who have traditionally helped maintain training capacity.'' NAFI further stated that part

61 instructors provide a significant amount of training toward professional pilot careers and to eliminate these instructors may reduce overall training capacity and result in a negative economic impact on these training providers. ALPA recommends the proposed ''authorized training provider'' be clearly defined in the regulations to assure the highest standards and quality of training for ATP applicants. NATA disagreed with part 135 operators being eligible to offer the ATP CTP stating it is impractical for part 135 operators because the required FSTDs are too expensive to acquire and the training must be outsourced. In addition, NATA stated the proposed requirements are a disincentive for part 135 pilots to get an ATP certificate because the proposed training requirements are not all relevant to operations outside of 14 CFR part 121.

The FAA acknowledges that, as a practical matter, pilots preparing for the ATP practical test have sought flight training from certified flight instructors even without explicit regulatory training requirements. Although such training may have covered ground training on the aeronautical knowledge areas in § 61.155, pilots primarily sought flight training in the specific type of aircraft in which they planned to take the ATP practical test. Although fewer pilots may choose to pursue an ATP certificate with a multiengine class rating as a result of the new training requirements, the pilots who seek an ATP certificate outside of an air carrier will continue to seek flight training from certified flight instructors as preparation for the practical test. Additionally, the practical test in many cases will still be given by designated pilot examiners who currently evaluate ATP applicants.

The specified training providers for the ATP CTP were chiefly determined by two factors: (1) The ability to sponsor an FSTD as set forth in 14 CFR part 60; and (2) the structure, systems, and management personnel required to develop, implement and maintain the FAA approved training program. This structure does not typically exist and is not required in part 61 training.

The FAA disagrees with those commenters who suggested part 135 certificate holders should not be eligible to provide this course. Part 135 operators are eligible to sponsor a simulator per the regulations and have approved designated examiners who are authorized to conduct proficiency checks that result in ATP certification. A part 135 certificate holder may choose not to provide the course because its pilots do not require ATP certificates or because it is cost prohibitive to provide to those pilots that do require ATP certificates, but that is not a regulatory decision.

The FAA has determined authorized training providers for the ATP CTP will be limited to certificate holders conducting operations under parts 121 or 135, and pilot schools and training centers certificated under parts 141 or 142, respectively. Each of these certificate holders have defined management structures, FAA approved training programs, and pilot training record retention requirements. Further, each ATP CTP submitted for approval will be reviewed by FAA Headquarters to ensure standardization. The FAA has modified the regulations for parts 121, 135, and 141 to permit those certificate holders to provide the training. Specifically, the FAA has: (1) Added the ATP CTP to the list of pilot school ratings in § 141.11 and to the list of special preparation courses in appendix K of part 141; and (2) established new §§ 121.410 and 135.336 to permit part 121 and part 135 certificate holders to obtain approval to provide the ATP CTP. The applicability provision in part 142 permits those training centers to provide training required by 14 CFR part 61.

3. Instructor Requirements

In the NPRM, the FAA proposed that instructors for the ATP CTP must meet the following requirements:

(1) Hold an ATP certificate with an airplane category multiengine class rating;

(2) have two years' experience in operations that require an ATP certificate to serve as PIC; and

(3) for those instructors that will provide training in an FSTD, have an appropriate aircraft type rating which the FSTD represents or have received training in the aircraft type from the certificate holder on those maneuvers they will teach.

As set forth in the NPRM, the instructors would also meet the individual requirements associated with the applicable part under which they provide the ATP CTP (unless specifically excepted in the proposed regulatory text) to ensure the quality of instruction.

Northern Michigan College supported the proposed instructor requirements and stated an ATP training course taught by qualified training providers should provide higher quality course content than that provided by a local flight instructor, thereby increasing the chance for improved flight safety.'' CAE stated the instructor must have the necessary qualifications and experience requirements to teach the ATP CTP. KSU stated the academic training requirements should be administered by a qualified instructor as part of a collegiate flight education program.

AOPA, UAA, and several individual commenters disagreed with stipulating instructor qualification requirements for the ATP CTP. Boeing recommended removing the two-year experience requirement from the ATP CTP for instructors under 14 CFR parts 121, 135, and 142, and devising an equitable solution for instructors under part 141 to gain line operational experience in order to instruct. Utah Valley University concurred with the requirement for instructors to hold an ATP certificate but was unsupportive of the air carrier experience requirement because very few highly qualified instructor pilots would be interested in low-paying educational positions.

NAFI raised concerns over the apparent prohibition of subject matter experts (SMEs) from teaching in the course, stating ''such a limitation could force the hiring of less knowledgeable instructors who have met the requirements for instruction based solely upon the acquisition of Part 121 experience, and not on individual qualifications.''

In the development of the final rule's instructor requirements, the FAA analyzed the existing training requirements for instructors in each rule part authorized to teach the ATP CTP. Whereas each rule part's instructor requirements are designed to meet the needs of the specific part (e.g. airman certification for part 141, simulator instruction for part 142, and air carrier operations for parts 121 and 135), none sufficiently cover all the competencies necessary to deliver the ATP CTP as designed.

Based on this regulatory review and the public comments, the FAA has assembled a specific set of instructor requirements designed to ensure the ATP CTP instructor: (1) Understands fundamental principles of instruction; (2) has the requisite experience to deliver the training topics with sufficient context to air carrier operations; and (3) if teaching in an FSTD, receives training on the limitations of simulation in order to mitigate the possibility of negative learning. Specifically, the FAA created new §§ 121.410, 135.336, and 142.54 and modified § 141.33 to standardize the instructor requirements for the ATP CTP.

a. Operational Experience

The FAA has determined only instructors with air carrier experience may teach the course because only

pilots with experience in part 121, and PIC experience in parts 135 and 91, subpart K—as defined by § 135.243(a)(1) and § 91.1053(a)(2)(i)—can effectively link the academic content of the course to the practical application of that knowledge in an air carrier environment. The concept and structure of the ATP CTP focuses on delivering the academic subjects and applying that knowledge in an FSTD through scenario-based training emphasizing how each subject area specifically relates to large turbine airplanes and air carrier operations.

In order to clarify the position on the operational experience requirement, the FAA proposed that instructors have at least two years of experience as a pilot in command in operations under § 91.1053(a)(2)(i) or § 135.243(a)(1), or in any operation conducted under 14 CFR part 121. Whereas the experience in part 121 operations is directly applicable, the FAA chose these particular operations in subpart K of part 91 and part 135 because they are air carrier-like operations that require the PIC to hold an ATP certificate. The ability to fly at the ATP certificate level and have demonstrated this proficiency during evaluation is an important regulatory differentiation. Specifically, these pilots will have gained experience as a PIC of a turbojet airplane or an aircraft with seating of 10 or more in operations very closely aligned to part 121 operations.

In addition, requiring air carrier operational experience is consistent with existing instructor requirements. Part 142 training centers are not air carriers, but those part 142 instructors who provide air carrier training must meet operational experience requirements for part 121 and part 135 instructors. The operational experience is necessary to ensure that each subject area specifically relates to transport aircraft and air carrier operations. For that reason, having an instructor with air carrier experience is critical. Further, the FAA believes there are a sufficient number of instructors with the required experience available, many of whom are already employed at likely ATP CTP providers. For example, air carriers that conduct their own training often use their own line pilots for the FSTD training. The FAA recognizes ATP CTP instructors with the requisite experience may require higher pay in comparison to current part 141 instructors and even some part 142 instructors. As a result, the FAA has accounted for a higher hourly wage in its economic analysis of the costs associated with the course.

The FAA also recognizes due to many factors, including air carriers that have terminated operations, employment records to verify air carrier experience may not always be available. The FAA has developed guidance in AC 61–138, Airline Transport Pilot Certification Training Program, which provides a method for a pilot to attest to previous experience.

b. Instructor Training

As part of this final rule, each instructor who provides training for the ATP CTP must receive initial training in the following topics:

- The fundamental principles of the learning process;
- Elements of effective teaching, instruction methods, and techniques;
- Instructor duties, privileges, responsibilities, and limitations;
- Training policies and procedures; and
- Evaluation.

The FAA recognizes that some of these training requirements may be duplicative for holders of a flight instructor certificate that has not expired as well as instructors already qualified under certain rule parts. For example, the fundamentals of instruction are trained and evaluated as part of the practical test standards for receiving a flight instructor certificate under part 61 and as part of the training for instructors under part 142. The fundamentals of instruction are reemphasized for an active flight instructor or through instructor refresher courses and annual training center evaluator/instructor training. As such, with sufficient documentation, the FAA does not believe pilots with current flight instructor certificates or currently qualified part 142 training center personnel need to repeat such training. This accommodation is reflected in the final regulatory text.

With regard to FSTD training the FAA believes well-trained instructors are the best means of ensuring that pilots are receiving effective training through simulation. There are two necessary components for ATP CTP instructors: (1) Training on the use and limitations of simulation; and (2) training on the tasks and maneuvers required in the ATP CTP. With the exception of part 142, no rule part specifically requires this training as a prerequisite to instructing in a simulator. These requirements are especially critical for the delivery of stall training, upset prevention and recovery training, and operations in icing conditions where the risk for negative learning is high.

The final rule ensures that instructors receive initial and recurrent training on the following topics: [14]

- Proper operation of flight simulator and flight training device controls and systems;
- Proper operation of environmental and fault panels;
- Data and motion limitations of simulation;
- Minimum equipment requirements for each curriculum; and
- The tasks and maneuvers that will be demonstrated in the FSTD. The specific training requirements have been added to § 141.33 for those instructors who will provide FSTD training for the ATP CTP. In addition, because part 121 and part 135 instructor requirements for simulator operations and limitations are specific to air carrier training conducted under those parts, the FAA has added this requirement to new §§ 121.410 and 135.336 to ensure that the training across rule parts is consistent with the objectives and requirements of the ATP CTP.

c. Type Rating

The NPRM also proposed the FSTD instructor must either have an appropriate aircraft type rating which the FSTD represents or have received training in the maneuvers they will teach. As noted above, several commenters expressed concern over the potential for negative learning during the FSTD portion of the ATP CTP. As a result the FAA has determined that instructors for the ATP CTP must have a type rating in the airplane that is replicated by the FSTD and receive training on the maneuvers they will teach. Requiring a type rating of instructors is consistent with current regulations for existing air carriers. For the purposes of the ATP CTP, the type rating requirement has been added to new §§ 121.410, 135.336, and 142.54. The requirement for a type rating was not included in part 141 regulatory text because those instructors must already hold a type rating on their pilot certificate in order to conduct training in a type specific aircraft or FSTD.

d. Subject Matter Experts

The FAA has clarified its position on SMEs delivering academic training in the ATP CTP. As identified by commenters, the ATP CTP contains academic subjects for which SMEs might be appropriate. The FAA sees benefit in a SME delivering a

[14] The FAA notes that any instructor providing training in an FSTD should receive training on the topics listed. Making such a regulatory adjustment, however, would be outside of the scope of this rulemaking.

specialized subject such as meteorology, human factors, or flight dispatch. Because the subjects focus on applying knowledge to an air carrier environment, the FAA will allow SMEs to deliver content in the ATP CTP while requiring an instructor with the required air carrier operational experience be present to ensure that the material presented is applied to air carrier operations. The FAA has determined these concepts can only be properly conveyed through an instructor with practical operational experience to meet the objectives of the course.

4. Training Topics and Hours

a. Academic Topics and Hours

The proposed ATP CTP incorporated most of the academic and FSTD competencies identified by the FOQ ARC and also addressed in part numerous NTSB safety recommendations. The proposed program hours for the ATP CTP were based on an assessment of the quantity and complexity of the subject matter. In the NPRM, the FAA was prescriptive for 20 of the 24 proposed academic hours, leaving some discretion to the training providers to determine what subject areas needed additional time. The FAA believed 24 hours of academic training was the minimum amount of time necessary to cover the material and be effective. The FAA further described the academic content in a draft AC that was posted to the docket.

The FAA received more than 80 comments regarding the training topics and training hours for the ATP CTP. Commenters including ALPA, Boeing, and Rocky Mountain College were generally supportive of the topics proposed in the academic portion of the ATP CTP.

Commenters such as A4A, Delta, NTSB, and IATA offered additional academic training topics for the ATP CTP such as human factors, fatigue, error trapping, United States Standard for Terminal Instrument Procedures (TERPS), air law, mentoring, leadership, professional development, decision making, dispatch and flight following. Additional commenters, including NAFI, recommended using the topics presented in the FOQ ARC report. A4A, FedEx Corporation (FedEx), and Parks College recommended additional training hours to teach the material, with total hours ranging between 30 and 50 hours. IATA commented that there should not be a specified number of hours for the ATP CTP, but rather a curriculum should be established and approved by the FAA based on the concept of demonstrated competency for course completion. An individual commenter stated the FAA had not accounted for pre-brief and post-brief time that is generally part of FSTD training.

The FAA concurs with major commenters that additional topics should be added and the training time should increase. Based on the specific topic areas proposed by commenters and the new accident analysis the FAA completed, the FAA reassessed the entire course and expanded the academic portion of the ATP CTP to emphasize certain areas proposed in the NPRM. In particular, the FAA has expanded training on leadership, professional development, CRM, and safety culture. Section § 61.156 requires six hours of training on these topics. Enhancing these training topics in the ATP CTP supports the objectives of Section 206 of the Act by raising the baseline knowledge level of new-hire pilots on these topics; however these provisions do not fully meet the intent of the statute. This will be addressed in the Flight Crewmember Mentoring Leadership, and Professional Development rulemaking project.

Additionally, some subjects, including checklist and MEL/CDL usage and weight and balance, were moved from the FTD portion of the course to the academic portion. The FAA determined these subjects could be taught effectively in the academic portion of the course using alternative devices, if appropriate, that do not require approval under part 60. The expansion of training topics and focus on particular topic areas will remove the 4 hours of discretion to training providers allotted in the NPRM and will increase the total minimum academic program hours from 24 to 30.

As noted by one commenter, the FAA did not account for briefing and debriefing time for FSTD training sessions; a typical component of flight training. The FAA agrees that briefing and debriefing are an important part of flight training because it allows for an explanation of the learning objectives for the training session and the opportunity for the instructor to reinforce the academic topic areas prior to the session and following the training event. As such, the FAA has decided to emphasize briefing and debriefing time before and after each FSTD period in the 61–ATP advisory circular. This additional briefing time (3 hours) will provide a review of the training topics before each FSTD period and tie them directly to the academic portion of the course. Briefing time before and after a flight is not normally a prescriptive time accounted for in the regulations. As such, the FAA has not incorporated this time into the programmatic hours for the ATP CTP in § 61.156; however, the time is accounted for in the economic analysis.

To the extent that commenters recommended that the ATP CTP be competency-based rather than have specific hour requirements, such an approach is not appropriate given the objectives of the ATP CTP. The FAA is very aware of competency-based training and is clearly supportive of its concepts in air carrier training by allowing advanced qualification programs (AQP), which use air carrier-specific data to establish and revise curricula. Training for certification, however, is traditionally and necessarily more prescriptive and based on program hours. Competency-based programs are most effective when the pilot is continually trained and evaluated within the same training program over the course of multiple years like at an air carrier. A pilot typically spends weeks in an air carrier initial training program receiving multiple evaluations prior to the qualification event. Once qualified, the pilot's performance is measured by multiple data sources including line operations. An air carrier's training programs and even its hiring practices can be altered to adjust to inadequacies of its training programs whereas part 61 certification is typically a one-time evaluation of the pilot's skills during a practical test. As such, standardized training requirements are necessary to achieve the level of safety desired. Further, since the training program could be provided across four different rule parts by different certificated air agencies and operators, a structured and approved curriculum combined with mandatory program hours will allow for the consistency desired by the FAA from all providers.

b. FSTD Topics

In the NPRM, the FAA proposed as part of the ATP CTP 16 hours of training in an FSTD qualified under 14 CFR part 60 on topics including low energy states/stalls, upset recovery techniques, adverse weather conditions, aircraft performance, navigation, automation, and CRM. The draft AC that was placed in the docket further defined those subject areas. Because the proposed training was focused on introducing pilots to general concepts affecting all transport category aircraft, the NPRM did not propose that the FSTD training be conducted in a particular aircraft type (non-type specific) as is required for air carrier training. The FAA stated in the AC, however, that the training should take place in an FSTD that

represents an aircraft with a maximum take-off weight of at least 40,000 pounds.

The FAA received nearly 70 comments regarding the appropriateness of requiring FSTD training that is not specific to any aircraft type. Many of the commenters, including AAL, agreed the training course should and can include concepts that are generally universal to transport category aircraft. CAPA noted aircraft performance and high altitude flight environments are universal across the transport category spectrum.

IATA stated the ATP CTP should include training in a non-type specific FSTD because ''the intention of the course is the development of core competencies independent of airplane type and applicable to all types of multi-crew transport category airplane operations.'' KSU stated training on non-type specific FSTDs would be beneficial and would add significant value to the ATP CTP. The University of Dubuque and SCSU stated training in non-type specific FSTDs reinforces and demonstrates concepts covered academically. A4A agreed with this proposal and stated principles of transport category jet operations do not need to be type specific. Boeing noted the concepts proposed to be trained in FSTDs are among those that have been consistently identified as lacking in recent accidents.

Several commenters, including Ameriflight, FSI, and IFL Group, disagreed with permitting portions of the ATP certification training course in a non-type specific FSTD. The UAA disagreed with any FSTD requirement as part of the ATP CTP and noted the phrase ''generally universal to transport category aircraft'' causes problems because it is onerous to pilots seeking an ATP certificate for non-transport category aircraft.

NATA opposed the requirement for general instruction in an FSTD because it shifts the cost to pilots with no benefit because the training would be superseded by air carrier initial training.

The FAA received several comments concerning the possibility for negative training when conducting non-type specific training. NATA acknowledged value in additional training for prospective ATP certificate candidates but stated that the ATP CTP will create negative learning situations by forcing pilots into non-applicable training. NATA believes there are many pilots operating turboprop or piston engine aircraft that will be required to accomplish the training in turbine simulators as part of the ATP CTP. NATA and RACCA believe that requiring these pilots to obtain training that does not apply to their experience and operational goals will lead to a negative experience that does not increase safety.

The FAA has concluded the ATP CTP FSTD training topics are necessary to reinforce the academic topics and to address the requirements of the Act. In addition, the FAA agrees with those commenters that believe the FSTD training can be non-type specific and not result in negative learning and therefore has decided to retain the non-type specific training in an FSTD.

First, the FAA reiterates that this framework of academic training and flight training is consistent with that of other pilot certificates. Pilots routinely receive basic certification flight training in one type of aircraft and then move on to fly many other types of aircraft without a negative transfer of learning. The training received in the ATP CTP will also be the last basic certification training a pilot receives. It will address topics not covered at the commercial pilot certificate level and establish a knowledge base that additional aircraft type-specific and air carrier-specific training can build upon when a pilot is trained to fly for an air carrier.

Second, the ATP CTP is designed to teach high-level concepts that are applicable to operating all large transport aircraft. It will increase knowledge through academic introduction to concepts that are generally true across all large aircraft types and then consolidate those same concepts through demonstration and experience in FSTDs. None of the training tasks will require applicants to perform maneuvers to proficiency, but rather experience critical events (stall onset, low energy states, upset prevention and recovery) with continuous instructor explanation and feedback. By combining this training experience with instructor explanation, the academic portion of the course will be effectively consolidated while reducing the possibility of negative transfer of learning for those pilots who may fly different aircraft types than those used in the course.

c. Level of FSTD and Hours

The FAA proposed 16 hours in an FSTD—8 hours in a Level C or D FFS and 8 hours in a Level 4 or higher FTD. The FAA received more than 130 comments regarding the level of the appropriate device but very little comment concerning the appropriate number of hours.

Many commenters, including the Regional Airline Association (RAA), UND, and FIT, stated that a level 4 or 5 FTD would be an appropriate level of FSTD for the entire course as long as it has visual capabilities and a stick shaker/pusher. Cape Air proposed that a level 5 or 6 FTD with realistic visuals would be sufficient for the course. OSU indicated a level 5 or higher device with visuals would be just as effective as a Level C FFS and would result in reduced costs. The commenters added that FTDs are an acceptable and safe alternative to FFSs. AOPA was particularly concerned that the FAA had not considered whether there was an adequate number of available FSTDs in the United States to accommodate the number of ATP applicants who will require training and raised concerns that compliance may be difficult.

ERAU cited various studies in their response that raised concerns regarding the use of motion-based training devices, including the value of using motion-based training devices in upset maneuvers, and disputed the need for simulator training in extended envelopes. One study asserts there are compromises made between cost and fidelity with the goal of getting the highest degree of transfer of training from the simulation device to the real world (Roscoe, 1980). An additional study that was cited by ERAU expanded upon that finding, indicating that FAA-qualified FFSs are unable to accurately portray how an airplane would react outside of the normal flight envelope—often referred to as extended envelope operations (Schroeder & Grant, 2010). ERAU noted the FAA participates in the International Committee for Aviation Training in Extended Envelopes (ICATEE). ERAU added ICATEE (2012) proposes an approach to examining the issue by first defining training needs and then proposing solutions. The ICATEE solution for training extended envelope flight tasks includes using flight simulation within its limitations. The eight hours of training with motion-based simulation in the ATP CTP will be for tasks in, or near, the extended envelope where the correlation to actual flight conditions is problematic. ERAU concluded its comment with the statement ''[n]o motion is preferable to incorrect motion.''

NTSB commented that, because simulators may not be able to accurately portray stalls and upset recovery, the FAA should allow flexibility in determining what level of simulation or automation is appropriate for specific training.

A number of colleges and universities, including Utah Valley University (UVU) and Rocky Mountain College stated the FFS requirement in the ATP CTP creates a significant obstacle for colleges and universities with aviation degree

programs due to the high costs of obtaining and maintaining those devices. Aims Community College, which operates a Level C FFS, was supportive of the proposed minimum FFS level. Commenters, including KSU, SCSU, USAPA, and WMU, stated the approved curriculum should have specified goals and competencies, not required hours.

The FAA concurs with many of the commenters' assertions regarding the ability to utilize FTDs in an effective training program. While an FTD does not provide the sensory input of motion, the fidelity of the aircraft data and replication of the aircraft controls can be very high. These high fidelity devices without motion can offer effective training benefits for tasks that do not require motion inputs to meet the learning objective (e.g., use of automation and navigational instruments and CRM).

Following a review of the comments and a training task analysis consisting of a re-evaluation of the FSTD topics and proposed device level, the FAA has reaffirmed that it is not possible to train all of the topics in an FTD. Therefore, the FAA has retained the requirement for training certain topics in an FFS. A flight training program that combines effective use of Level 4 and higher FTDs and the benefits of Level C or higher FFSs best ensures that the learning objectives will be effectively met. Notwithstanding the decision to retain training in FSTD, the FAA has modified the training hours in the final rule. Based on the task analysis, rather than the 16 hours of FSTD training proposed in the NRPM, the final rule requires 10 hours of training in FSTDs: Six hours in a Level C or higher FFS and four hours in Level 4 or higher FTD.

As previously stated, the FAA has moved some topics that were originally proposed for the FSTD portion of the course to the academic portion. The FAA has matched the remaining flight training objectives from the ATP CTP with the appropriate level of device and determined the ''FTD topics'' (e.g. flight management systems) could be trained in four hours rather than the eight hours proposed in the NPRM. As a result, the regulatory text of § 61.156 permits up to four hours of the ten hours of FSTD training to be completed in an FTD—which may be conducted in a Level 4 or higher FTD or Level A or higher FFS (with or without motion activated).

In completing the task analysis of the ATP CTP, the FAA also determined that the training that must be completed in a Level C or higher FFS could be accomplished in six hours rather than the eight hours proposed in the NPRM. Many of the maneuvers such as taxi, takeoff, and landing can be conducted only in a Level C or higher FFSs. Neither FTDs nor Level A or B FFSs are evaluated to perform such maneuvers. Additionally, low energy states, stall events, upset prevention and recovery techniques, and adverse weather conditions, including icing, thunderstorms, and crosswinds, require devices with motion cueing to achieve the learning objective. Only Level C or higher FFSs can replicate both the specific aerodynamic characteristics of the aircraft and the sensory perceptions that motion provides, which are necessary to allow the applicant the opportunity to fully grasp the critical concepts of the course. Level C or higher FFSs offer superior training benefits for maneuver-based training that cannot be replicated adequately by an FTD. This determination is based on the conclusion that, while both visual and vestibular systems are directly impacted by simulation, the element of these systems that is critical to satisfactory training is motion on-set (or acceleration) cueing. In addition, for a pilot's first exposure to critical concepts, such as high altitude handling, low energy states, and aircraft handling in adverse weather conditions, Level C or higher devices are necessary in order for the pilot to achieve the learning envisioned by the Act.

Various studies have shown an increase in pilot performance when pilots use simulators with motion. See Showalter, T.W.; Parris, B.L., ''The Effects Of Motion And GSeat Cues On Pilot Simulator Performance Of Three Piloting Tasks,'' Ames Research Center, Jan 1, 1980 (indicating 40% improvement on yaw performance and roll performance, engine out on takeoff with use of motion simulators); Parris, B.L.; Cook, A.M., ''Effects of visual and motion simulation cueing systems on pilot performance during takeoffs with engine failures,'' Ames Research Center, Dec 1, 1978; Hosman, R.J.A.W., & van der Vaart, J.C. ''Effects of vestibular and visual motion perception on task performance,'' (1981); Heintzman, Richard J. ''Determination of Force Cueing Requirements for Tactical Combat Flight Training Devices,'' Training Systems Product Group Aeronautical Systems Center Air Force Materiel Command Wright Patterson AFB, February 1997; Gebman, J.R.; Stanley, W.L.; Barbour, A.A.; Berg, R.T.; Birkler, J.L., ''Assessing the Benefits and Costs of Motion for C–17 Flight Simulators,'' Department of The Air Force, Washington, DC, June 1986. Accordingly, the FAA has determined that maneuver-based tasks must be conducted in a Level C or higher FFSs because the FFSs provide the level of motion cueing necessary to ensure proper response in real flight operations. These simulators most closely represent an aircraft with respect to aerodynamic handling characteristics and possess the motion required to achieve the learning objective of many tasks.

The FAA agrees with ERAU's assertion regarding the limitations of FFS in extended envelope maneuvering and modeling; however, none of the requirements in the ATP CTP involve training in these extended envelopes. The FAA believes the commenter's use of the term extended envelope is referring to theoretical or analytical data used in simulation which may exceed typical manufacturer-captured flight test data. As set forth in AC 61–138, low energy states (slow flight), approach to stalls, and even the upset prevention and recovery training will all be conducted within the manufacturer's supplied and FAA's National Simulator Program validated aerodynamic envelope.

As noted by ERAU, the FAA participates in ICATEE and other research projects in order to develop training tasks within current limitations and research adjusting future simulator modeling where appropriate. The commenter also expresses concerns over the lack of available displacement of hexapod motion platforms that could induce negative transfer training if the training task exceeds the motion capabilities of the device. We concur with this thought but re-emphasize all the training tasks proposed will occur within the validated aerodynamic and simulator motion envelopes. The upset training maneuvers used in the ATP CTP are supported through the research and development of the Airplane Upset Recovery Training Aid (AURTA) and recently validated by the 2012 Loss of Control Avoidance and Recovery Training (LOCART) ARC. The LOCART ARC was sponsored by the FAA and additionally supported by International Civil Aviation Organization (ICAO), the European Aviation Safety Agency, and Transport Canada to develop recommendations for upset prevention and recovery maneuvers in order to minimize the loss of control inflight accidents worldwide. The AURTA was developed by Airbus, Boeing, and the Flight Safety Foundation; it contains effective upset recovery training tools designed to work within the simulator's designed motion platform. This training is intended to increase a pilot's ability to recognize and avoid situations that

can lead to airplane upsets and improve the pilot's ability to recover control of an airplane that has exceeded the normal flight regime. To further mitigate the possibility of negative transfer of training, the FAA has published AC 120–109, Stall and Stick Pusher Training, comprehensive guidance for the training and checking of stall events. The FAA will publish additional guidance material in AC 61–138 for the academic training portion of the course for the aerodynamics, and upset prevention and recovery topics based on the recommendations of the LOCART ARC. The FAA emphasizes instructor training in all of its guidance material relating to stall and upset, for both the operation of the training device and training in the device's limitations, in order to avoid a student's potential for negative learning.

In the draft AC for the ATP CTP that was placed in the docket when the NPRM published, the FAA stated that in order to replicate the high altitude and low energy handling characteristics desired, the FFS should represent a swept-wing transport category airplane with a maximum gross takeoff weight of 50,000 pounds or greater. The FAA did not propose this standard in the regulatory text. Despite receiving significant comment on the training topics listed in the AC as well as what level of device would be appropriate, the FAA received only one comment—which was supportive—regarding the proposed takeoff weight or wing design of the type of airplane the FFS should represent. As part of the evaluation of the FFS training topics and learning objectives, the FAA reviewed all of the approved FFSs under 14 CFR part 60 including the associated weights of the aircraft they represent. Based on that review, the FAA has determined an FFS representing an aircraft with a maximum takeoff weight of at least 40,000 pounds is necessary to meet the objectives of the ATP CTP.

The weight of the aircraft the simulator represents is an important factor in ensuring handling characteristics of a typical transport aircraft. The 40,000 pound minimum requirement will ensure the device can replicate the lower performance margins and handling qualities inherent in transport category aircraft when being operated near their maximum operating weight at altitudes near their service ceiling. Critical concepts such as high speed slowdowns and approach to stall recoveries, which can take thousands of feet to recover at high altitudes, cannot be achieved in lighter aircraft types with higher thrust-to-weight ratios. The FAA notes that 40,000 pounds generally captures most regional aircraft including larger turboprops like the Bombardier DHC–8–400. To ensure that the objectives of the ATP CTP are met, the FAA has incorporated the weight requirement from the AC into § 61.156. Due to the potential for differing interpretations associated with the terms ''swept-wing'' or ''straight wing,'' the FAA has decided to remove that language from the FSTD requirements. The weight requirements described above and listed in the final regulatory language will produce the desired handling qualities sought in order to achieve the objectives of the course.

In response to commenters' concerns over the lack of sufficient number of training devices to deliver the ATP CTP, currently there are 407 FAA-evaluated Level C or higher FFS devices that replicate aircraft with a maximum takeoff weight at or exceeding 40,000 pounds. These devices represent 98% of all Level C and D FFSs that have been approved by the FAA. The FAA has evaluated the average number of ATP certificate applicants per year over the last 10 years (5,500), compared to the number of devices (81 FTDs and 407 FFSs) defined by the rule and recommended for use in the ATP CTP. Being conservative, the FAA assumed that all 10 hours of FSTD training would occur in Level C or higher FFSs. Assuming each FFS is capable of five 4-hour simulator periods per day (allowing for one 4-hour maintenance period per day), the U.S. inventory of these FFSs offers over 700,000 simulator periods. The 5,500 ATP certificate applicants will require 16,500 FFS periods from the U.S. inventory—less than 2% of available simulator time. Use of FTDs in the course will only improve availability. The AC suggests the FTD should replicate multicrew aircraft and be equipped with a flight management system (FMS) and autoflight. Currently, 68% of FAA-evaluated Level 4 or higher FTDs (a total of 81 FTDs) replicate the desired aircraft as defined by AC 61–138. Therefore, the FAA has determined even with moderate usage for non ATP CTP training, there is ample inventory of available FSTD time to accommodate the requirements of the course.

Finally, the FAA has decided to allow for consideration of a deviation from the weight requirement set forth in § 61.156. The FAA established a baseline weight because it believes that having all FFSs representing aircraft weighing 40,000 pounds or more allows for adequate demonstration of the learning objectives described in AC 61–138. The FAA recognizes, however, that there may be FFSs that represent an aircraft weighing less than 40,000 pounds that may be capable of replicating the lower performance margins and handling qualities desired at higher altitudes to meet the learning objectives of the course. If a training provider seeks to use a device that does not meet the weight criteria set forth in § 61.156, it must apply for a deviation. In considering a deviation request, the Air Transportation Division, the National Simulator Program, and the certificate holder's assigned principal inspector or TCPM will work together to determine if the training platform ensures quality, effective training for ATP applicants and provides an equivalent level of safety.

d. FSTD Cost

As reflected in the final regulatory evaluation, the cost to provide the training is estimated to be equivalent across all possible training providers. Although part 121, 135, 141 and 142 certificate holders may sponsor a simulator under part 60, there is no requirement to own a simulator. Many part 121 and part 135 certificate holders currently utilize simulation for training without the ownership and maintenance of the devices. It is common practice for many air carriers to enter into agreements with other carriers and part 142 training centers to lease time in FSTDs. Additionally, there is no requirement to deliver the ATP CTP training program, and each certificate holder must individually determine if providing the course best meets its needs and ability. Although the FAA considered cost when aligning the appropriate device to the training task, meeting the learning objective was the paramount consideration.

5. FAA Knowledge Test for an ATP Certificate

In the NPRM, the FAA proposed to revise the aeronautical knowledge areas in § 61.155 to incorporate the new knowledge areas in the ATP CTP. We noted that such a revision would result in changes to the ATP knowledge test. Commenters such as IATA and the IFL Group believed the current ATP knowledge test is inadequate. Commenters assert the current preparatory products available to applicants of the knowledge test only ensure rapid rote memorization of the material and not knowledge retention. The FAA concurs and has determined academic knowledge gained and evaluated in a classroom setting, reinforced with demonstration and experience in an FSTD, and then validated by a revised written knowledge test gives the applicant the

best chance of knowledge retention. This knowledge will allow the student to perform more effectively upon entering an air carrier environment—the ultimate goal of the Act.

The FAA also proposed to extend the validity period for the knowledge test for an ATP certificate to five years in consideration of the applicant's time and financial commitment to the ATP CTP. The FAA considered the extension appropriate due to the proposed elimination of the ability for air carrier pilots to use expired knowledge tests. The FAA received no comments on this proposal. In the final rule, FAA has retained the five-year validity period for the ATP knowledge test only for those pilots who pass the knowledge test after having completed the ATP CTP—meaning any test passed after July 31, 2014. The FAA has also retained the provision that allows pilots employed by certificate holders in parts 121, 125, or 135 to use expired knowledge tests. As set forth in § 61.39, pilots employed in parts 125 and 135 may use an expired knowledge test if they have completed the ATP CTP and the operator's approved pilot-in-command training or checking program. New hire pilots in part 121 operations may use an expired knowledge test if they have completed the ATP CTP and the operator's initial training program.[15] These pilots employed by air carriers are subject to additional training and evaluation requirements that will ensure that they have a continued understanding of the general concepts of the ATP CTP. If an applicant outside of an air carrier environment fails to take the practical test within five years of taking the knowledge test, he or she must retake the knowledge test to validate retention of the subject areas of the ATP CTP. The FAA has modified § 61.35 to make clear that a person may not take the knowledge test for the ATP certificate with an airplane category multiengine class rating until the person is 18 years of age.

Finally, as set forth in existing § 61.49, those applicants who fail the knowledge test for the ATP certificate after completing the ATP CTP are required to receive the necessary remedial training from an approved ATP CTP training provider and receive an endorsement before retaking the knowledge test.

[15] As set forth in § 61.39(b), the knowledge test results for pilots who pass the knowledge test before August 2014—meaning they have not completed the ATP CTP—will expire 24 months after the date the test was passed. These pilots may not use an expired knowledge test to take the practical test even if they are employed by an air carrier.

6. Credit Toward Air Carrier Training Programs

In the NPRM, the FAA proposed that the ATP CTP would be a basic certification requirement, not an air carrier training program requirement. This position was consistent with the provision in the Act that directed the FAA to modify the ATP certificate to require the specific training previously discussed in this final rule. The FAA specifically asked commenters whether changes or reductions could be made to a part 121 air carrier training program based on the proposed content of the ATP CTP. There were 27 respondents who indicated that air carriers could either incorporate the ATP CTP into their initial program or reduce initial training hours based on the air carrier providing the ATP CTP. Whereas most of the respondents were favorable to air carriers offering the course, commenters were split on the issue of reducing an air carrier's initial training program as a result of the ATP CTP. FlightSafety and Aerosim supported a reduction of initial training if additional subjects were covered by the ATP CTP. RAA indicated that reductions to air carrier flight training programs based on the proposed content of required ATP CTP would be difficult because the content of the ATP CTP was more generic than air carrier training. A4A stated ''a review of initial training should be accomplished'' without further explanation for why such a review should occur. Ameriflight claimed there is no legal basis for air carriers to provide part 61 training.

Although part 121 and part 135 operators may elect to offer this training for their pilots, it would remain separate from part 121 and part 135 training requirements. Because the proposed ATP CTP is part of the basic certification requirements for an ATP certificate, air carriers who elect to offer this training would be required to provide the course to their pilots prior to beginning initial training. The FAA proposed that principal operations inspectors may approve a reduction of hours in an air carrier's initial training program based on material taught in the ATP CTP. However, because the ATP CTP requirements are basic certification requirements, these hours could not be reduced based on the contents of an air carrier's initial training program.

The FAA agrees with many commenters that the initial flight training should not be reduced because type-specific and operator-specific training is critical in the development of air carrier pilots. The FAA conducted a review of the ground training required for initial training in part 121, subpart N. The general subjects that are listed in § 121.419(a)(1) contain many of the more basic knowledge requirements now addressed by the ATP CTP.

The FAA has determined that some reductions in initial training for those more generic items listed in § 121.419(a)(1) can occur. However, in place of requiring POI approval for these reductions, as was proposed in the NPRM, the FAA has decided to amend the general subject areas of initial training for those air carrier new hire pilots who have completed the ATP CTP prior to initial training. As these general subjects will now be taught in the ATP CTP, it will raise the baseline knowledge for all new hire pilots entering part 121 operations. This change will allow for more air carrier specific training to occur in initial training while allowing for reductions in the required program hours. The FAA notes that, until August 1, 2016—the date that all knowledge test results completed without completion of the ATP CTP will have expired—air carrier training classes could be comprised of some pilots who have completed the ATP CTP and some pilots who have not completed the course.

With regard to Ameriflight's comment regarding the impropriety of air carriers providing training that results in part 61 certification, the FAA is unclear of the basis of Amerifight's confusion. Regulations have recognized part 61 certification events for ATP certification and type ratings through air carrier training programs for many years.

7. Additional Course Requirements

The FAA has added provisions to new §§ 121.410, 135.336, and 142.54 to ensure that certificate holders maintain certain standards for the ATP CTP. First, there is a provision in the final rule that prevents certificate holders from issuing graduation certificates unless a student has satisfactorily completed all of the training requirements for the ATP CTP. Second, the FAA is requiring certificate holders to establish a mechanism that insures continued evaluation of the ATP CTP to guarantee that training techniques, procedures, and standards are acceptable to the Administrator. These requirements are in addition to the administrative requirements that are already contained in the various rule parts. Because part 141 pilot schools currently have similar requirements for training courses and are required to renew their certificates every two years, no provisions have been added to that part.

E. ATP Certificate With Restricted Privileges (§ 61.160)

1. Public Law and NPRM

Section 217 of the Act mandates that an applicant for an ATP certificate have ''at least 1,500 flight hours.'' The section gave the FAA discretion to permit applicants to obtain an ATP certificate with fewer than the minimum 1,500 hours if they have completed ''specific academic training courses,'' [16] as determined by the Administrator. The Act permitted a reduction only upon a determination by the Administrator that the courses would ''enhance safety more than requiring the pilot to fully comply with the flight hours requirement.''[17]

Based on the discretion afforded to the Administrator in section 217, the FAA proposed a new section, § 61.160,which set forth two alternative flight hour requirements for an ATP certificate with airplane category multiengine class rating based on academic experience. Specifically, the FAA proposed to permit military pilots who have graduated from an Armed Forces undergraduate pilot training school to obtain an ATP certificate with 750 total flight hours and graduates of four-year aviation degree programs with integrated flight training to obtain an ATP certificate with 1,000 total flight hours.

The FAA proposed to limit the privileges of any pilot who obtains an ATP certificate under the aeronautical experience requirements of new § 61.160. As set forth in the NRPM, a pilot holding an ATP certificate with fewer than 1,500 hours (an R–ATP certificate) would not be permitted to act as PIC in part 121 operations or as PIC in operations conducted under § 91.1053 and § 135.243—the only operations under parts 91 and 135 that require the PIC to hold an ATP certificate. A pilot holding an R–ATP certificate would also not be permitted to serve as SIC of an aircraft in flag or supplemental operations that require three or more pilots because, even prior to the statutory requirement, SICs in those operations were required to hold an ATP certificate.

In addition, the FAA proposed to modify the eligibility requirements of § 61.153 to establish a minimum age of 21 years for an R–ATP certificate. The FAA also proposed amending § 61.167 to preclude a pilot who holds an R–ATP certificate from providing instruction under that section.

2. General Support for and Opposition to an ATP Certificate With Reduced Hours

Sixteen commenters, including APA, CAPA, USAPA, and Kestrel Aviation, LLC, (Kestrel) believe reducing the flight hour requirement to be eligible for an ATP certificate should not be allowed. The Families of Continental Flight 3407 stated that they would like to see ''every pilot required to have the minimum 1,500 actual flight hours before being eligible for an ATP certificate.'' Four New York Congressmen and RACCA opposed a reduction in flight time for everyone except military pilots. Several individual commenters added that completing flight training through a part 141 pilot school or part 142 training center cannot replace flight experience.

CAPA commented that ATP certification is a well-proven system and the 1,500-hour minimum time requirement provides an undeniable basic level of safety and operational proficiency. APA stated: (1) The 1,500 flight hour requirement helps ensure that a mature, experienced aviator will be at the controls; (2) there is no substitute for experience; and (3) the most effective way for pilots to gain essential experience is to fly aircraft. APA noted that, along with total flight hours, ATP certificate requirements include cross country, night, and instrument flight hours that develop pilot skills that cannot be taught in a classroom or properly developed in a simulator. CAPA stated that real-world experience is vital.

NAFI submitted results of a survey it conducted with 427 of its members regarding the proposals and questions presented in the NPRM. A majority of the responders indicated that they did not support an ATP certificate with restricted privileges for pilots with fewer than 1,500 flight hours based on academic training or experience. However, the results of the survey also showed that a significant number of NAFI members (327 respondents) believed that segments of the pilot community other than military pilots and graduates of four-year aviation degree programs should be eligible for an R–ATP certificate.

AmeriFlight commented that the proposed rule will isolate many factions of the industry and funnel students to the cost-prohibitive four-year college flight training programs. AmeriFlight questioned whether the FAA believed that the knowledge gained while attending a four-year postsecondary institution is an adequate replacement for 500 hours of flight time and 175 hours of flight time in cross-country operations. Delta stated that a reduction in hours, training, or experience for pilots exercising the PIC privileges of an ATP certificate is not appropriate based on the statute.

The majority of commenters, including representatives of air carriers, educational institutions, and aviation organizations, were generally supportive of a restricted privileges ATP certificate but recommended alternatives to the proposal and suggested that it be made available to a greater number of pilots.

Fifteen commenters offered opinions and comments on what they referred to as arbitrary hour requirements, including CAA and IATA. A4A stated that flight time alone does not ensure pilot proficiency or professionalism and added that formal education combined with good hiring practices, training, and mentoring will produce the most highly qualified pilots. American Flyers/Nova Southeastern University argued that the FAA should not consider flight hours alone as a satisfactory indicator or piloting ability, judgment, or experience. It stated that the qualification for the R–ATP certificate should be based on a combination of academic training and experience. Several commenters, including AOPA, RACCA, and the University of Dubuque thought the minimum age of 21 for an R–ATP was also arbitrary. One individual commenter added that there was no evidence to suggest age 18 undermined safety.

SAFE stated that academic experience should only be used to reduce flight hours if there is demonstrable evidence to support it. Four commenters, including WMU, and John A. O'Brien Consulting, LLC, agreed that a R–ATP certificate should be permitted based on training or experience.

GAMA argued that there should be no flight hour minimum; rather, the FAA should focus on ensuring the quality of flight training. It added that eligibility for an R–ATP certificate should be determined through evaluation of the quality of the applicant's academic and practical flight training. Three commenters noted that the quality of flight experience was a better indicator of pilot success than only quantity of flight hours. Six commenters contended that the FAA needs to allocate resources to develop a better formula for rating the formal training, education, and experience of candidates for an R–ATP certificate.

The FAA continues to support an ATP certificate with restricted privileges

[16] The Act specified that these training courses must be beyond the additional training required by the Act itself. In other words, the new training mandated by the Act could not be a basis for a reduction in flight hours below 1,500 hours.

[17] Current regulations do not define the term ''flight hours;'' therefore, the FAA assumes that the 1,500 flight hours referenced in the Act represents the 1,500 hours total time as a pilot currently required by § 61.159.

for pilots who are at least 21 years of age. The majority of commenters asserted that allowing a reduction in flight hours based on academic coursework is safe, appropriate, and meets the intent of Congress. For the commenters who disagree with establishing an ATP certificate with fewer than 1,500 hours, the FAA also maintains that flight experience in an aircraft is an important component in developing the knowledge and skills necessary for a pilot to perform effectively in the air carrier environment. However, by granting the FAA discretion to reduce the required flight hours based on specific academic training, the Act acknowledged that flight time is not necessarily the only component to developing a safe and qualified pilot. The FAA concurs and has determined structured academic training integrated with flight training programs can provide more safety benefit than simply meeting the 1,500 hour flight time requirement alone.

Accordingly, the FAA will permit a pilot to obtain an ATP certificate with restricted privileges and serve as an SIC in part 121 operations. The minimum aeronautical experience requirements and age requirements of an R–ATP certificate will greatly exceed the commercial pilot certificate requirements previously required to serve as SIC in part 121 operations. As discussed in greater detail below, the academic coursework prerequisites for the R–ATP certificate together with the additional flight hour experience and the new training required for ATP certification will result in a pilot who is better prepared to enter an air carrier environment than meeting the 1,500 hour requirement alone.

The FAA emphasizes that pilots who meet these alternative hour requirements will be required to pass the same ATP knowledge test and practical test as pilots who obtain an ATP certificate at 1,500 hours. In addition, in the final rule, the FAA is retaining the limitations on the certificates of pilots who obtain an ATP certificate with the reduced flight hours. These pilots will have the following limitation placed on their certificates: ''Restricted in accordance with 14 CFR 61.167'' and ''Holder does not meet the pilot-in-command aeronautical experience requirements of ICAO.'' Pilots who hold ATP certificates with these limitations will not be permitted to act as PIC in any operation that requires an ATP certificate or serve as SIC in flag or supplemental operations that require three or more pilots. The FAA will remove the restriction from the ATP certificate once the pilot provides satisfactory evidence of having met the age requirements in § 61.153(a)(1) and the aeronautical experience requirements of § 61.159.

The flight time requirements for an ATP certificate under § 61.159 are not being altered by this rule. Therefore, pilots acting as PIC under part 121, § 135.243(a)(1), and § 91.1053(a)(2)(i) are still required to have at least 1,500 hours of total time as a pilot. Additionally, the age requirement for obtaining an ATP certificate to serve as PIC is not being altered in § 61.153. Pilots must continue to be at least 23 years old to act as PIC in operations that require an ATP certificate or to serve as SIC in flag or supplemental operations requiring three or more pilots. The FAA agrees with many of the commenters that the existing total time requirements for an ATP certificate are appropriate to act as PIC.

The following sections address specific comments about alternative crediting systems, the eligibility of military pilots and graduates of four-year aviation degree programs as proposed in the NPRM, and specific recommendations from commenters regarding expanding eligibility for the R–ATP certificate beyond those proposed in the NPRM.

3. FOQ ARC Recommendation

The FOQ ARC recommended crediting academic training as well as aeronautical experience. The ARC developed a complex system that not only permitted flight-hour credit for a variety of academic training including both two- and four-year aviation degrees but also allowed weighted credit for various flight experience.

Eleven commenters, including NAFI, Boeing Commercial Airplanes (Boeing), NATA, RAA, JetBlue, WMU, Purdue, and FSC suggested that the FAA implement a system of weighted flight hour reductions based on pilot experience. NAFI noted that the Pilot Source Study and the recommendations of the FAA's FOQ ARC should be referenced in any consideration of credit options. Boeing stated that the FAA should credit all manner of training that would better prepare pilots for air carrier operations. Boeing noted that this would include all college aviation programs, approved courses from part 141 and part 142 certificate holders, and all related experience and courses.

The RAA argued that the FAA should adopt the recommendations of the FOQ ARC. It noted the FOQ ARC recommended an aeronautical experience credit system that incorporated many of the individual recommendations identified by other commenters. The RAA contended that the FOQ ARC credit system is the model for establishing the proper level of eligibility and academic credit levels that should be provided for students of worthy programs. Finally, the RAA added that the NPRM fails to recognize the myriad of important providers of academic education and relevant flight experience that should be considered for flight hour reductions. Additional supporters of the FOQ ARC crediting system included A4A, CAA, American Eagle Airlines, Inc., ExpressJet, Aerosim, FedEx, Cape Air, AAL, John O'Brien Consulting, MTSU, Spartan College, and numerous individual commenters.

The National Training Aircraft Symposium (NTAS), which consisted of 80 industry members from academia, air carriers, and flight training providers, recommended a crediting system very similar to the FOQ ARC crediting system with the only difference in the amount of credit allowed for flight instruction. Supporters of the NTAS system included JetBlue, WMU, Purdue University, and FSC.

The FAA has reconsidered the FOQ ARC crediting system and determined that implementation and oversight of such a complex system, or a variation of it, would be too burdensome. Allowing a large number of crediting options creates a much more complicated process for FAA examiners and designees in determining and validating how much credit a pilot can get to be eligible for an R–ATP certificate. In addition, the weighted flight experience concept gives a multiplier effect to hours that were deemed more applicable to air carrier operations and therefore more valuable to a prospective air carrier flightcrew member. While the FAA finds value in the weighted flight experience concept, the Act does not permit giving flight hour credit to certain types of flight experience to reduce the minimum required flight hours for the ATP certificate.[18]

Considering phases I and III of the Pilot Source Study, the crediting system proposed by the ARC, and the structured academic coursework a graduate completes for an aviation

[18] The FAA notes that Section 217 of the Act directed the FAA to ensure that applicants for an ATP certificate had received ''flight training, academic training, or operational experience'' that would prepare the pilot to function effectively in an air carrier environment. Several paragraphs later in Section 217, Congress gave the Administrator discretion to reduce flight hours for the ATP certificate based on ''specific academic training courses.'' The FAA has determined that the failure to list operational experience in this provision of the Act does not permit the FAA to reduce flight hours based on operational experience.

degree, the FAA has determined that a reduction in flight hours is appropriate, and we have retained credit for academic training in the final rule. In addition to decisions surrounding the crediting system proposed by the ARC, the FAA also engaged in extensive qualitative evaluation of aviation degree programs and courses, which will be discussed in more detail later in this final rule. This evaluation, coupled with the documentation that will be provided by the aviation programs, will help to ensure that crediting hours are only granted for legitimate aviation program coursework.

4. Military Pilots

Commenters submitted 95 responses regarding the proposal to allow military pilots to obtain an R–ATP certificate with 750 hours of flight time. Eighty-eight commenters agreed a restricted privileges ATP certificate is appropriate for military pilots. Several other individual commenters observed that the military operational environment is different than the air carrier environment, so reductions based on military experience are not justified. CAPA specifically stated there is no empirical evidence that a graduate from a military program has better experience or skill than other airman.

Four New York congressmen and RACCA opposed a reduction in flight time for anyone except military pilots. These commenters acknowledged the highly specialized disciplined screening and training procedures military pilots undergo.

Twenty-eight commenters, including Delta, CAA, and RAA, indicated a 750-hour requirement for former military pilots is too high. Most commenters stated 500 hours is more appropriate. Spartan College stated ''the rigor and quality selection process for military pilots linked with highly structured training meets or exceeds the requirements of the NPRM'' and added that 500 hours is appropriate for military pilots who operate in a multi-crew environment.

An additional 17 commenters including ERAU, KSU, JetBlue, NAFI, PABC, GAMA, FSC, CAE, NATA, DSU, and a number of individuals agree military pilots should be eligible for a restricted privileges ATP certificate but did not suggest how much experience is appropriate. Three commenters, including Aerosim, stated 750 hours is too low and suggested 1,000 hours instead. Aerosim conducted a survey of over 300 of its part 141 flight training institutions that indicated that 71% of the respondents support a reduction in flight hours for military pilots, with 55% of respondents stating that 750 hours was adequate.

The FAA has determined that permitting military pilots to obtain an R–ATP certificate with fewer than 1,500 hours is appropriate due to the quality and structure of military training. To be accepted into a pilot training program in one of the branches of the military, a person must undergo a rigorous screening process including an assessment of aviation aptitude. Depending on the branch of the military, an applicant for pilot training must hold an associate's degree or a bachelor's degree. Once accepted into a pilot training program, a person is assigned full-time to aviation training.

As an example, the United States Air Force Specialized Undergraduate Pilot Training (SUPT) includes four to six weeks of academic and preflight training on aerospace physiology, altitude chamber tests, aircraft systems, aviation weather, mission planning, and navigation. After initial academic and preflight training, the Air Force student pilot undergoes 22 weeks of primary aircraft training before transitioning to a track of advanced aircraft training that continues for another 24 to 28 weeks. During flight training, military pilots continue their academic training through detailed briefings and debriefings of their flight training. An Air Force student pilot is committed to a 12-hour duty day while at SUPT, and his or her flight proficiency is continuously assessed. Additionally, during the flight training phases, an Air Force student pilot participates in flight training every day, either in a simulator or an aircraft.

Similarly, a Navy pilot completes a six-week indoctrination program which includes classes in aerodynamics, air navigation, aviation physiology, and engineering. The Navy pilot next completes primary training in approximately 22 weeks. It includes ground-based academics, FSTDs, and flight training. The Navy pilot then continues to advanced flight training.

Based on the comprehensive and demanding nature of military pilot training, the FAA is adopting the proposed requirement to allow military pilots who have graduated from an Armed Forces flight training program to apply for the ATP practical test after obtaining 750 hours of flight time. To the extent that some commenters have suggested a reduction is not appropriate due to operational differences in military operations, the FAA responds that the completion of military pilot training and the accumulation of 750 flight hours does not automatically result in an R–ATP certificate. Rather, a military pilot will still be required to complete the ATP certification training program in new § 61.156, pass the ATP knowledge test, and pass the ATP practical test or air carrier evaluation that results in the issuance of an ATP certificate. In addition, prior to serving in part 121 operations, military pilots will be required to complete an air carrier's initial training program and pass a proficiency evaluation. Accordingly, a military pilot will be required to demonstrate knowledge of civilian operations.

The FAA has modified § 61.39 to require military pilots applying for the ATP practical test to present the documents listed in § 61.160(a) to substantiate eligibility for an R–ATP certificate. These documents include an official U.S. Armed Forces record that shows that the applicant graduated from a U.S. Armed Forces pilot training school and received a rating qualification as a military pilot. Graduation from a training program designed to qualify a military pilot solely for operation of unmanned aircraft systems will not satisfy the requirement in § 61.160(a). Additionally, the FAA notes that regulations do not currently permit the time acquired while operating an unmanned aircraft system to be logged to meet aeronautical experience requirements for FAA certification.

Although several commenters have suggested the FAA allow a further reduction in flight hours for military pilots, the FAA has received no compelling data to support such a reduction. In addition, the FAA notes that, based on averages provided by the military, an additional reduction would have limited impact on those that could take advantage of this provision. Specifically, the majority of military pilots who complete their service obligations will have acquired the 1,500 hours required for an unrestricted ATP certificate. Army pilots who average approximately 800 hours when they complete their service obligations and pilots who are honorably discharged from the military prior to completing their service obligation would be most likely to benefit from the R–ATP certificate.

5. Graduates With a Bachelor's Degree in an Aviation Major

One hundred and seventy-five commenters supported an R–ATP certificate for applicants with a bachelor's degree with an aviation major. Several academic institutions including the Council for Higher Education Accreditation (CHEA), the American Association of Community

Colleges, UAA, Fox Valley Technical College of Aeronautics, WMU, Aims Community College, ERAU, Hesston College, Purdue, KSU, FSC, Westminster College, UVU, SIU, OSU, MTSU, DSU, Spartan College, Nova Southeastern University, and Florida Institute of Technology were supportive of the flight experience reduction based on academics. In addition, several individual commenters stated that graduates of an aviation degree program should be eligible to obtain an R–ATP certificate because the quality of training received at such schools is superior to that received under part 61.

CAPA commented that there is no empirical evidence that a graduate of an aviation degree program has better experience or skill than an airman who has not. CAPA also stated that, because most pilots cannot afford the ''extraordinarily high cost of specialized aviation institutions,'' the reduction in flight hours for these graduates is unfair because an applicant with financial resources can ''purchase'' their qualifications without having to gain flying experience. Moore Air, Inc. stated that permitting pilots from aviation bachelor's degree programs affiliated with part 141 schools discriminates against pilots with fewer economic resources. John A. O'Brien Aviation Consulting, LLC, stated the restricted privileges ATP certificate should not be limited to college graduates from ''select universities.'' AAL commented that the NPRM encourages pilots to attend a four-year aviation college or university but fails to recognize that such paths are available only to those willing and able to afford such educational paths. AAL acknowledges that higher education and quality training should be encouraged but quality training is also available in places outside accredited four-year aviation colleges.

In support of a reduction based on academic credit, Parks College (Parks) stated that its aviation graduates accomplish approximately 220 ''hours of ground and classroom instruction leading to a [commercial pilot certificate] with an instrument rating.'' Parks noted that, in addition to this classroom training for pilot certification, its students complete an additional 480 hours (32 credit hours) of academic coursework on topics related to aviation and air carrier operations. UND also provided information demonstrating that graduates of its professional flight curriculum must complete 464 hours of instruction in required aviation coursework that includes courses on human factors, flight physiology, advanced aerodynamics, and aviation weather. These students must also complete ground and flight training toward a commercial pilot certificate and instrument rating.

Based on the fact that the academic coursework completed as part of an aviation major generally exceeds the time a pilot might spend in ground school outside of that environment, the FAA continues to support a reduction of flight hours for graduates with an aviation major from a four-year institution of higher education who complete ground and flight training as part of approved training courses at a part 141 pilot school that is associated with the institution of higher education. Over the course of several years, these graduates complete significant aviation coursework well above the hours of ground training required for commercial pilot certification. In addition, a student's knowledge and flight proficiency are continuously evaluated throughout the degree program.

Notwithstanding the FAA's continued support for a reduction in required flight hours for these applicants, the FAA has refined, clarified, and expanded some elements of the R–ATP certificate as it applies to graduates of degree programs with aviation majors in the final rule. These modifications are discussed in the following sections.

a. Flight Hour Requirement

Notwithstanding general support for a reduction in hours for these pilots, many commenters recommended reducing the hours below the 1,000 hours proposed in the NPRM.

One hundred sixty-five commenters stated that 1,000 hours is too high, including OSU, Aviation Professional Development, LLC (APD), DSU, and the Pilot Career Initiative. AAL and Westminster College stated 1,000 hours is much too high to provide an incentive for pilots to pursue a formal education.

Most commenters responded that a total flight time of 500 to 750 hours is more appropriate for graduates of a four-year aviation degree program. Many commenters, including Delta, ERAU, and Rocky Mountain College cited the Pilot Source Study as evidence that the FAA should allow pilots with fewer than 1,000 hours to be employed by air carriers. The American Aviation Institute (AAI) along with several other commenters suggested the rule be simplified by establishing the 750-hour threshold for an R–ATP certificate to civilian candidates who have graduated from accredited programs including two- and four-year universities, programs designed for university graduates, and other structured academies run by training organizations and by airlines. AAI also recommended the FAA establish requirements for academies to qualify them. Other commenters suggested that the FAA offer an R–ATP certificate to graduates of a four-year collegiate flight program with fewer total flight hours, generally in the range between 500 and 1,000 flight hours.

Ten commenters, including KSU, SJSU, WMU, UVU, Aerosim, ALPA, American Flyers, and Nova Southeastern University believe the proposed 1,000 hours of flight experience is adequate. Approximately 47 percent of NAFI's members indicated that 1,000 hours is too low but did not specify how many of those responding generally oppose an R–ATP certificate.

The FAA has considered the 2010 and 2012 Pilot Source Studies, the FOQ ARC report, and the structured academic coursework in aviation a graduate receives [19] and has determined that, based on the best currently available information, it is appropriate to retain the minimum 1,000-hour aeronautical experience requirement for graduates of four-year degree program with an aviation major who obtain their commercial pilot certificate and instrument rating from an associated part 141 pilot school. Commenters have not provided compelling evidence to support a further reduction in hours for graduates of these programs. Many commenters referenced the 2010 Pilot Source Study (which indicated that the most successful pilots in initial training, without any consideration of the manner in which they received their aviation training, were those pilots hired with 500–1,000 hours) to justify why they felt the FAA should reduce the hour requirement further.[20] The FAA notes that the third phase of the Pilot Source Study, which was submitted to the docket, indicated that pilots with 1,001–1,500 total flight hours had more completions in training than any other group, including the group with 500–1,000 total flight hours.[21]

[19] There is further discussion of the FAA's review of academic curriculum later in this document. This review provided additional support to the agency's decision to retain the credit for graduates of aviation degree programs.

[21] A summary of the findings of the 2012 Pilot Source Study was submitted to the rulemaking docket. The FAA considered the results along with additional factors during development of the final rule. A recent journal article discussing the results of the 2012 Pilot Source Study concluded that ''flight hours are not a good predictor of performance.'' The journal article can be found in the Journal of Aviation Technology and Engineering, Vol.II, Issue 2 (2013) at: *http://docs.lib.purdue.edu/jate/vol2/iss2/2/*.

b. Institutional Accreditation and ''Aviation Degree Programs''

The FAA proposed in the NPRM to permit a reduced flight hour requirement for applicants who hold a bachelor's degree with an aviation major obtained from a postsecondary educational institution that satisfies the definition of ''accredited'' as established by Department of Education in 34 CFR 600.2. The Department of Education maintains a database of accredited postsecondary institutions and programs available at the following Web site: *http://ope.ed.gov/accreditation/*.

UAA fully supported the proposed requirement that any degree-granting institution qualifying its graduates for reduced flight hours must be accredited by a nationally recognized accrediting agency as defined by the Department of Education in 34 CFR 600.2. UAA contended that this type of accreditation insures the validity of the institution granting the degree and provides the most inclusive form of accreditation possible by which to prepare pilots for the proposed R–ATP certificate. UAA added some of their member institutions hold program-specific accreditation in addition to institutional accreditation, but the majority do not have program accreditation at this time. UAA looked at current, national collegiate flight training and indicated the number of eligible institutions will decrease from over 164 to 29 if program specific accreditation becomes a requirement. UAA noted that two institutions that currently hold program accreditation are phasing out their pilot training programs.

KSU stated that the relationship between the academic institution and the flight training provider signifies a strong commitment to quality pilot education and fosters an environment of professional pilot training. KSU added that Aviation Accreditation Board International (AABI) accreditation and part 141 approval by the FAA provide the needed quality assurances for the quality and integrity of flight training. Purdue added that the same credit should be given to graduates of AABI-accredited flight programs regardless of the part under which the school operates. APD agreed with the proposal to provide an R–ATP certificate but indicated that those R–ATP certificates should be available only for those students attending an AABI-accredited flight school.

The FAA received several comments requesting the FAA further define ''aviation degree program.'' The NTSB supported an ATP certificate with restricted privileges provided standards are established for student performance and the type of degree programs are more clearly defined. An individual commenter also suggested ''aviation-related degree'' is too broad. The commenter suggested the FAA specify the number of hours as well as the subject areas that should be taught. Barbary Coast Consulting expressed concern that the determination of what degree credits would qualify for a reduction in hours would fall to the academic institution and recommended that the FAA should make this determination based on how these classes will actually enhance aviation safety.

The Families of Continental Flight 3407 stated that, while there is value to aeronautical knowledge and training provided by four-year accredited institutions that offer aviation degrees, such graduates should not ''blindly be accorded flight hour credit without carefully evaluating each course to determine if it meets the law's specific criteria[.]'' The Families of Continental Flight 3407 specifically noted that the law required that academic training courses ''enhance safety more than requiring the pilot to fully comply with the flight hours requirement.'' P.L. 111–216, sec. 217(d). The Families of Continental Flight 3407 further stated that the FAA should develop a procedure to carefully evaluate the coursework in each graduate's academic program and only give credit to courses that enhance aviation safety and not courses that focus on ''tangential areas of aviation.'' They indicated that credit should be based on a course-by-course basis and not a blanket 500-hour reduction.

NATA noted that the Act gave the FAA authority to allow for reduced hours based on a safety assessment. It argued that the FAA failed to demonstrate in the NPRM that it had performed a comprehensive analysis. AAI indicated that the FAA should set specific program standards that can be met at the undergraduate or graduate levels at accredited schools and universities.

Spartan College commented that the education program must be well integrated with the university to make sure that classroom and flight lab time match the learning objectives. Spartan College recommended that all academic and ground school courses be taught by faculty and instructional staff employed by the institution. Spartan College indicated, however, that flight training could be taught either by an institution's instructional staff or by one or more qualified contractors through written contract.

The FAA is retaining the requirement for institutional accreditation in this final rule because accreditation ensures that education provided by institutions of higher education meet acceptable levels of quality. Accrediting agencies, as defined by the Department of Education in 34 CFR 600.2, develop evaluation criteria and conduct peer evaluations to assess whether those criteria are met. According to CHEA, accredited status is a signal to students and the public that an institution meets at least threshold standards for its faculty, curriculum, student services, and libraries.

The FAA acknowledges the value of programmatic accreditation, but it is not the sole means of assuring the quality of an aviation degree program for the purpose of qualifying students for an R–ATP certificate. Currently, AABI is the only organization that provides accreditation to aviation degree programs. As noted by UAA, if program-specific accreditation becomes a requirement for the R–ATP certificate, the number of eligible institutions will be reduced to 29.

The FAA agrees, however, with commenters who believe that the requirements of ''aviation degree programs'' must be better defined. The FAA has reviewed aviation degree curriculum requirements from over 100 colleges and universities and found that graduates of four-year universities receive bachelor's degrees with as few as 27 credit hours and as many as 85 credit hours in aviation and aviation-related courses. In addition, required courses and electives within aviation degree programs vary significantly. Many aviation degree programs are not focused primarily on preparing a student for a career as a professional pilot but rather for careers in areas such as air traffic control, aerospace engineering, aircraft maintenance, or business aviation. If the requirements proposed in the NPRM were not refined, graduates of those degree programs could be eligible for an R–ATP certificate without having completed relevant coursework designed to improve their knowledge and skills as a pilot.

For this reason, the FAA has decided that broad approval of aviation degree programs based on accreditation alone is not sufficient. Rather, the most critical element for determining whether a graduate should be eligible for an R–ATP certificate is the body of coursework completed prior to graduating with a degree in an aviation major. Establishing more specific program criteria for eligibility for an R–ATP certificate will better ensure that

academic training courses enhance safety such that a reduction in flight hours is consistent with the Act.

The FAA has modified § 61.160 from that proposed in the NPRM to clarify the academic requirements a student must complete to be eligible for an R–ATP certificate. In the final rule, the FAA has established that a student must:

- Earn a bachelor's degree in an aviation major;
- Complete 60 semester credit hours in aviation and aviation-related coursework designed to improve and enhance the knowledge and skills of a person seeking a career as a professional pilot;
- Complete ground training for a commercial pilot certificate and an instrument rating under approved part 141 curricula at the institution of higher education;
- Complete flight training for commercial pilot certificate and an instrument rating under approved part 141 curricula at the institution of higher education or at a part 141 pilot school associated with the institution of higher education; and
- Obtain a commercial pilot certificate with airplane rating and an instrument rating upon completion of ground and flight training.

The FAA has established 60 semester credit hours in aviation and aviation-related coursework designed to improve and enhance the knowledge and skills of a person seeking a career as a professional pilot as the minimum requirement. In determining whether a course is designed to improve and enhance the knowledge and skills of a person seeking a career as a professional pilot, the institution should consider the objective and purpose of the course. For instance, an introductory course on air traffic control could be designed to provide a foundation for both pilots and for students intending to pursue a career as an air traffic controller. On the other hand, an upper-level or advanced air traffic control course is primarily intended to prepare a person to work as an air traffic controller with little additional benefit to a person seeking a career as a pilot. Although knowledge of tower operations is instructive, an upper-level air traffic control course is not generally designed with the goal of improving and enhancing the knowledge and skills of a person seeking a career as a professional pilot.

These credit hours may include coursework outside the aviation department so long as the course focuses on an aviation-related topic. For example, credit hours obtained in a meteorology course outside the aviation department could count toward the required 60 credit hours because it introduces the student to basic weather theory that will affect flight decisions. As further explained in AC 61–139, Institution of Higher Education's Application for Authority to Certify its Graduates for an Airline Transport Pilot Certificate with Reduced Aeronautical Experience, the FAA believes that courses in subject areas like aircraft performance and aerodynamics, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulations, aviation weather, and aviation safety represent courses that are designed to enhance and improve the knowledge and skills of a person seeking a career as a professional pilot. The FAA expects that, in addition to the ground and flight training required for FAA certification, aviation students will have completed coursework in all of these areas as part of their aviation degree.

Finally, an R–ATP certificate applicant must have a commercial pilot certificate with an airplane category and instrument rating earned from a part 141 pilot school that is part of the academic institution or associated with the academic institution through a formal training agreement. Under § 61.160, a graduate must have completed all ground training for the commercial pilot certificate and instrument rating at the institution of higher education. Accordingly, the academic institution must, at a minimum, hold a part 141 pilot school certificate for ground training. This requirement will ensure that the ground training for certification is integrated into the institution's broader academic curriculum. The flight training for the commercial pilot certificate and instrument rating may be completed either at the institution, if it holds a part 141 pilot school certificate for flight training, or at a part 141 pilot school that is associated with the undergraduate institution through a formal training agreement. The FAA notes it has revised § 141.26 to require a pilot school that provides flight training for an institution of higher education that holds a letter of authorization under § 61.169 must have a formal training agreement with that institution of higher education.

Under the standards established in the final rule, the FAA estimates that students who are eligible for an R–ATP certificate will complete over 600 instructional hours [22] in aviation and aviation-related coursework designed to prepare them for a career as a professional pilot. Concurrently with their broader aviation coursework, students will complete the required ground and flight training and pass the practical tests for a commercial pilot certificate and instrument rating. These students are continuously evaluated with academic testing and flight evaluations over the course of several years. Based on these factors, a graduate of a bachelor's degree program who completes the requirements set forth in § 61.160 is eligible for an R–ATP and may apply for the ATP practical test with 1,000 hours total time as a pilot.

In setting the criterion for 60 semester credit hours in aviation and aviation-related coursework, the FAA decided to allow partial recognition for applicants with bachelor's degrees with aviation majors who fall short of the 60 credit hour requirement. Applicants who have completed at least 30 semester credit hours in aviation and aviation-related coursework designed to improve and enhance the knowledge and skills of a person seeking a career as a professional pilot may apply for an R–ATP certificate with 1,250 hours total time as a pilot. The applicant's coursework must include all of the ground and flight training for a commercial pilot certificate and instrument rating.

c. Cross Country Time for the R–ATP Certificate

To apply for an ATP certificate under § 61.159, a pilot must accumulate 1,500 hours total time as a pilot that must include 500 hours of cross-country flight time. In the NPRM, the FAA proposed to require military pilots who apply for an R–ATP certificate with 750 hours total time as a pilot to have 250 hours of cross-country flight time. The NPRM proposed requiring graduates with aviation majors who apply for an R–ATP certificate with 1,000 hours total time as a pilot to have 375 hours of cross-country flight time. The reduction in the required cross-country flight time was proportional to the reduction in total flight hours.

UND's John D. Odegard School of Aerospace Sciences submitted a research study that was conducted to assess the impact of the proposed rule on the supply of pilots who primarily obtain their flight experience from flight instructing. UND's study concentrated on the nature of flight time acquired as a flight instructor as it relates to the 500 hours of cross-country flight time required to apply for the ATP certificate.

[22] The FAA estimated that, as part of a degree program, students will complete an average of 12–15 credit hours of ground and flight training toward FAA certificates and ratings. Students will complete an additional 45–48 credit hours of broader aviation and aviation-related coursework during 15-week semesters.

The participants in the study included line flight instructors from 17 collegiate aviation programs. Based on its research, UND concluded that the average flight instructor would have to log 2,100 total flight hours before accumulating 500 hours of cross-country flight time. UND recommended that the FAA amend the rule to require a minimum of 200 hours of cross-country flight experience to obtain an R–ATP certificate rather than the 375 hours proposed in the NPRM for graduates of four-year aviation programs.

The FAA has reviewed the information provided by UND and determined that it is appropriate to reduce the cross-country flight time required for all applicants for an R–ATP certificate to 200 hours. In reaching this decision, the FAA considered the past and current requirements of both the commercial pilot and ATP certificates. Although 200 hours is below the requirements for an ATP certificate under § 61.159, the FAA believes pilots will accumulate a significant and relevant amount of cross-country experience as SICs in part 121 operations before being eligible to obtain an unrestricted ATP certificate and upgrade to PIC. The 200 hours of cross-country experience represents a significant increase over the 50 hours of cross-country flight time required for the commercial pilot certificate—the prior requirement to serve as SIC in part 121 operations. Pilots who hold an R–ATP certificate will be required to meet the 500 hours of cross-country flight time required in § 61.159 prior to having the limitation removed from their certificate. The FAA notes that the 200 hours of cross-country flight time is consistent with the ICAO standard for an unrestricted ATP certificate.

d. The Role of the Institution of Higher Education in Certifying Its Students

Under new § 61.169, an institution of higher education may apply for authority to certify that its graduates have met the academic eligibility requirements for an R–ATP certificate. The institution may not certify a student based solely on the degree received or the aviation major that has been completed. Rather, it will be required to evaluate each student's coursework before certifying that a graduate has met all of the academic eligibility requirements.

To obtain authority to certify students for eligibility for the R–ATP certificate under new § 61.160, an institution of higher education must submit an application and supporting documentation, as appropriate, to the FAA that includes:

- List of aviation majors offered by the institution;
- Type of degree offered;
- Institutional accreditation information;
- Part 141 pilot school information;
- List of substantial changes to degree programs in past five years;
- Course descriptions of aviation and aviation-related courses that may be used to satisfy the credit hours required by § 61.160; and
- Training agreements for flight training provided by a part 141 pilot school, if applicable.

The institution must identify on the form those academic courses that satisfy the requirements of § 61.160. Specifically, the institution must demonstrate that a course is designed to improve and enhance the skills and knowledge of a person seeking a career as a professional pilot. These courses will include the ground and flight training courses required for FAA certification as well as other coursework within the aviation department, such as Aviation Law, Human Factors, or Advanced Aircraft Systems. Courses outside the aviation department may also satisfy the requirements of § 61.160. For example, a physics course may qualify as an aviation-related course provided the course description clearly indicates aircraft performance and aerodynamics are the primary focus of the course. The institution must demonstrate that it offers sufficient aviation and aviation-related courses that a graduate could rely upon to meet at least 30 semester credit hours.

The application and FAA review process for institutions seeking a letter of authorization to certify students is further explained in AC 61–139. The AC provides greater detail on the aviation and aviation-related coursework used to satisfy the semester credit hour requirement. In addition, the AC provides information related to the part 141 pilot school requirements, including training agreements, and the institution's responsibility to notify the FAA of any changes that will affect its letter of authorization. Once the FAA has determined that an institution of higher education has met all the requirements, it will issue a letter of authorization granting the school authority to add a certifying statement to a student's transcript or other document deemed acceptable by the Administrator. The certifying statement must denote whether the graduate is eligible to apply for an R–ATP certificate based on the applicable criteria in § 61.160 at 1,000 hours (graduates who have completed at least 60 credit hours), or 1,250 hours (graduates who have completed at least 30 credit hours). A graduate will then be required to present the certifying document, along with all other documentation required in § 61.39, when applying for the practical test for an R–ATP certificate.

6. Recommendations for Expanding Eligibility for the R–ATP Certificate

A significant number of commenters, including air carriers, educational institutions, training providers, instructors, and aviation organizations suggested that a greater number of pilots should be eligible for an ATP certificate with reduced flight hours. Specifically, commenters suggested that the FAA make the R–ATP certificate available to the following candidates:

- Graduates of two-year aviation degree programs with commercial pilot certificates and instrument ratings from an affiliated part 141 pilot school;
- Students who come to eligible programs already holding commercial pilot certificates and instrument ratings;
- Students from non-eligible programs who transfer into and graduate from eligible programs;
- Pilots who are age 21 and have 1,500 hours of flight time;
- Graduates with bachelor's degrees with aviation majors and obtain commercial pilot certificates and instrument ratings from a non-affiliated part 141 pilot school;
- Graduates with bachelor's degrees with aviation majors and obtain commercial pilot certificates and instrument ratings from an affiliated part 61 flight training program;
- Graduates with associate's degrees with aviation majors and obtain commercial pilot certificates and instrument ratings from a non-affiliated part 141 pilot school;
- Graduates with associate's degrees with aviation majors who obtain commercial pilot certificates and instrument ratings from an affiliated part 61 flight training program;
- Pilots who have completed training programs at ''Aviation Academies'' (part 141 pilot school or part 142 training center);
- Pilots who have completed ''other'' aviation courses (e.g. AJT, Upset Prevention and Recovery Training (UPRT));
- Certified Flight Instructors (CFI); and
- Graduates of colleges and universities who do not have aviation degrees

A discussion of the options suggested by commenters follows.

a. Graduates With an Associate's Degree in an Aviation Major

In the NPRM, the FAA did not propose any reduction in total flight time for graduates of two-year aviation degree programs. Thirty six commenters, including Fox Valley Technical College Aeronautics Advisory Committee (FVTC), Experimental Aircraft Association (EAA), Aims Community College, NAFI, Jet Transitions, American Association of Community Colleges, Hesston College, Spartan College, UAA, CAE, and ExpressJet, argued that graduates of pilot schools not associated with a four-year aviation degree program should also be eligible for reduced flight time to be eligible for an R–ATP certificate. Most of the thirty six commenters stated that two-year college flight training programs should be eligible for an R–ATP certificate.

Fox Valley Technical College and the American Association of Community Colleges contended that the proposed rule is arbitrary and discriminatory and that graduates of two-year colleges and universities should be allowed to obtain an R–ATP certificate.

Aims Community College added that its students receive the same focused aviation training discussed in the NPRM and should be eligible for the same credit that graduates of four-year degree programs receive. According to Aims, these students complete the same flight hour and academic instruction requirements as students at four-year institutions, even though they do not complete as many courses unrelated to aviation. Aims indicated that students who earn an Associate of Applied Science degree complete 72 credit hours as part of its fixed-wing professional pilot program. They also stated the two-year college and university system nationwide has been providing well-trained pilots for the airlines and other aviation employers for decades. They suggested that, with the high cost of flight training and college in general, now is not the time to take away an efficient, effective, reasonably priced, educational opportunity from those who cannot afford the cost and time required for a four-year degree program.

CAE contended that quality instruction and flight experience can be delivered in two-year programs affiliated with part 141 pilot schools or part 142 training centers. Spartan College supported academic credit based on a variety of educational tracks including four-year and two-year collegiate aviation degrees. UAA, ExpressJet, and several other commenters argued that the FAA failed to include two-year programs, which should be afforded academic credit as provided in the FOQ ARC report.

The UAA added that two-year college and university aviation degree programs are a key part of the overall collegiate aviation-related pilot supply. To validate the assertion, the UAA conducted a telephone survey in April 2012, which reached a total of 29 community college aviation degree programs out of 40 identified as flight training providers. Based on the data obtained in the survey, the UAA estimates more than 2,000 aviation students are currently enrolled in two-year degree programs. For the 29 respondents, it was found that: ''(1) 1,474 total students were enrolled in aviation flight-related degrees at these institutions, or, on average, 51 students per institution; (2) the student enrollment ranged from a low of 7 students to a high of 292 students; and (3) of the 29 institutions reporting, 18 conducted flight training solely under part 141, 6 operated under part 61, and 5 used a combination of parts 61 and 141.''

UAA recommended changing the proposed § 61.160 to eliminate the differentiation between two- and four-year schools and recommended a 750-hour minimum for the R–ATP certificate. The EAA contended that the FAA should form a working group to explore what modifications should be made to these two-year school accreditation standards in order for their programs and students to qualify for the revised ATP aeronautical experience requirements in § 61.160.

The AAI recommended that the FAA adopt a program-based standard and not define acceptability solely by the length of the program. AAI commented that a student at a four-year institution pursues coursework in non-aviation fields, which is far less relevant than the aviation coursework actually taken.

Based on the FAA's extensive review of two-year and four-year aviation degree programs, the FAA has determined that it is appropriate to permit graduates who obtain an associate's degree with an aviation major to apply for an R–ATP certificate with fewer than 1,500 total hours. The two-year colleges, universities, and their graduates who responded to the NPRM have provided sufficient information to support a reduction in the flight hour requirement for an R–ATP certificate.

The FAA has found that these graduates receive degrees with a range of 24 to 56 credit hours in aviation and aviation-related coursework. On average, however, graduates of associate degree programs complete fewer credit hours in aviation coursework than graduates of bachelor's degree programs. For that reason, the FAA disagrees with giving the same credit to two-year programs. Accordingly, the FAA has modified § 61.160 to permit graduates of approved two-year degree programs with aviation majors to apply for an R–ATP certificate with 1,250 total hours of flight time.

As set forth in § 61.160(c), graduates of two-year programs must complete a minimum of 30 semester credit hours in aviation and aviation-related coursework designed to improve and enhance the knowledge and skills of a person seeking a career as a professional pilot. The 30 credit hours may include coursework outside of the aviation department so long as the course focuses on an aviation related topic. The FAA assumes on average courses are offered at three semester credit hours per course. The 30 credit hours therefore will include the ground and flight training courses for a commercial pilot certificate and instrument rating and other aviation and aviation-related courses.

As with bachelor's degree programs, the graduate will need to acquire a commercial pilot certificate with an airplane category and instrument rating from a part 141 pilot school that is part of the undergraduate institution. The institution of higher education must hold a part 141 pilot school certificate and provide all ground training for the commercial pilot certificate and instrument rating. This requirement will ensure that the ground training is integrated into the broader academic curriculum. The flight training may be completed either at the institution, if it holds a part 141 pilot school certificate for flight training, or at a part 141 pilot school that is associated with the undergraduate institution through a training agreement.

b. Transfer Students

SIU believes students who move from a two-year aviation degree program to an affiliated four-year aviation program and complete their bachelor's degree and the required flight training under part 141 should be eligible for a restricted privileges ATP certificate. KSU similarly states students who transfer to a four-year collegiate flight training degree program with an affiliated part 141 pilot school should have the same eligibility as a student who solely attends a four-year collegiate flight training degree program with an affiliated part 141 pilot school. KSU noted, however, that the school receiving a transfer student must evaluate the student's performance and

ensure that the school's own performance standard is met before graduation can occur.

The FAA acknowledges students follow a number of different paths for completing post-secondary education at a college or university. Some students start at community colleges and transfer to four-year degree programs while other students transfer between different four-year institutions of higher education. The FAA does not want to deter individuals from seeking alternative paths to achieving an aviation degree and therefore has determined that students who transfer into a two-year or four-year degree program with an aviation major could be eligible for an R–ATP certificate. These graduates would be eligible for an R–ATP certificate provided they complete the applicable requirements of § 61.160, including the semester credit hours and ground and flight training.

The FAA acknowledges that many of the larger four-year degree programs with aviation majors have satellite programs that are two-year programs. The satellite schools follow the same ground and flight training curriculum as the parent school which makes for a smooth transition from the two-year program to the four-year program. The FAA believes those graduates should also be eligible for an R–ATP certificate provided the requirements of § 61.160 are met and documented through official college transcripts and records. Further guidance and clarification on transfer credit is provided in AC 61–139.

c. Pilots With 1,500 Hours Who Are Not Yet 23 Years Old

Three commenters stated pilots should be able to obtain an R–ATP certificate at the age of 21 or less as long as they meet the full aeronautical experience requirements for the ATP certificate, including the 1,500 hours of total flight time. The commenters added that the existing age 23 requirement for the ATP certificate is arbitrary, discriminatory, and not based on science. AOPA commented that the FAA should allow any applicant to obtain an ATP certificate at the age of 21 and receive restricted privileges. NATA supports no age requirement if the ATP minimums are met, stating those pilots should be eligible for a restricted privileges ATP certificate.

Many pilots who have not yet reached the age of 23 have met or exceeded the 1,500 hours of total time as a pilot required for an ATP certificate. The FAA has remained consistent through denials of requests for exemption and previous rulemaking efforts to maintain the eligibility requirement of 23 years of age for an ATP certificate. The FAA has stated that the minimum age requirement of 23 years ensures ''a high maturity level for those pilots who are permitted to operate as PIC in operations requiring an ATP certificate.'' Exemption No. 7472. Commenters have failed to provide any compelling evidence to support a change to the long-standing requirement that a pilot exercising the PIC privileges of an ATP certificate be at least 23 years of age. Therefore, the FAA has not changed the age requirements for pilots serving as PIC in part 121 air carrier operations, SIC in part 121 flag or supplemental operations requiring three or more pilots, or operations conducted under §§ 91.1053(a)(2)(i) and 135.243(a)(1).

Based on the comments, however, the FAA has determined that a pilot who has reached the age of 21, has logged 1,500 hours total time as a pilot, and satisfies the remaining aeronautical experience requirements for an R–ATP certificate should be permitted to apply for an R–ATP certificate and serve as an SIC in part 121 operations. These pilots will exceed the age requirement of 18 years old that is currently required to obtain a commercial pilot certificate which, prior to the final rule, allowed a pilot to serve as SIC in part 121. Additionally, these pilots will have achieved the total flight time for an ATP certificate obtained under § 61.159. The FAA has determined that permitting such pilots to serve as SICs is an increase in the level of safety under current regulations and is consistent with the public law's focus on a higher level of flight experience for pilots serving in part 121 air carrier operations.

As with other applicants for an R–ATP certificate, these pilots will be required to complete 200 hours of cross-country flight time. The remaining 300 hours of cross-country flight time can be completed as an SIC in part 121 operations. The minimum age of 21 for an R–ATP certificate will allow those pilots currently serving as SICs in part 121 operations to continue serving in their current role provided they meet the required aeronautical knowledge and experience requirements and successfully accomplish an evaluation that results in ATP certification and an aircraft type rating.

d. Other Degree Programs

Twenty-seven commenters stated that graduates from four-year universities affiliated with part 61 schools should also be eligible for an R–ATP certificate. One commenter suggested that the FAA establish a fair method whereby flight proficiency could be measured against part 141 standards to allow part 61 students a reduction in flight hours. Another individual commenter pointed out that part 141 schools are given an unfair advantage over part 61 schools. UVU stated that graduates from four-year aviation programs with integrated flight training should qualify for an R–ATP certificate regardless of whether their training was conducted under part 61 or part 141.

Numerous commenters stated that AABI accredited institutions with part 61 schools should be eligible for a restricted privileges ATP certificate at 1,000 flight hours. Purdue believes any AABI-accredited aviation program should be eligible for credit regardless of whether the associated flight training is conducted under 14 CFR parts 61, 141, or 142.

Several commenters, including DSU and CAE, believed pilots with an aviation-related degree and part 141 flight training from a separate organization should be eligible for a restricted privileges ATP certificate. SIU, AAL, and Prairie Air Service, Inc. argued that the FAA should extend eligibility for the R–ATP certificate to any four-year college graduate, regardless of academic major or where flight training was obtained. Westminster College supported academic credit as a substitute for flight experience adding that credit should be extended to graduates of a part 141 pilot school with any four-year college degree or associate's degrees in aviation.

Many commenters disagreed with allowing credit for an ATP certificate for training received from non-affiliated part 141 pilot school. IATA stated that, if this proposition were to become a reality, it would require an unreasonable amount of FAA oversight in determining the adequacy of each applicant's training. ALPA's support of flight hour reduction for the restricted ATP certificate for college or university educated pilots is based on a comprehensive flight training curriculum integrated with the student's education. Several of the individual commenters stated that graduates of an aviation degree program should be eligible to obtain an R–ATP certificate because the quality of training received at such schools is superior to that received under part 61.

The FAA has considered all of the various methods for obtaining academic and flight experience proposed by commenters but decided that degree programs with non-aviation majors, flight training conducted under part 61, and non-integrated flight training

should not be eligible for an ATP certificate with fewer than 1,500 hours. The FAA has permitted a reduction for graduates who receive bachelor's degrees and associate's degrees with aviation majors and receive part 141 ground and flight training for a commercial pilot certificate and an instrument rating as part of a broader aviation curriculum.

The FAA does not agree with those commenters who believe that graduates with degrees unrelated to aviation should be eligible for an R–ATP certificate. These graduates have not completed coursework that prepares them for a career as a professional pilot and such an allowance would not be consistent with the Act. As discussed above, the FAA has emphasized the importance of an aviation curriculum in permitting a reduction in flight hours. It is the significance of aviation coursework above and beyond what is required for pilot certification that is the primary basis for permitting a reduction in flight hours. To underscore this fact, the FAA has established a minimum number of credit hours in aviation and aviation-related coursework designed to improve and enhance the knowledge and skills of a person seeking a career as a professional pilot that these students must complete to be eligible for an R–ATP certificate. Although completing a bachelor's degree may develop certain qualities in an individual that may assist them in a career as a professional pilot, those qualities are not directly relevant to aviation and should not be the basis for a reduction in flight hours.

For those commenters who believe that the reduction should apply to graduates irrespective of whether they complete ground and flight training through a part 141 pilot school or under part 61, or whether or not the flight training is integrated with the academic coursework, the FAA disagrees. By requiring the institution of higher education to hold a part 141 certificate to teach at least the ground training, the FAA ensures that the training for a commercial certificate and instrument rating is incorporated into the broader academic aviation curriculum. In addition, the FAA has oversight of the training conducted through part 141 program approval. Those pilot schools must renew their certificates every 24 months and demonstrate the quality of the training through an established training standard.

e. Other Approved Training and Specialized Courses

Forty-one commenters, including the Pilot Career Initiative (PCI), AOPA, Paradigm Shift Solutions, Inc., Prairie Air Service, Inc., SIU, MTSU, and Spartan College, encouraged the FAA to permit pilots with other training experiences to qualify for an R–ATP certificate.

AOPA and AAI contend that the FAA defined ''academic credit'' too narrowly. NAFI advised consideration of what would constitute ''academic study'' and recommended that it not be limited only to university or college training programs. NAFI stated that it was possible that other institutions or training providers could develop highly effective ''academic study'' training programs. NAFI added that a standardized criterion that could be applied across various programs would be necessary to allow such a condition to be successful and measurable.

PCI contended that the structured flight academies should qualify for a reduction in hours because they have strong academic and flight training programs conducted through an approved FAA curriculum. John A. O'Brien Aviation Consulting, LLC indicated that aviation academies should be eligible since they provide interaction with experienced airline professionals and flight instruction in accordance with FAA regulations to individuals seeking employment as a pilot at an airline. The training is specialized and regimented for an individual with very little aviation background to acquire the skills and knowledge to graduate from a program, in a short timeframe, with all of the pilot certificates necessary to fly at an air carrier. AOPA is also supportive of credit for training completed at aviation ''academies.''

AOPA and two other commenters stated that the FAA should allow credit for individual academic courses and not simply apply a blanket reduction at graduation. Paradigm Shift Solutions and four additional commenters noted the FAA had not considered Advanced Jet Training for credit—a unanimous recommendation from the FOQ ARC. Another commenter noted the FAA had not considered pilots enrolled in FAA-Industry Training Standards programs or those pilots who complete air carrier training through an Advanced Qualification Program. The Upset Prevention and Recovery Training Association (UPRTA) added that the FAA should issue restricted ATP certificates with reduced flight hour requirements to all ATP candidates, provided they have received academic and flight instruction in upset prevention and recovery from qualified instructors.

NATA recommended that the FAA expand the flight hour credit ''to include a comprehensive framework similar to the recommendations of the FOQ ARC and any other science-based advanced training courses that provide a benefit to safety.'' NATA stated that, if the FAA did not expand the proposal, the NPRM should be withdrawn in its entirety until such time as a more comprehensive framework could be created. The AAI contended that credit should be applied to other structured academies run by training organizations or air carriers.

Twelve commenters, including John A. O'Brien Aviation Consulting, LLC, the AAI, PABC, UAA, Sporty's Academy, and the IFL Group argued that students attending flight schools that are not associated with an accrediting entity, also referred to as flight academies, should be eligible for reduced time to qualify for a restricted ATP certificate.

A4A argued all part 141-trained pilots should be eligible for a restricted ATP because part 141 pilot schools are subject to the same standards, regardless of their affiliation with a four-year college. IFL Group similarly argued that the FAA should extend credit to any commercial, instrument, multi-engine pilot who has graduated from a part 141 pilot school. Aerosim also argued graduates from independent part 141 schools that offer a structured training program, with air carrier procedures, policies, and standards, should be eligible for academic credit.

The FAA does not support a reduction in flight hours for pilots who complete training at an ''aviation academy,'' or for pilots who complete their ground and flight training at a part 141 pilot school. The reduction for graduates who receive bachelor's or associate's degrees with aviation majors was not based solely on the completion of ground and flight training for certification at a part 141 pilot school. Rather, the reduction was based on the content and substance of a broader academic curriculum completed concurrently with ground and flight training for certification. The FAA notes that the regulations already reflect a reduction in flight hours for a commercial pilot certificate completed at a part 141 pilot school or part 142 training center. Pilots who complete a commercial pilot certificate as part of an approved part 141 or part 142 curriculum can apply for a commercial pilot certificate with 190 total flight hours, as opposed to the 250 hours required for those pilots who train under part 61.

The FAA acknowledges that flight academies generally provide focused training to prepare pilots for a professional pilot career; however, the FAA does not agree that the academic curriculum is sufficient to meet the intent of the Act. Flight academies do not spend an abundance of time in aviation coursework, separate from the minimally required ground school, over a period of several years. These academies lack the accredited and structured academic environment that the aviation colleges and universities provide. The courses taught by aviation academies are primarily focused on flight training and obtaining certificates and ratings rapidly. Many programs advertise a person can obtain their private pilot certificate, commercial pilot certificate, instrument rating, and certified flight instructor certificates in 12 months or less.

The FAA also does not support a reduction in flight hours for specialized courses such as upset recovery training and advanced jet training. The FAA encourages pilots to seek additional training that will enhance their skills and abilities; however, the FAA does not have the resources to evaluate every possible course that could be the basis for a reduction in flight hours. The FAA also does not support a reduction in flight hours for those pilots who obtain FAA certificates through a FITS program or who complete air carrier training through AQP. These programs are designed to meet existing regulatory requirements and do not represent additional training courses that merit a reduction in flight time. In addition, allowing a large number of crediting options creates an increasingly complicated process for FAA examiners and designees in determining and validating how much credit a pilot can get to be eligible for an R–ATP certificate.

f. Certified Flight Instructors

Many commenters indicated that the individuals who perform best in air carrier initial training are those that have CFI certificates and were hired with 500 to 1,000 hours. The commenters contended that the Pilot Source Study in 2010 and 2012 provided support with statistically significant results for the argument that CFIs perform better in part 121 training. The pilots that had CFI certificates had more training completions and required fewer extra training events in part 121 training. NTAS, AABI, Spartan College, and one individual commenter stated that credit for CFI ratings and flight instruction given should qualify for a reduction in flight hours. Another individual commenter suggested that a restricted ATP should be available to active CFIs.

The FAA recognizes that, while completing the ground and flight training for a CFI certificate is valuable, it is not the predominant reason that a CFI is recognized for his or her knowledge and skill. It is the time spent in the training environment teaching other pilots that reinforces a CFI's skills and abilities. Therefore, the FAA does not agree with commenters who suggest that this time meets the intent of the academic crediting provision in the statute. The operational experience gained from teaching is what is valuable, not the academic coursework to obtain the certificate. As with specialized courses, the FAA encourages pilots to seek additional training that will enhance their skills and abilities like CFI certificates; however, CFI ground schools are designed to meet existing regulatory requirements and do not represent additional training courses that merit a reduction in flight time as permitted under the Act. In addition, allowing a large number of crediting options creates a much more complicated process for FAA examiners and designees in determining and validating how much credit a pilot can get to be eligible.

7. Summary of FAA Decision

The FAA is adopting the following alternative total flight hour requirements for an R–ATP certificate with airplane category multiengine class rating or an ATP certificate obtained concurrently with an airplane type rating:

- 750 hours for a military pilot who has graduated from a flight training program in the Armed Forces;
- 1,000 hours for a graduate who holds a bachelor's degree with an aviation major (60+ aviation semester credits) from an institution of higher education who also receives a commercial certificate and instrument rating from an associated part 141 pilot school;
- 1,250 hours for a graduate who holds a bachelor's or an associate's degree with an aviation major (30+ aviation semester credits) from an institution of higher education who also receives a commercial certificate and instrument rating from an associated part 141 pilot school; and
- Pilots who have reached age 21, have logged 1,500 hours total time as a pilot, and satisfy the remaining aeronautical experience requirements defined in § 61.160.

F. Aircraft Type Rating for All Pilots Operating Under Part 121 (§ 121.436)

In the NPRM, the FAA proposed requiring all SICs in part 121 operations hold an aircraft type rating for the aircraft flown in revenue service by August 1, 2013. A total of 113 commenters responded to this proposed requirement.

1. Aircraft Type Rating Requirement for Part 121 SICs

Seventy-eight commenters, including A4A, AOPA, APA, CAA, CAPA, Cape Air, Delta, ExpressJet, Parks College, NADA/F, PABC, Aviation Professional Development, FSC, FedEx, IATA, NAFI, UAA, USAPA, and WMU, agreed with the proposed aircraft type rating requirement. ALPA, CAE, and FSI support the proposed requirement because it would require a type rating for part 121 SICs flying domestically; thus harmonizing the U.S. with current ICAO standards. Boeing supported the proposed aircraft type rating requirement for part 121 SICs because it encourages one level of safety for operations involving aircraft that require type ratings. ERAU, Purdue, Rocky Mountain College, and SIU, agreed with the proposed rule requiring SICs in part 121 air carrier operations to hold an aircraft type rating, provided the air carrier is responsible for supplying the type rating to the SIC. An individual commenter said that operators should provide the type rating to decrease costs for new hire pilots. Rocky Mountain College noted that pilot supply would diminish if the cost of the type rating is transferred to the pilot.

Twenty-two commenters, including KSU and GAMA generally disagreed with requiring SICs in part 121 air carrier operations to hold an aircraft type rating. Four commenters, including AAL and the IFL Group, said that requiring SICs in part 121 air carrier operations to hold an aircraft type rating is not necessary and that current regulations and air carrier training programs are sufficient. Ameriflight stated experience, not certification, is the problem. Prairie Air Services ''doubted'' that any accidents would have been prevented if the SIC had a type rating. Bemidji Aviation Services, Inc. indicated that SIC checks achieve the same goal. UPRTA supports upset prevention and recovery training as an alternative to obtaining a type rating. Aerosim and an individual commenter noted that a type rating has not historically been an indicator that SICs are properly trained.

The FAA agrees with the large number of commenters who said that

requiring an aircraft type rating for all SICs serving in part 121 operations would improve safety in part 121 air carrier operations. In addition, this requirement responds to the objectives of section 216 of the Act, which requires the Administrator to determine the appropriate multiengine airplane flight experience for pilot flightcrew members.

The historic division of responsibilities between the PIC and SIC have changed. In today's air carrier environment, both the PIC and SIC share the role of pilot flying and pilot monitoring. Therefore, the FAA has determined that requiring an SIC to train to the same level of aircraft handling proficiency as the PIC by obtaining an aircraft type rating is appropriate. The FAA assumes most pilots will obtain an aircraft type rating at the air carrier as part of initial training. The practical test for an SIC to obtain an aircraft type rating will include the same tasks and maneuvers as those required for a PIC receiving a type rating. Because this practical test would be administered by an FAA inspector or designee, the test would serve as an additional level of oversight of the SICs aircraft handling skills and abilities. The FOQ ARC members unanimously recommended that an SIC hold a type rating in the aircraft to be flown in part 121 air carrier operations.

2. Compliance Time

JetBlue and AAL requested a grandfather clause for existing SICs to enable additional compliance time and reduce the financial burden that would be incurred by requiring unplanned training and evaluation sessions. JetBlue estimated it would cost $6 million to provide a type rating to its current 1,120 SICs who do not hold a type rating for the aircraft they fly. This estimate is based on the cost provided in the FAA's initial regulatory evaluation, which estimated the incremental per-pilot cost of a type rating for existing SICs at $5,389. AAL is concerned about the additional cost burden of providing a type rating to their 852 current SICs who do not have type ratings. AAL added that the FAA should consider allowing qualified simulator instructors or check airmen to validate flying skills for those pilots with at least 1,000 hours in type during their next recurrent training cycle. Upon completion of the evaluation event, AAL suggested having a letter issued to the pilot to take to an FAA office to obtain their ATP certificate. Delta estimated the short-term cost to provide the type rating to its more than 1,800 SICs who already have ATP certificates but not the type rating for the aircraft flown to be $11.6 million dollars.

AAI, A4A, Delta, FedEx, and UPS also requested that the proposed compliance deadline of August 1, 2013 be extended. They specifically proposed a compliance deadline of 5 years or during transition or upgrade training. JetBlue proposed aligning the compliance time frame with initial, transition, or upgrade training. Some commenters indicated that, for current SICs, the compliance period for the type rating requirement should be five years or be aligned with upgrade training. UVU, SJSU, and four individual commenters discussed implementation of a grandfather clause for current students currently enrolled in college to become a pilot.

The FAA estimates that even if an air carrier does not currently provide aircraft type ratings to its SICs, the impact of the proposed rule to its training program would be low. Currently, all SICs in part 121 operations receive extensive training and a thorough evaluation at the end of the air carrier's initial training program. During the evaluation, SICs must demonstrate that they can perform most of the maneuvers and tasks that would be required for an aircraft type rating. The FAA acknowledges that an SIC may need some additional hours of training on tasks and maneuvers required for an aircraft type rating that are not currently required during the SIC evaluation. The FAA believes, however, that the practical test for the aircraft type rating could be performed in the same simulator session currently used for the evaluation. The FAA acknowledges that, unlike an evaluation, which is typically conducted by a check airman, the practical test for an aircraft type rating would have to be administered by an FAA inspector or FAA designee.

As a result of the statutory deadline requiring all part 121 SICs to hold ATP certificates by August 2, 2013, most current part 121 SICs that hold only a commercial pilot certificate will likely receive an aircraft type rating during an ATP certification event administered by the air carrier prior to the deadline. Many air carriers have already initiated a change to their approved training programs to provide ATP certificates and type ratings to SICs who hold only commercial pilot certificates. The FAA assumes the proposed compliance date for the type rating will not be an issue because this population of SICs will receive a type rating simultaneously with an ATP certificate.

In the initial regulatory evaluation, the FAA assumed that air carriers would provide a type rating to their SICs who already hold ATP certificates during annual recurrent training. With the publication of the final rule so close to the proposed compliance date, it is likely that air carriers will have to schedule additional training and testing events for these SICs to obtain a type rating by August 2013 unless the FAA extends the compliance date. To the extent commenters suggested aligning the type rating requirement and upgrade training, the FAA has determined that would result in an unnecessary delay given the assumptions in the initial regulatory evaluation. The time period for upgrade to PIC is approximately 5 years for regional carriers and 10 years for major air carriers.

To balance the cost and timing concerns raised by commenters with the benefits of requiring SICs to hold an aircraft type rating, the FAA has decided to extend the compliance date to January 1, 2016 for pilots who have been employed as part 121 SICs on or before July 31, 2013. This change is reflected in the new § 121.436(c). The extended compliance period will allow air carriers to make the appropriate modifications to their approved training programs and incorporate the type rating requirement into their recurrent training and transition training. In addition, it will alleviate the burden placed on the aircrew program designees and FAA employees who will need to administer the certification event for the large number of SICs who may require aircraft type ratings. The FAA notes that the extended compliance date will most benefit current SICs who hold ATP certificates and already have relevant experience operating the aircraft they are flying.

The FAA does not support a grandfather provision that would result in differing SIC certification requirements. Nor does it support certification by air carrier employees who are not designees of the Administrator. There is no precedent for an evaluation event that results in the issuance of an FAA certificate or rating being conducted by someone other than a designee of the Administrator. The commenters did not offer any persuasive arguments for why non-FAA employees or designees should be allowed to administer these evaluation events.

3. Aircraft Type Rating Requirement for SICs Serving in Operations Outside of Part 121

Fifteen commenters stated that SICs serving in operations outside of 14 CFR part 121 should hold a type rating if the PIC is also required to hold a type rating under the rule part. CAPA supported

the idea of requiring SICs serving in operations conducted under parts 91, 125, and 135 to hold a type rating because flying tasks are based on the pilot flying and pilot monitoring designations, not on seat specific maneuvers, as was once the case. FSI commented that even under normal operations there may be scenarios where the SIC does not have the knowledge and experience to successfully land the aircraft. FSI and an individual commenter also noted that SICs should hold a type rating as a way of ensuring they can safely fly the aircraft in the event the PIC is incapacitated. IATA stated in its comments that a type rating gives SICs more insight into the technical and operational characteristics and specifics of the aircraft and generates more confidence, which can be translated into increased operational safety. APA stated that all pilots should be required to accomplish the same training to the same standards. Delta commented that requiring SICs flying operations outside of part 121 to hold a type rating issued in accordance with the practical test standard would ensure that all pilots serving as flightcrew members and carrying passengers for hire meet the same standard.

Forty-five commenters including Rocky Mountain College, IFL Group, and Prairie Air Services, disagreed with requiring SICs serving in operations outside of part 121 to hold an aircraft type rating. KSU, Purdue, FSC, and Aviation Professional Development, LLC stated that the current rules for parts 91, 125 and 135 are sufficient and there is no need for a type rating requirement. GAMA also commented that there are sufficient regulations in place for parts 91, 125 and 135 operations and added there are no safety issues related to the SIC not having a type rating. Spartan College also stated that current regulations are sufficient and that the training received by SICs is adequately preparing them for line operations. Bemidji Aviation Services Inc. commented that a type rating evaluation is no different than the checkride that most airlines already make an SIC pass. Aerosim commented that type-rating training has not historically been any indicator of a properly trained pilot. Aerosim stated that real scenario-based training coupled with a structured training program would result in a more competent pilot.

AAL, RAA, Pilot Career Initiative, Cape Air, and PABC expressed concern that a type rating requirement for SICs serving in parts 91, 125, or 135 would restrict an important time building avenue for pilots aspiring to serve in part 121 operations. Additionally, the Pilot Career Initiative, Cape Air, ExpressJet Airlines, and Airlines for America noted that the Act only addresses part 121 operations. For this reason the type rating requirement should be limited to part 121 operations.

NATA commented that an SIC type rating requirement outside of part 121 is not relevant because the FAA did not propose such a requirement in the NPRM, nor did the FAA present conclusive evidence of a need for requiring a type rating for SIC serving in operations under parts 91, 125 or 135. Parks College commented that there is a clear potential safety benefit to requiring SICs under parts 91, 125 and 135 to possess a type rating; however, there is not enough data regarding the potential economic impacts of the proposal to offer a cost-benefit based recommendation. ERAU commented that it is unnecessary because operations under other rule parts are not similar.

The FAA agrees with commenters that the flight-related tasks are no longer based on seat position, but rather by the pilot flying versus pilot monitoring designations. Additionally, the FAA agrees that type-specific training could increase the technical and operational knowledge level of SICs on specific aircraft. The Act was specific to modifying the ATP certificate and part 121 operations. As such, the NPRM did not propose that SICs under other operating parts obtain an ATP certificate or aircraft type rating. Even though the FAA specifically solicited comments on requiring SICs serving outside of part 121 to obtain a type rating, a specific requirement was not included in the draft regulatory text in the NPRM. Additionally, the FAA did not provide any economic impact information in the regulatory evaluation that was provided with the NPRM. While the FAA did receive comments that supported extending the type rating requirement to operations outside of part 121, a majority of the commenters did not support such a requirement. As a result the FAA intends no action at this time.

G. Minimum of 1,000 Hours in Air Carrier Operations To Serve as PIC in Part 121 Operations (§ 121.436)

Prior to the issuance of this final rule, SICs in part 121 operations were only required to hold a commercial pilot certificate with an instrument rating, which can be obtained in as few as 190 flight hours. If hired by a part 121 air carrier with these minimums, SICs would acquire over 1,000 hours in air carrier operations before meeting the regulatory requirements for the ATP certificate, which is required to serve as PIC in part 121 operations. Therefore, regulations minimized the chance that two pilots with little or no air carrier experience could be paired together as a flightcrew. The Act's requirement for part 121 SICs to hold ATP certificates significantly changes the flightcrew composition for those operators who hire pilots with the minimum flight time requirements. By raising the certificate requirement of part 121 SICs, the natural mentoring period may no longer exist without additional regulation. The FAA notes that this requirement will create time for mentoring to occur for pilots new to the air carrier environment, which supports in part the objectives of Section 206 of the Act. That statutory requirement will be addressed in the Flight Crewmember Mentoring Leadership, and Professional Development rulemaking project.

The intent of the proposed 1,000-hour air carrier experience requirement in § 121.436 was to prevent two pilots in part 121 operations with little or no air carrier experience from being paired together as a flightcrew in line operations. In addition, it would ensure that pilots obtain at least one full year of relevant air carrier operational experience before assuming the authority and responsibility of a PIC in operations conducted in part 121 operations. As proposed, the 1,000 hours in air carrier operations could be a combination of time as PIC in operations conducted under § 91.1053(a)(2)(i), § 135.243(a)(1), or as an SIC in part 121 operations.[23]

1. Air Carrier Experience Requirement

Twenty-nine commenters, including AAL, A4A, ALPA, CAA, CAPA, PABC, Pilot Career Initiative, The Families of Continental Flight 3407, USAPA, UVU, and WMU, stated the proposed 1,000 hour requirement is appropriate.

Over 40 commenters, including CAE and KSU, believe the proposed rule is excessive with some proposing alternative hours of air carrier experience. Delta specifically stated that 750 hours is enough time for a pilot to complete initial training, meet operating experience requirements, and acquire approximately 18 months of flying experience. Additionally, over the 18-month period the pilot would be exposed to seasonal weather differences, mechanical issues, passenger issues, and air traffic control issues. GAMA, Rocky Mountain College, FSC, Purdue,

[23] The FAA has included an exception from this requirement for pilots who are serving as pilot in command in part 121 operations on July 31, 2013.

and Spartan College commented that the proposed time was too long and that upgrade from SIC to PIC should be based on competency, not on the number of flight hours. The UAA and SIU commented that the requirements for a PIC should be established by the air carrier and the air carrier's POI. UAA and SUI also commented that pilots who obtain an unrestricted ATP certificate with 1,500 hours would need a minimum of 2,500 total flight hours to upgrade to a part 121 PIC. SICs with an R–ATP certificate would need a minimum of 1,750 (military pilots) to 2,000 total flight hours (graduates of qualifying four-year aviation degree programs) to upgrade to a part 121 PIC. UAA and SIU are concerned that these flight hours may exceed what is necessary to train safe, competent PICs.

Fifteen commenters contended the requirement is unnecessary. Ameriflight, Inc., Boeing, JetBlue, and Kestrel commented that setting a flight time requirement for upgrade will not guarantee an increased level of operational safety or competency. These commenters assert that minimum hour requirements are not a guarantee that a desired experience has been gained and that flight time alone does not provide an opportunity to assess the pilot's ability to act as PIC. ExpressJet Airlines stated that the current requirements for a PIC in part 121 are sufficient because air carrier PIC candidates complete a rigorous training program, which is approved by the FAA. These pilots also receive continuous oversight through recurrent training and checking events. ERAU noted the proposed requirement is arbitrary, too long, and limits the air carrier's flexibility.

RAA supported the requirement for 1,000 hours of experience in air carrier operations for part 121 passenger service, but believes that requirement is excessive for part 121 all-cargo supplemental operations. RAA is concerned that because supplemental carriers providing feeder service are often limited to shorter flight legs, it could take three or more years for a pilot to gain 1,000 hours as an SIC. RAA states that these operations pose no threat to the flying public and a more suitable time requirement should be considered for part 121 supplemental carriers.

The FAA has considered all of the comments and determined that keeping the 1,000-hour air carrier experience requirement is appropriate for all operations under part 121. This requirement will ensure that an SIC has experienced an entire year of relevant air carrier operational experience before assuming the authority and responsibility of a part 121 operation as PIC. The FAA does not differentiate part 121 flightcrew member certification and qualification requirements based upon whether they are conducting passenger or supplemental (cargo) operations. The FAA acknowledges that this requirement will increase the minimum time required for a pilot prior to serving as PIC in part 121 operations. If a pilot is entering part 121 service with no previous air carrier experience, it may take more than one year for the pilot to upgrade to PIC. The FAA estimated in the initial regulatory evaluation for the NPRM that flightcrew members serving in part 121 operations fly on average 750 hours per year. However, the FAA notes that part 121 pilots are permitted by regulations to fly up to 1,000 hours per calendar year (§ 121.471). The FAA also notes that for most operators the 1,000-hour requirement will not be a factor given actual upgrade times for SICs exceed the minimum time it would take to acquire 1,000 hours, and thus we believe there will be minimal costs and benefits from this provision.

2. Part 135 and Part 91, Subpart K Time

The FAA received over fifty comments on whether to credit flight time earned in part 135 and subpart K of part 91 towards the 1,000 hours of air carrier experience requirement. The majority of commenters supported including the PIC flight time in these operations as proposed in the NPRM as part of the requirement. AAL, GAMA, KSU, and RACCA stated this time is similar to part 121 operations and provides a useful base of experience. FedEx, ExpressJet, ALPA, IFL Group, and Purdue specifically commented that other PIC time in part 135 operations should also count toward the 1,000-hour requirement. Conversely, five commenters, including APA, CAPA, and USAPA, stated operations under part 135 and subpart K of part 91 and should not count towards the proposed 1,000-hour experience requirement.

In the NPRM the FAA also asked commenters if SIC time outside of part 121 should count towards the 1,000 hour requirement to upgrade to PIC in part 121. The majority of commenters on this question offered that some SIC time outside of part 121 operations should count toward the requirement. Cape Air said that flight time as an SIC in scheduled part 135 operations should count. ExpressJet said that SIC time in subpart K of part 91 and part 135 operations should count. FedEx commented that subpart K to part 91, part 125, and part 135 operations can involve complex aircraft and experience relevant to part 121 operations; therefore, that time should count. FSI said that multicrew time accrued by SICs in subpart K of part 91 and parts 135 and 125 should count toward the 1,000 hours. ALPA commented that SIC time in part 135 and subpart K of part 91 should count if the time was acquired in a multiengine turboprop or turbojet airplane. NATA commented that SIC time outside part 121 should count because experience in multiple operational scenarios is beneficial. Purdue said that SIC time should count as long as it was acquired while flying in a multi-pilot crew under subpart K of part 91 or part 135. UPRTA said that SIC time outside of part 121 should count only if the SIC has completed upset prevention and recovery training.

Aviation Professional Development and FSC said that SIC time accrued outside of part 121 operations should not count because other operations are dissimilar. The PABC stated that SIC time accrued outside of part 121 operations should not count towards this requirement because the mentoring and experience needed to become an effective part 121 PIC cannot be received outside of part 121 operations. USAPA does not support counting flight time in subpart K of part 91 or part 135 operations towards the 1,000 hour requirement.

The FAA has decided that pilots should not be permitted to count any time as a required SIC in operations conducted outside of 14 CFR part 121. These SICs are not exercising the privileges of an ATP certificate and have not demonstrated leadership and command abilities necessary to exercise operational control of a flight in conditions most similar to operations conducted under part 121. The FAA has concluded that the time an SIC spends observing a PIC in part 121 operations plays an important role in preparing the SIC for eventual upgrade to PIC. A PIC in part 121 air carrier operations is expected to possess leadership and command abilities, including aeronautical decision making and the sound judgment necessary to exercise operational control of the flight. The FAA has determined that developing these abilities is most effectively done by performing the duties of an SIC in part 121 air carrier operations while under the supervision of an experienced PIC.

The FAA has determined that the ability to fly at the ATP certificate level and have demonstrated this proficiency during evaluation is an important regulatory differentiation. The FAA first proposed that certain operations under part 135 should require an ATP certificate in 1977. In that NPRM, the

FAA stated the requirement to hold an ATP certificate to act as PIC in some part 135 operations was ''[. . .] based in part on operational complexity and the number of persons carried, would provide a level of safety more comparable to that provided by Part 121.'' For these same reasons the FAA has determined that flight time acquired as a PIC in operations under § 91.1053(a)(2)(i),and § 135.243(a)(1) and flight time acquired as an SIC in part 121 operations should count towards the 1,000 hour air carrier experience requirement. Operations under § 91.1053(a)(2)(i) or § 135.243(a)(1) require an ATP certificate, are multicrew operations, and generally use turbine aircraft and therefore are the most applicable to part 121 operations. The FAA has determined that, while other part 91 and part 135 operations may involve certain elements that are relatable to part 121 operations, the varied nature of operations does not make credit toward the 1,000 hour requirement appropriate. As such, the proposed requirement that the 1,000 hours in air carrier operations may be a combination of time as PIC in operations conducted under § 91.1053(a)(2)(i) or § 135.243(a)(1) or as SIC in part 121 operations remains unchanged from the NPRM.

3. Military Time

Delta, A4A, AAL, and FedEx commented that flight time in military operations should count toward the 1,000-hour air carrier experience requirement. UPS specifically asked whether military flight time counted towards the 1,000-hour air carrier operating experience requirement. FSI indicated that multicrew flight time in the military should count. An individual commenter stated that military pilots who fly transport category aircraft as PIC should be able to credit up to 500 hours of their transport category military flight time. The commenter stated that this would still require them to fly 500 hours for an air carrier before being eligible to act as PIC for a part 121 operation.

The FAA recognizes that many pilots in the course of their military careers will obtain significant multicrew experience as PICs of transport category aircraft and therefore has added paragraph (c) to new § 121.436 to allow 500 hours of military flight time accrued as PIC of a multiengine turbine-powered, fixed-wing airplane in an operation requiring more than one pilot to be credited to the 1,000-hour requirement. While there is value in this experience, the FAA does agree with some of the commenters that these pilots operate in a unique system that is different from a part 121 air carrier environment. The FAA has determined that military pilots would benefit from spending some time serving as a required crewmember in a civilian air carrier operation before upgrading to PIC. This time would prepare them for operating in compliance with the regulations that govern civil aviation, the air carrier's particular operating specifications, and the airplane's operations manual.

4. Other Time

FedEx, A4A, and FSI said that flight time in part 125 should count toward the 1,000 hours of air carrier experience required to serve as PIC in part 121 operations. The FAA determined that flight time in part 125 should not count because, although these operations share certain characteristics with part 121 operations, they are not sufficiently similar to count toward the 1,000 hours of air carrier experience. Part 125 does not involve common carriage, a pilot is only required to have a commercial pilot certificate, and the operating rules in part 125 differ significantly from the operating rules in part 121.

FedEx, AA, A4A, and FSI commented that flight time in international air carrier operations should count toward the 1,000 hours required to serve as PIC in part 121 operations. The FAA concluded that, although foreign air carrier operations are similar to U.S. air carrier operations, there are significant differences related to the environment under which foreign air carrier operations are conducted, including possible cultural differences. Most importantly, pilots serving for foreign air carriers do not operate under U.S. regulations and may not have experience in the U.S. national airspace system. The FAA concluded that requiring these pilots to serve first as an SIC in part 121 operations before upgrading to PIC is appropriate.

CAE commented that the FAA should consider a minimum time in aircraft type if a pilot does not have sufficient flight time in subpart K of part 91, part 135, or part 121 to meet the requirement. While time in type is valuable, the proposed requirement is directed at gaining relevant experience in complex air carrier operational environments rather than in aircraft handling. The FAA has determined that the proposed requirement for SICs to obtain a type rating will provide additional experience and proficiency in aircraft-specific handling and knowledge. Therefore, the FAA has decided not to allow credit for time in the type of aircraft towards the 1,000 hours of air carrier operating experience.

H. Miscellaneous Issues

1. Pilot Supply

In the NPRM the FAA sought comment on the potential impact to pilot supply on part 121 and part 135 air carriers as well as part 141 pilot schools and part 142 training centers as a result of the requirement for all SICs in part 121 to hold an ATP certificate. The FAA received 267 comments regarding pilot supply from airlines, industry/trade groups, colleges and universities, pilot training centers, and pilots.

a. Part 121 Pilot Supply

More than 100 commenters specifically stated the proposed ATP requirements for part 121 SICs would hurt part 121 pilot supply. The University of Dubuque, SIU, and 58 other commenters stated the ATP certificate requirement for part 121 SICs would significantly affect air carriers' ability to hire new pilots, particularly regional air carriers.

Only a handful of commenters provided specific information to support the assertion that part 121 pilot supply will diminish. Among these commenters was the UAA. Their comments included data that suggests there is a diminishing supply of pilots in general at a time when forecasts suggest a consistent and growing global demand for pilots. UAA stated in their comments:

- Overall, U.S. airline domestic revenue passenger enplanements are expected to grow an average of 2.2 percent per year from 2011 to 2032 and international revenue passenger enplanements by U.S. carriers are expected to grow 4.2 percent per year from 2011 to 2032.
- Currently, Boeing forecasts a global need for 460,000 pilots through the year 2030, with 97,350 of those needed for North America. This demand is based upon projected fleet growth and pilot retirements.
- Pilots who turned 60 in the years 2007 to 2012 will be forced to retire beginning in 2012. UAA estimated that, beginning in 2018 or 2019, as many as 2,000 part 121 pilots will be forced to retire each year due to the Age 65 rule.
- FAA statistics demonstrate the number of new student pilot certificates issued has declined from 2007 to 2010 by more than 12,000. The number of new commercial pilot certificates issued also declined significantly from 2007 through 2010.
- A study conducted by the University of North Dakota indicates

only slightly more than half the flight instructors surveyed who initially planned on an airline career still have that long-term goal.

• The Pilot Source Study (2010) indicates a decrease in military pilots moving to air carriers. As the U.S. Armed Forces continue contraction, fewer military pilots are needed.

ALPA stated in their comments that there will be no impact on the pilot supply based on this rule because there are thousands of qualified pilots currently on furlough. They also noted that the availability of pilots is a function of the health of the air carrier industry.

CAPA stated the business practices and models of many of our nation's carriers have reduced the career expectations of entry-level pilots to a standard that will not allow a pilot to support a family. This new economic reality is what is driving many qualified pilots out of the job market. CAPA stated there will not be a pilot shortage but a shortage of pilots willing to work for low wages.

Several commenters, including RAA, ExpressJet, JetBlue, Ameriflight, Paradigm Shift Solutions, Inc., and GAMA stated this rule will exacerbate the pilot shortage caused by the Age 65 rule. Ameriflight added that no pilots will be available for operators of small aircraft as a result of talent drain to larger operators.

The AAI contended that within five years the proposed rule will result in a severe flight shortage to small communities. It also contends that the rule will threaten feeder routes and hub operations.

IATA contended that the proposed rule will be felt first in regional carriers but will eventually affect legacy carriers as well. ExpressJet, Delta, Parks College, and two other commenters state that the rule sacrifices quality pilot candidates by focusing on flight time instead of the quality of training. American Eagle Airlines, Inc., states that the rule will put U.S. air carriers at a disadvantage with foreign carriers.

Cape Air, UPS, FSC, CAA, ERAU, A4A, CAE, Human Capital Management and Performance, LLC, Aviation Professional Development, LLC, DSU, Spartan College, LeTourneau University, and three other commenters predict that the arbitrary hour requirements of the proposed ATP certificate with restricted privileges will discourage students from seeking air carrier careers.

b. Part 135, 141, and 142 Pilot Supply

The FAA also received comments on the impact the proposed rule would have on part 135 operators, 141 pilot schools, and 142 training centers. The RAA commented that students will be less attracted to part 141 schools that are not associated with a four-year university and college accredited aviation degree programs because those students could not take advantage of the R–ATP hour requirements.

SJSU commented that part 141 pilot schools and 142 training centers may see a decline in new student enrollment because some students already struggle to afford training costs and will not be willing to spend the extra money needed to meet the new requirements of a part 121 SIC position. On the other hand, ALPA commented that it expects enrollment at accredited colleges and universities with part 141 pilot training programs to increase. It also anticipates the rule ''could result in the creation of training partnerships between those accredited colleges and universities and training academies (e.g., CAE and FlightSafety International) that possess part 141/142 certificates to utilize the certified flight training simulators that these flight training academies may have.''

DSU commented that it already has a high attrition rate because the flight training component of its program doubles the cost of the aviation degree compared to other degrees offered by the university despite the fact that it makes no money on the flight training. It is concerned the rule would increase the attrition rate further.

CAE commented that part 141 operators might retain their instructors longer but may also suffer from reduced customer throughput as the new rule virtually eliminates their options to provide training at any level of reduction below the 1,500 hours.

Parks College commented that part 135 operators and part 91 subpart K operators may face negative impacts in two ways. First, if the supply of pilots qualified for part 121 operations diminishes significantly, causing entry wages to increase, there may be a shift of employees from part 91 and part 135 operations to part 121 operations. Secondly, the supply of pilots that gain their initial crew experience in part 121 operations as SIC, then move to part 135 operations or part 91 subpart K as PIC may decrease. It also anticipates that the proposed ATP CTP would increase training volume at part 142 training centers, as they currently operate the majority of Level ''C'' and ''D'' simulators. Additionally, training volume at part 142 certified training facilities would significantly increase, as only a limited number of part 141 and collegiate programs currently operate approved Level 4/5 FSTD devices.

NADA/F commented that the 1,500 flight hours and ATP requirement should benefit part 141 training centers and should have no impact on part 135 carriers as they already require an ATP and 1,500 hours.

Cape Air commented that it is likely that many part 135 pilots with ATP certificates will be recruited by the larger part 121 carriers who would then not have to incur the costs of the ATP CTP. This natural career progression essentially places the majority of the burden of acquiring ATP certificates to smaller airlines, with limited resources.

c. FAA Response

The FAA does not dispute the factual numbers of decreased pilot starts and the decreased number of commercial and flight instructor certificates issued over the past 10 years. However, the FAA also cannot change the requirement under the Act that all pilots in part 121 operations have an ATP certificate by August 2013. The FAA has decided to take advantage of the relieving option within the Act to offer an ATP certificate with restricted privileges, which would permit some pilots to obtain the ATP certificate with less than 1,500 hours. While pilot supply was not the reason the FAA considered such an option, the FAA has determined it would be a cost-relieving measure and would address some of the pilot supply concerns.

Despite the reduced pool of eligible pilots (i.e. pilots with the total flight hours for an ATP certificate), the current level of safety will be maintained because pilots must continue to meet certification and qualification standards before serving as a pilot in part 121 operations. As under current regulations, any pilot who fails to demonstrate satisfactory performance for the ATP certificate or successfully complete all of the requirements within the air carrier training program will not serve in part 121 operations. We do not see safety compromised because of a reduced eligible pilot pool.

The FAA acknowledges it is possible that as a result of the reduced pool of eligible pilots, some carriers with less competitive compensation packages may experience a higher failure rate due to an inability to attract the best candidates, which in turn is a cost to that carrier. Determining the actual cost is very difficult to identify due to lack of available data and long term hiring data is difficult to forecast. The FAA notes, however, the candidates who have traditionally performed the best in initial training, as identified by the ARC

and the pilot source study, are those candidates that will be eligible for a restricted privileges ATP certificate.

2. Benefits and Cost

Ameriflight questioned why the FAA calculated the cost of the proposed rule post-statute (meaning without the costs associated with the self-executing ATP certificate requirement), but claimed a $23 million dollar benefit [24] from the ATP certificate requirement. Ameriflight recommended the FAA not be allowed to take a benefit from any proposed rule it is not accounting for in its costs.

The FAA's Office of Accident Investigation and Prevention (AVP) conducted an accident analysis accidents of those accidents where the SIC had less than 1,500 hours and found no relationship with the ATP certificate requirement. AVP found the probable cause and contributing factors for those accidents to be other issues that are addressed by the ATP CTP and the aircraft type rating requirement. Therefore, the FAA did not attribute any benefit to the ATP certificate requirement. However, as reflected in the final regulatory evaluation, if one were to attribute all of the benefits claimed for those accidents to the ATP certificate requirement (meaning there was no other attributable cause for the accident other than the fact that the SIC did not have an ATP certificate and 1,500 hours), it would total $23 million (NPRM).

Ameriflight and RACCA believe that the cost of the final rule will exceed $141 million for the airline industry and should therefore precipitate a review under the Unfunded Mandates Reform Act of 1995. The $141 million dollar figure that triggers the Unfunded Mandates assessment relates to costs imposed in any one year on the private sector, which is not the case for this rule. The total costs attributable to the rule over a 20-year period are just $312.7 million and the highest cost in any year is under $20 million (2032). Consequently, the Unfunded Mandates Reform Act is not implicated by this final rule.

Ameriflight and RACCA objected to the finding of no economic impact on part 135 operators. RACCA questioned ''the thoroughness and validity of the economic impact analyses'' and suggested ''one reason for the FAA's inaccuracy is their complete disregard of Part 135 on-demand flying.'' Ameriflight and RACCA also object to the FAA's finding that the (annualized) cost of the rule is less than 0.5% of the operating revenues of all small firms affected by the rule and request that this finding be reevaluated taking into account RACCA members and other similarly-placed part 135 carriers.

In conducting the economic analysis, the FAA did not disregard part 135 on-demand operations as evidenced by the accident analysis conducted by AVP. For part 135 operators, the FAA determined that this rule would have had no economic impact on those operators. Operating revenue data is not available for most part 135 operators as most are privately held. However, the three part 135 operators for which we do have operating revenue, as measured by number of PICs (4 to 45 PICs), encompass almost the entire size range of part 135 operators (1 to 55 PICs). The finding that there would be an insignificant economic impact therefore applies to RACCA members and other similarly-placed part 135 carriers.

In commenting on the costs of the ATP CTP, AOPA indicated the FAA did not calculate the time required of air carriers to ''navigate the cumbersome schedules of part 142 training centers or airline in-house training centers'' to schedule simulator training and estimated the cost to be a minimum of two hours per ATP applicant. AOPA also stated the ATP CTP costs did not account for travel expenses because the FAA assumed the ATP CTP training would take place immediately prior to initial training for the air carrier, but ''the FAA does not address pilots seeking ATP certification outside of the air carrier environment.'' AOPA also questioned the training pay assumption, stating that ''It seems highly unlikely a pilot earns only $43 a day—$2 per day less than their daily per diem—while training. . . .''

The FAA estimates the social cost of the ATP CTP by estimating the impact on the low-cost providers of the training—part 121 air carriers and part 142 training centers. To also include the pecuniary impact on training schools would be double counting. The FAA does not agree with costing two hours per applicant to schedule training. Given the inventory availability of FSTDs discussed previously, the FAA believes the impact to training department administrators will be minimal. With respect to travel costs, the FAA has modified its assumption and believes that 50% of pilots will be trained directly by air carriers and 50% will be trained by part 142 training centers. We believe it is highly reasonable to assume that ATP certification training by air carriers will take place just prior to initial pilot training so there will be no incremental travel costs. However, we now include travel costs for pilots undergoing ATP certification training at part 142 training centers. We agree that we underestimated training pay in the NPRM and have increased our estimate for the final rule.

In reference to our estimate of the cost of the 1,500-hour requirement, the IFL Group disputed the assertion that a new pilot can easily fly 750 hours in a year outside of part 121 operations. The IFL group noted that kind of flight time has historically been obtained working for an air carrier, which the pilot will no longer be able to do. The commenter added, although flight instructing is another way to build time, as a result of the declining student pilot starts, the ability for pilots to earn that much time annually is not realistic. Upon review, the FAA has reduced its assumption to 500 hours of flight time annually.

With respect to the cost of the ATP CTP, NATA asserted the costs are borne by the individual, not an air carrier. ''Should the FAA reject NATA's comment that costs of the ATP CTP should be computed based upon impact to the regulated individual pilot, NATA asserts that the FAA still must modify its estimates to reflect the higher training costs faced by Part 135 and 91 subpart K operators'' due to smaller class sizes and the need to contract with training providers.

The FAA believes that most pilots will receive the ATP CTP through employment—either at large air carriers, with their own training facilities and simulators, or at part 142 training centers through training agreements. The inefficiencies of small size can be greatly mitigated by contracting out, and, in fact, many small operators already use contract training to meet existing training requirements. Moreover, the ATP CTP, as a general program, is not specific to any type aircraft, nor to any rule part (121, 135, 91K). Therefore, we believe that competitive part 142 training centers will deliver generic ATP CTP training to individuals, as well as air carriers, at costs no higher than our conservative estimate.

3. Alternative Licensing Structure

In the NPRM the FAA posed two questions which focused on an alternative pilot licensing structure for part 121 pilots. The FAA asked if it should consider an alternative licensing structure for pilots who desire only to fly for a part 121 air carrier (e.g. multicrew pilot license). The FAA also asked if it were to adopt a licensing

[24] In the NPRM initial regulatory evaluation, the FAA estimated that the total benefit for accidents involving SICs with fewer than 1,500 hours of flight time was $23 million. The final rule regulatory evaluation estimates it to be $16 million.

structure for a multicrew pilot license (MPL), what would be the appropriate amount and type of ground and flight training.

With respect to the question of whether the FAA should consider an alternative licensing structure for prospective part 121 pilots, a total of 79 commenters including IATA, JetBlue, NAFI, Boeing, PABC, FedEx, A4A, CAE, RAA, Delta, NADA/F, USAPA, ERAU, Spartan College, and UAA provided input. Just over half of the commenters were supportive of the FAA considering an alternative method to certificate part 121 air carrier pilots. NTAS supplied the results of their industry polling; their responders reflected similar results. Sixty-two percent of their responders were in favor of the FAA considering an MPL-like structure. FAA's harmonization with ICAO was the most selected reasoning for support according to the NTAS poll.

Some commenters including IATA and Boeing, noted the benefits of an alternative licensing structure for pilots who desire only to fly for a part 121 air carrier. IATA noted results show pilots training in a multicrew environment exhibit proficiency and safety. Boeing stated the graduates of these programs are highly competent in the knowledge and skills required for air carrier operations. An individual commenter stated training for such a license specifically develops the core competencies necessary to operate as a part 121 SIC. Another individual commenter noted MPL is one of the most rigorous structured pilot training programs.

CAE stated its top recommendation is for the FAA to adopt a U.S. MPL. Another individual commenter noted the MPL would allow applicant pilots to save time and money in reaching their goal. Aerosim stated the MPL has been proven to be effective training outside the United States and should be considered in the United States. LETU noted many other countries are using the ICAO MPL to address pilot shortage. The RAA stated there is more than enough experience in alternate pilot training and licensing approaches elsewhere in the world to support FAA consideration of such an approach.

Several commenters including ERAU disagreed with an alternative licensing structure for pilots who desire only to fly for a part 121 air carrier and noted the lack of information regarding MPL programs. ERAU noted not enough performance data exists on pilots from MPL programs. CAPA stated an MPL-like structure would replace fully qualified and type rated pilots with ones that have limited knowledge and experience thus reducing safety.

The Families of Continental Flight 3407, NADA/F, GAMA, USAPA, and Bemidji Aviation Services, Inc., disagreed with an alternative licensing structure for pilots who desire only to fly for a part 121 air carrier. Families of Continental Flight 3407 suggested an ATP should be the minimum for SICs. NADA/F stated they are opposed to altering the ATP requirements and noted the option of multicrew license is not part of the legislation. USAPA stated the FAA should keep the current ATP standard. Bemidji Aviation Services, Inc., stated pilots need to have more experience than an MPL. FSI noted their ATP courses already include appropriate CRM training. American Flyers and NOVA Southeastern University stated the FAA should not accept a lower standard of skill.

With respect to the question of what would be the appropriate amount and type of ground and flight training for an MPL-like certification structure, 35 commenters provided specific recommendations on the ground and flight training for an MPL-like structure. Seventeen commenters recommended looking to existing ICAO standards or rules in place in other countries. ExpressJet recommended the FAA should review the existing MPL structure as outlined in Annex 1 to the International Convention on Civil Aviation and consider the desired outcomes and harmonizing with ICAO before determining the amounts and types of training.

JetBlue supported an alternative licensing structure and stated ground and flight training should be determined by a comprehensive task analysis and qualification standard, derived from an Instructional Systems Design (ISD) process, and in alignment with the requirements of ICAO. Similarly, CAE states MPL candidates meet the requirements of a pilot operating in multicrew transport category aircraft in all environments developed through an ISD approach. It is not determined by hours, but by meeting objectives of the required competencies through theoretical and flight training, as specified by the ICAO Procedures for Air Navigation Services (PANS) Training Document. Consistent with the concepts of Advanced Qualification Program (AQP), MPL is a continuous improvement training process validated by empirical data.

FedEx, AAL, and A4A each stated the FAA should consider MPL requirements in accordance with ICAO standards or as recommended from an ARC. JetBlue recommended an ARC be convened to propose an alternate licensing structure for pilots seeking employment with a part 121 air carrier. Delta, ALPA, and CAE also recommended the FAA form an MPL ARC to develop recommendations for the adoption of MPL program.

The FAA is appreciative of the comments received regarding an alternative certification avenue for part 121 air carrier pilots. Whereas the FAA recognizes the potential benefits of such a certification structure, it is also cognizant of the potential risks such a dramatic departure from traditional certification and experience requirements could present. The FAA also agrees with commenters on the limited data points available for a comprehensive evaluation of existing MPL programs abroad. Although the FAA cannot commit to a timetable for the organization of an ARC, the FAA believes such an industry group could properly research, study, and provide detailed recommendations to the FAA for additional consideration.

4. Accident Effectiveness Ratings

In the NPRM the FAA sought comment on the effectiveness ratings for the specific accidents identified in Appendix 4 of the Initial Regulatory Evaluation. Appendix 4 contained the list of part 121 and part 135 accidents that may have been prevented as a result of this rulemaking. The accident analysis was conducted by the FAA's Office of Accident Investigation and Prevention (AVP) in the Assessment of the Effectiveness of Public Law 111–216 in Reducing Accident Risk posted to the docket. Only six commenters addressed the effectiveness ratings of the accident analysis.

Ameriflight and an individual commenter quoted AVP's assessment that it found little relationship between the 1,500 hour requirement and airplane accidents, and therefore found little benefit for that requirement. Only seven of the 31 accidents used for the 14 CFR Part 121 benefit analysis had SICs with less than 1,500 hours. The individual commenter also stated that it appears that since the 1,500 hour requirement is mandated by statute, the FAA found it unnecessary to examine the 1,500 hour requirement as a tool for improving safety. Aerosim disagreed with the accident analysis because none of the accidents reviewed were caused by low time SIC. UPS commented that it was unaware of any evidence to suggest the accidents cited by the FAA as the benchmark for both benefit and prevention would have been avoided if the proposals in this NPRM had been in place.

A4A states that the FAA should ''exclude the 24 part 121 accidents that include SICs with more than 1,500 hours as not relevant to this rulemaking.'' A4A questioned the effectiveness ratios on several specific accidents [25] because the NTSB determined that the probable causes of the accidents were failures by the PIC not the SIC. A4A based its conclusion on the fact that this final rule ''mandates additional experience for a SIC'' and, therefore, any accident based primarily on an NTSB finding that the PIC was primarily responsible for the accident should be excluded.

The FAA did consider the 1,500 hour requirement for SICs as a regulatory baseline, since it is required by the Act, when reviewing the accidents. However, both the proposed rule and final rule would have affected the eligibility of both the PIC and the SIC involved in the accidents cited in AVP's analysis. The eligibility of flight crews is based on the ATP certificate requirement for SICs and the 1,000 hours of air carrier experience for the PIC. In all 3 accidents that received ''high'' effectiveness scores (meaning there is a 75% reduction in the likelihood of the accident under the proposed rule), crew performance essentially explained the accidents and the rule would have affected the eligibility of both pilots, as neither the PIC nor the SIC met the proposed minimum experience for their respective positions under the proposed and final rule. AVP concluded that more experience and seasoning would have affected the outcome of these accidents.

AVP also acknowledged in its analysis that, as a matter of analytical principle, no accident received an effectiveness score higher than 0.9 based on the assumption that the FAA can never be certain that any intervention would eliminate all risk in a particular scenario. The accident analysis considered the entire proposal, not just the requirement for part 121 SICs to hold an ATP certificate. AVP found the rulemaking to be effective at least to some degree against 31 accidents analyzed, and in most cases the effectiveness scores were ''low'' or ''low-to-moderate.''

As a result of the comments and the changes incorporated into the final rule, AVP re-evaluated the part 121 and part 135 accidents and made some adjustments. The full review of the accident analysis is available as part of the Final Regulatory Impact Analysis for the final rule, which is included in the docket for this rulemaking.

[25] A4A specifically questioned the effectiveness ratios in Great Lakes Aviation accident (6/20/2007), the Air Tahoma accident (8/13/2004), the Mesa Airlines accident (10/16/2001), and the Avjet accident (3/29/2001).

5. Considerations for Offering the ATP CTP

In the NPRM, the FAA sought comment on what factors parts 121, 135, 141, and 142 certificate holders would principally consider in determining whether to offer the ATP CTP. The FAA received 39 comments to this question.

Of the comments received, a majority of the commenters including Ameriflight, CAE, SIU, and ERAU, indicated having a Level C or higher FFS would be a consideration. UND commented that it does not have a Level C or D FFS. The cost to acquire, house, operate, and maintain the device would be prohibitive. UND was quoted $8 million dollars to purchase a Level C FFS. This means UND would have to charge $1,000 per hour to operate the simulator. This cost does not include the cost to build a building to house the FSTD or the cost to hire staff to operate the equipment. The UAA commented that the proposed requirement for a Level C FFS severely limits the number of 141 certificate holders who could provide the training. UAA stated that none of its member colleges or universities own Level C FFSs. UAA stated the proposal would thrust more training on part 121 operators and the large part 141 pilot schools and 142 training centers.

Another consideration by many of the commenters was whether the certificate holder had instructors that met the proposed requirement of two years of experience in airline operations. Boeing, SIU, and UAA commented that the requirement for ATP CTP instructors to have two years of experience under § 91.1053(a)(2)(i), or § 135.243(a)(1), or in any part 121 operation does not assure proficiency in instructing. Boeing further commented that the instructor requirement is overly burdensome on part 141 and 142 certificate holders as these organizations have no ability to qualify instructors that did not already meet the requirement.

Additional comments focused on which certificate holders might need to provide the ATP CTP. American Airlines commented that aviation colleges will be incentivized to offer the course; however costs to the certificate holder would be a significant factor in determining whether to develop and offer such a course. JetBlue speculates the ATP CTP requirement would necessitate part 135, regional part 121 carriers, and parts 141 and 142 certificate holders to offer the ATP CTP immediately to help alleviate pilot supply concerns. JetBlue added that an ATP certificate is a prerequisite to pilot employment for it, however, market forces and future pilot supply ''will ultimately determine our and other part 121 major airlines' decision to offer the course.''

The FAA appreciates the commenters input on what the considerations will be for offering the ATP CTP and took the identified concerns into consideration in developing this final rule.

6. Administrative Law Issues

This final rule will be effective immediately upon publication in the **Federal Register**. Section 553(d)(3) of the Administrative Procedure Act provides that publication of a rule shall be made not less than 30 days before its effective date, except ''for good cause found and published with the rule.'' 5 U.S.C. 553(d)(3). Consistent with section 553(d)(3) and for reasons discussed below, the FAA finds good cause exists to publish this final rule with an immediate effective date.

As noted earlier, independent of any rulemaking action by the FAA, all flightcrew members in part 121 operations must hold an ATP certificate by August 2, 2013. Under this final rule, certain pilots will be able to obtain an ATP certificate with fewer than 1,500 hours based on specific academic training courses. The FAA has established a process by which institutions of higher education may apply for authority to certify graduates for an R–ATP certificate. Without an immediate effective date, the FAA cannot begin to issue this authority, which will delay issuance of R–ATP certificates. Such a delay could result in hardship for those pilots currently serving in part 121 air carrier operations who would otherwise qualify for an R–ATP certificate. To minimize disruptions to part 121 operations and reduce the impact on pilots currently serving in part 121 with commercial pilot certificates, the FAA finds good cause exists for this rule to take effect immediately upon publication in the **Federal Register**.

7. Miscellaneous Amendments

The FAA proposed several miscellaneous amendments to parts 61 and 142. These amendments—maintained in the final rule—are non-substantive technical amendments intended to define terms, remove obsolete provisions, and make minor conforming changes to existing regulations. In addition, the FAA has made a slight modification to § 61.71(c). This change makes clear that a person may be considered to meet the aeronautical experience, aeronautical

knowledge, and areas of operation requirements of part 61 under the terms of a Bilateral Aviation Safety Agreement (BASA) and associated Implementation Procedures for Licensing (IPL). As previously written, the provision could have given the impression that a person who holds a foreign pilot license and is applying for a U.S. pilot certificate on the basis of a BASA is automatically considered to have met the requirements of part 61. In fact, a foreign pilot is only considered to have met those requirements specifically identified in the BASA and IPL.

IV. Regulatory Notices and Analyses

A. Regulatory Evaluation

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 and Executive Order 13563 direct that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 (Pub. L. 96–354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Pub. L. 96–39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S. standards. Fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of $100 million or more annually (adjusted for inflation with base year of 1995). This portion of the preamble summarizes the FAA's analysis of the economic impacts of this final rule. We suggest readers seeking greater detail read the full regulatory evaluation, a copy of which we have placed in the docket for this rulemaking.

In conducting these analyses, FAA has determined this final rule has benefits that justify its costs, satisfies a Congressional requirement to improve aviation safety, and is a ''significant regulatory action'' as defined in section 3(f) of Executive Order 12866 because it raises novel policy issues contemplated under that executive order. The rule is also ''significant'' as defined in DOT's Regulatory Policies and Procedures. The final rule, if adopted, will not have a significant economic impact on a substantial number of small entities, will not create unnecessary obstacles to international trade, and will not impose an unfunded mandate on state, local, or tribal governments, or on the private sector.

Total Benefits and Costs of This Rule

In the Act, Congress mandated that all part 121 pilots serving as second in command (SICs) have an airline transport pilot (ATP) certificate with at least 1,500 flight hours. This statutory requirement is self-executing, it will take effect whether or not the FAA issues a regulation. We estimate the costs of the ATP certificate requirement to be $6.4 billion ($2.2 billion in present value), almost all of which stems from the 1,500-hour flight time requirement. The statute allows the FAA Administrator to specify academic training as an offset to the 1,500-hour flight time requirement provided the training enhances safety. This rule provides cost savings benefits from its provision of such academic training credits toward the 1,500-hour requirement (by means of the R–ATP certificate) and also by its provision allowing pilots with a minimum age of 21 to be eligible for the R–ATP certificate. Our estimate of these cost savings are $2.3 billion with a present value savings of $0.8 billion.

The final rule requires that all SICs serving in part 121 operations hold a type rating in the airplane flown and requires that an ATP CTP be completed by all applicants for an ATP certificate with an airplane category multiengine class rating (or an ATP certificate obtained concurrently with an airplane type rating). The costs of the final rule training and aircraft type rating requirements total $312.7 million ($138.7 million in present value). The expected benefits from the new training requirements are $576.8 million with a present value of $251.7 million.

For part 121 operators the final rule is cost-beneficial as present value benefits, at $127.5 million, exceed present value costs, at $124.6 million. For part 135 operators present value benefits, at $124.2 million, exceed present value costs, at $9.8 million. Although the FAA does not have a quantitative estimate of benefits for part 91, subpart K, operators, we believe that the ATP CTP will sufficiently enhance safety for part 91, subpart K, operators to make the rule cost-beneficial for these operators as well. Because of the similarity of their operations, we believe that part 91 subpart K operators are subject to similar risks as part 135 operators. The lack of identifiable rule-related accidents reflects the significantly smaller scope of part 91 subpart K operations compared to part 135 operations and a possible under-recording of part 91 subpart K accidents. Additional discussion can be found in the full regulatory evaluation.

Statute and Rule Costs and Benefits

TABLE 5A—STATUTE COSTS AND BENEFITS

Statute costs	Total cost ($ mil)	PV cost ($ mil)
ATP Certificate Requirement—Knowledge & Practical Tests	$29.9	$31.1
ATP Certificate Requirement—Eligibility Restrictions	6,344.5	2,181.9
Part 121 ATP Certificate Requirement	6,374.4	2,213.0
Statute Benefits	No Identifiable Accident Benefits.	

TABLE 5B—FINAL RULE COSTS

Final rule costs	Total cost ($ mil)	PV cost ($ mil)
Part 121 Operators	$280.4	$124.6
Part 135 Operators	22.4	9.8

TABLE 5B—FINAL RULE COSTS—Continued

Final rule costs	Total cost ($ mil)	PV cost ($ mil)
Part 91, Subpart K, Operators	9.8	4.3
Total Training/Type Rating Costs	312.7	138.7

TABLE 5C—FINAL RULE SAFETY BENEFITS

Final rule safety benefits	Total benefits ($ mil)	PV benefits ($ mil)
Part 121 Safety Benefits	$292.5	$127.5
Part 135 Safety Benefits	284.3	124.2
All Safety Benefits	576.8	251.7

TABLE 5D—COST SAVINGS BENEFITS OF FINAL RULE

Final rule cost savings	Total cost savings ($ mil)	PV cost savings ($ mil)
Military Academic Training Credit (750 hrs)	$547.1	$188.2
4-Year Degree Academic Training Credit (500 hrs)	972.0	333.0
2-Year Degree Academic Training Credit (250 hrs)	490.1	165.8
Pilots with 1,500 Hrs Flight Time Eligible for Restricted ATP Certificate at Age 21	300.1	102.8
Cost Savings from Rule Relief	2,309.3	789.8

Notes: 1. Part 121 PV cost of $124.6 million includes $123.1 million in ATP CTP costs and $1.5 million in type rating costs.
2. Details may not add up to totals due to rounding.

Who is potentially affected by this rule?

Pilots working for or seeking employment by air carriers operating under part 121 will be affected. It could also impact pilots working for or seeking employment by operators in parts 135 and 91, subpart K. Certificate holders approved under parts 121, 135, 141, or 142 will be affected if they choose to offer the ATP CTP. Institutions of higher education that seek the authority to certify their graduates have met the requirements for a restricted privileges ATP certificate may also be affected.

Assumptions:

• We use a 20-year period of analysis in order to more fully account for costs that will accumulate over time as new pilots replace retiring pilots unaffected by the rule. All monetary values are expressed in 2010 dollars. In calculating present values, we discount back to the end of 2010/beginning of 2011.

• All monetary values are expressed in 2010 dollars. Present value discount rate is 7 percent (Office of Management & Budget, Circular A–4, ''Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs,'' October 29, 1992, p. 8, *www.whitehouse.gov/omb/circulars/index.html*).

• Value of statistical life (VSL) begins at $8.86 million in 2010, and increases to $10.7 million in 2032 by an annual growth factor of 1.0107.[26] Memorandum: Guidance on Treatment of the Economic Value of a Statistical Life in Departmental Analyses [February 2013]. United States Office of the Secretary of Transportation (OST).

• Number of rule-related accidents and associated number of fatalities, number of minor & serious injuries, and aircraft damage: FAA, Office of Accident Investigation and Prevention (AVP).

• Market value of aircraft and restoration costs: APO update to 2008 of data in Economic Values for FAA Investment and Regulatory Decisions, A Guide, Section 5, Office of Aviation Policy and Plans, U.S. Federal Aviation Administration, Wash., DC, Dec. 31, 2004. The 2008 data is updated from 2008 to 2010 by the GDP implicit price deflator.

• Number of part 121 PICs and SICs by airline, part 135 ATP pilots, and part 91, subpart K, fractional ownership program PICs: FAA, Flight Standards Service, National Vital Information Subsystem (NVIS) database (Nov. 22, 2010; Dec. 10, 2010).

• Pilot growth rate (0.6%): U.S. DOT, FAA, Aviation Policy & Plans. FAA Aerospace Forecast: 2010–2030. Table 29, ''Active Pilots by Type of Certificate'', Air Transport, Avg Annual Growth, 2009–2030.

• Cost of ATP CTP and cost of type rating: Estimated from 2010 FAA industry survey and FAA Flight Standards Service.

• Percentage of part 121 SICs without an ATP certificate (regional = 85 percent; major/cargo = 15 percent): Estimated from 2010 FAA industry survey.

• Percentage of part 121 SICs without a type rating (regional = 90 percent; major/cargo = 30 percent): Estimated from 2010 FAA industry survey.

• Typical number of years for upgrade from SIC to PIC (Major airlines: 10 years, Regional airlines: 5 years): Estimated from 2010 FAA industry survey.

• Typical number of years after which PIC will move from regional airline to major airline (2 years): Estimated from 2010 FAA industry survey.

• Pilot salary data by airline (2008): *www.airlinepilotcentral.com.*

• Early and medical part 121 pilot retirement rate (0.5%): Email from Kit Darby, President, *KitDarby.com* Aviation Consulting, LLC, Peachtree City, GA, 12/18/2010.

• Part 121 pilot retirement rate (3.6%): Email from Kit Darby, President, *KitDarby.com* Aviation Consulting, LLC, Peachtree City, GA, 12/20/2010.

[26] Due to a decline in real income in 2011 and 2012, the growth factors for these years are 0.98246 and 0.99702, respectively. Email from OST, March 7, 2013.

- Part 135 and part 91, subpart K, retirement rate (3.0%): We used this rate in the FOQ Initial Regulatory Evaluation (p. 17) and received no comments.
- Flight experience of military pilots leaving the service: FAA Flight Standards Service.
- Hiring minimums by airline & airline group and percentage of pilots hired with military training: Kit Darby, President, *KitDarby.com* Aviation Consulting, LLC, Peachtree City, GA.
- Number of baccalaureates with aviation-related degrees: Aviation Accreditation Board International (AABI), Gary W. Kiteley, Executive Director, 3410 Skyway Drive, Auburn, AL.

Benefits of This Rule

The benefits of this final rule are that it provides some mitigation of the cost of the Airline Safety and Federal Aviation Extension Act of 2010 mandate and will provide accident prevention safety benefits from the rule's training program in response to Congressional direction. We estimate the cost to be $6.4 billion ($2.2 billion in present value) to be the Congressionally-mandated self-executing requirement that all part 121 SICs have an ATP certificate with at least 1,500 flight hours. The FAA found no quantifiable relationship between the 1,500-hour requirement and airplane accidents because all part 121 PICs have an ATP certificate and 1,500 flight hours, and, in most accident cases, the SICs had 1,500 flight hours. Very importantly, because the 1,500-hour requirement will become law regardless of FAA action, the costs for this requirement do not require an FAA benefit justification for such costs. Congress allowed, and the final rule provides, cost-savings benefits from the rule's provision for academic training credits (including credit for military training) toward the 1,500-hour requirement. The final rule also provides cost savings by reducing the minimum age requirement for pilots with 1,500 flight hours to 21 years. The cost savings that result from these provisions are $2.3 billion, with a present value of $0.8 billion.

Primarily because of the training requirements of this rule, the FAA expects that the rule will reduce the number of future accidents. The quantified benefits from this rule are based upon the value of preventing future accidents. The methodology begins by identifying previous accidents that this rule could have prevented, or mitigated. We then estimate the probability that such accidents would be prevented in the future were the rule in place.

The ATP CTP is designed to address the gap in knowledge identified by the FOQ ARC between a commercial pilot and the knowledge a pilot should have when entering an air carrier environment. The basic concepts addressed by these requirements are applicable to pilots operating in part 135 and part 91, subpart K operations as well as pilots in part 121 operations. The ATP CTP has a comprehensive topic list to address these deficiencies that are the underlying causes of many airplane accidents:

- Aerodynamics
  - Stall recognition/recovery
  - Upset prevention/recovery
  - High altitude operations
  - Energy management
  - Operating in a multicrew environment
- Air Carrier Operations
  - Physiology/Fitness for duty
  - Communications
  - Ground operations
  - Aircraft systems and performance
- Crew Resource Management
- Knowledge-based decision-making
- Leadership and Professional development
- Manual Aircraft Handling Skills
- Pilot Monitoring Responsibilities
  - Communication
  - Risk management
  - Decision making
  - Threat and error management

The FAA determined that 58 accidents were partially attributable to pilot qualification issues, over the 2001–2010 period of accident analysis. We estimated the value of preventing these 58 accidents in the future to be worth $838.6 million. After taking into account probability that pilot certification and qualification training would prevent these accidents, we derived part 121 safety benefits of about $292.5 million, with present value $127.5 million, and part 135 safety benefits of about $284.3 million, with present value $124.2 million.

Costs of This Rule

Without this final rule, the Act's mandate would cost $6.4 billion ($2.2 billion in present value). Because the mandate of the SIC 1,500-hour requirement will become law regardless of FAA action, the costs for this requirement are not a cost of this rule. The final rule provides cost savings by reducing the minimum total hours for an ATP certificate for military pilots and graduates of bachelor's and associate's degree programs with aviation majors, and by reducing the minimum age requirement for pilots with 1,500 flight hours to 21 years. The cost savings that result from these provisions are $2.3 billion, with a present value of $0.8 billion. The costs of the final rule training requirements for ATP certificate applicants and the aircraft type rating requirement total $312.7 million ($138.7 million in present value). Of these costs part 121 operators are estimated to incur $280.4 million ($124.6 million in present value).

Cost Benefit Summary

The purpose of this final rule is to meet pilot certification and qualification requirements imposed by Congress in Sections 216 and 217 of the Act. Congress mandated the ATP certificate requirement—the most expensive requirement of this final rule, $6.4 billion ($2.2 billion in present value), although Congress allowed the FAA to provide academic training credits (by means of the R–ATP) which result in cost savings of $2.0 billion ($0.7 billion in present value) that partially offset the requirement. The final rule also partially offsets the requirement by reducing the R–ATP minimum age requirement for pilots with 1,500 hours to age 21. This relief provides an additional cost savings of $0.3 billion ($0.1 billion in present value). Lastly, the costs of the final rule training requirements for ATP certificate applicants and the aircraft type rating requirement total $312.7 million ($138.7 million in present value) with expected benefits of $576.8 million ($251.7 million in present value).

B. Regulatory Flexibility Determination

1. Introduction and Purpose of This Analysis

The Regulatory Flexibility Act of 1980 (Pub. L. 96–354) (RFA) establishes ''as a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration.'' The RFA covers a wide-range of small entities, including small businesses, not-for-profit organizations, and small governmental jurisdictions.

Agencies must perform a review to determine whether a rule will have a significant economic impact on a substantial number of small entities. If the agency determines that it will, the agency must prepare a regulatory

flexibility analysis as described in the RFA.

However, if an agency determines that a rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the RFA provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

As required by Section 603(a) of the RFA, we prepared and published an initial regulatory flexibility analysis (IRFA) as part of the NPRM for this rule (77 FR 12374, February 29, 2012). As a result of that analysis we determined this rule would not have a significant impact on a substantial number of small entities for the following reason: The annualized cost [27] of the rule is less than 2% of operating revenues for all small firms that would be affected by the rule.

Section 604 of the RFA also requires an agency to publish a final regulatory flexibility analysis (FRFA) in the **Federal Register** when issuing a final rule. Section 604(a) requires that each FRFA contain:

(1) A succinct statement of the need for, and objectives of, the rule;

(2) a summary of the significant issues raised by the public comments in response to the IRFA, a summary of agency's assessment of such issues, and a statement of any changes made to the proposed rule resulting from such comments;

(3) a description of and an estimate of the number of small entities for which the final rule will apply;

(4) a description of the projected reporting, recordkeeping and other compliance requirements of the rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record; and

(5) a description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statues, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.

2. Objectives of This Rule

The purpose of this final rule is to meet pilot certification and qualification requirements imposed by Congress in Sections 216 and 217 of the Airline Safety and Federal Aviation Extension Act of 2010 (Pub. L. 111–216). The provisions of this Act were the result of the fatal accident of Colgan Air Flight 3407 that occurred in Buffalo, New York, on February 12, 2009. In addition to specific mandated requirements, the Act requires the FAA to address certain issues in pilot qualification and certification. This rule addresses those issues, most importantly with training requirements to qualify pilots for the ATP certificate mandated by the Act.

3A. Summary of the Significant Issues Raised by the Public Comments in Response to the IRFA, a Summary of the Assessment of the Agency of Such Issues, and a Statement of Any Changes Made to the Proposed Rule Resulting From Such Comments

The FAA received more than 200 comments on the requirement that all pilots, including SICs, hold an ATP certificate (requiring 1,500 flight hours), many in opposition to the requirement. These comments were made in response to the proposed rule, not the IRFA per se. Several commenters also objected to our finding in the Initial Regulatory Flexibility Analysis that there was no significant impact on a substantial number of small entities. These objections appear to stem from the commenters' belief that the cost we attribute to the statute is a cost of the rule. But the requirement for all pilots in part 121 operations to hold an ATP certificate is Congressionally-mandated and self-executing, so the significant costs associated with this requirement are attributable to the statute, not the rule.

The statute allows the FAA to grant academic training credits, effectively reducing the costs of the 1,500-hour requirement. As a result of the comments on the ATP certificate requirement and the R–ATP certificate, in the final rule the FAA will broaden the scope of academic credits to include pilots with a two-year degree with an aviation major. The FAA will also permit a pilot with 1,500 hours of flight time to obtain an R–ATP certificate at the age of 21.

With regard to the costs associated with the ATP certification training program, NATA stated that ''Since no requirement exists or is proposed that require air carriers to provide the ATP CTP, we believe the FAA must perform its analysis of this proposal assuming the impact is on individual pilots pursuing ATP certification.'' NATA also stated that the FAA failed to account for dramatically higher training costs for part 135 and 91 subpart K operators compared to part 121 operators owing to far smaller class sizes, often one or two pilots at a time, and their inability to use in-house training personnel to the same extent as a large airline. This lack of ability to use efficiencies the way large airlines do would lead to significantly higher costs.

The FAA believes that most pilots will receive the ATP CTP through employment—either at air carriers, with their own training facilities and simulators, or at part 142 training centers through training agreements, as these are the organizations that have the FFSs required for the ATP CTP. The inefficiencies of small size can be greatly mitigated by contracting out this training, and, in fact, many of the smallest operators already use contract training to meet existing training requirements. Moreover, the ATP CTP, as a general program, is not specific to any type aircraft, nor to any rule part (121, 135, 91K). Therefore, we believe that competitive part 142 training centers will deliver generic ATP CTP training to individuals, as well as air carriers, at costs no higher than our conservative estimate.

3.B. A Description of the Steps the Agency Has Taken To Minimize a Significant Economic Impact on Small Entities and * * * Why Other Significant Alternatives to the Rule That Affect Small Entities Were Rejected

The FAA has no discretion with respect to the Congressionally-mandated requirement that all part 121 pilots hold an ATP certificate. Although not specific to small entities, the FAA has mitigated the cost of the 1,500 flight hour requirement for an ATP certificate by allowing credits towards total flight time based on academic training courses. These credits are provided by means of a new R–ATP certificate. The final rule also reduces the minimum age requirement for the R–ATP certificate to age 21. The regulatory evaluation estimates this relief provided in the final rule will reduce the cost of the Congressionally-mandated ATP certificate requirement by $2.3 billion (present value cost: $0.8 billion).[28]

Several commenters believe removing the ability for pilots to receive training for the multiengine airplane ATP

[27] Annualized cost is the annual cash flow of an annuity that yields the same present value as the total present value cost.

[28] The FAA has also modified the compliance date for the ATP CTP and the type rating requirements to provide additional time to all pilots and operators to accommodate the new requirements.

certificate under part 61 will hurt local fixed-base operators (FBOs) and CFIs. These commenters believe that allowing FBOs and CFIs to provide the ATP CTP would reduce the cost of the training and the negative impact on part 61 instructors and part 61 flight schools. The FAA notes that prior to this final rule there were no training requirements for the multiengine airplane ATP certificate so pilots who sought the certificate on their own did not seek training with an instructor except when they were ready to take their practical test. Because most ATP certificates are currently accomplished through evaluation events conducted by employers under other rule parts (i.e., parts 121 or 135) rather than through part 61 instruction, the FAA does not believe that there will be a significant impact on part 61 instructors and part 61 flight schools by excluding those groups from providing the ATP CTP.

As for the new requirement for pilots to complete the ATP CTP, the FAA has determined that the safest and most effective way to ensure that applicants for an ATP certificate have met the requirements of section 217 of the Act is to establish specific requirements that include training in an FSTD. The requirements specifically relating to training at high altitude, in adverse weather, and in difficult operational conditions cannot be safely or effectively accomplished in aircraft. For that reason, the ATP CTP can be provided only by certificate holders who can sponsor an FSTD.

The FAA does not believe that there is an alternative to the ATP CTP requirement that could be applied to small entities. The Act identified several critical areas that must be part of the training required to apply for an ATP certificate to prepare pilots to operate in an air carrier environment. To allow smaller operators who conduct operations that require pilots to hold an ATP certificate to meet a reduced training standard would not be responsive to the Act and would create two different standards for pilots who are exercising the privileges of an ATP certificate.

To the extent that small businesses were concerned about the costs associated with the type rating, as noted earlier, the FAA has adjusted the compliance date from August 2, 2013, to January 1, 2016, for those pilots who are employed as a pilot by a part 121 certificate holder by July 31, 2013. Although not specific to small entities, this will reduce the impact on small entities. In any case, type rating costs for new-hire pilots are minimal given the statutory requirement for an ATP certificate.

4. Description of the Small Entities to Which the Final Rule Will Apply and an Estimate of Their Number

The final rule would affect firms in part 121, part 135, and part 91, subpart K, operations in the following North American Industry Classification System (NAICS) industries, for all four of which the Small Business Administration (SBA) size standard is 1,500 employees.[29] The SBA size standard as defined in 13 CFR 121.201, is the largest size that a business (including its subsidiaries and affiliates) may be to remain classified as a small business by the SBA. As the size standard is identical at 1,500 employees for all four air transportation industries, we do not attempt to classify affected firms by particular air transportation industry.

TABLE 6—SBA SIZE STANDARD FOR NAICS AIR TRANSPORTATION INDUSTRIES

NAICS code	2002 U.S. NAICS title	SBA Size standard
481111	Scheduled Passenger Air Transportation	1,500 employees.
481112	Scheduled Freight Air Transportation	1,500 employees.
481211	Nonscheduled Chartered Passenger Air Transportation	1,500 employees.
481212	Nonscheduled Chartered Freight Air Transportation	1,500 employees.

The FAA database (2010) has 92 operators classified as part 121 air carriers. Using Department of Transportation 2009 employment data,[30] we identified 32 of these part 121 operators as large and an identical number as small. Using other employment data, we identified eight more part 121 operators as large, seven as subsidiaries of a group with more than 1,500 employees and one known to be large (UPS). We identified one more part 121 operator as small, as a subsidiary of a group with less than 1,500 employees. We inferred 19 more operators to be small on the basis of pilot numbers.[31] So in all, we identified 40 of the 92 part 121 operators as large and 52 as small. Therefore, there are a substantial number of small entities operating as part 121 air carriers.

We also identified five of the nine part 91, subpart K, operators as small on the basis of employment data available from the FAA database. We had no corresponding employment data for part 135 operators. The largest part 135 operator, however, had just 55 PICs, so we infer that all 1,106 part 135 operators are small. Table 7 below lists our identified small entities operating under part 121, part 135, and part 91 subpart K operators along with data to assess the impact of the final rule on them, as discussed below. We list all 52 small part 121 operators and all nine small part 91 subpart K operators, but, owing to their large numbers, only the three part 135 operators for which we have operating revenue data. Revenue data is not available for most part 135 operators as most are privately held. However, the three part 135 operators for which we do have operating revenue, as measured by number of PICs (4 to 45 PICs), encompass almost the entire size range of part 135 operators.

5. Description of the Projected Reporting, Recordkeeping and Other Compliance Requirements of the Final Rule

Reporting and Recordkeeping Requirements

The final rule levies requirements that must be met by certificate holders who wish to offer or provide the ATP CTP. While requiring the gathering and maintaining of information and, in certain cases, the reporting of some of that information to the FAA, these sections require no additional burdens on the certificate holders beyond what is required by the current rule or that which is currently borne by certificate holders in regular practice. Exceptions to this are the following:

[29] U.S. Small Business Administration. Table of Small Business Size Standards Matched to North American Industry Classification System Codes, July 21, 2006. Web site: *www.SBA.gov.*

[30] *www.bts.gov/programs/airline_information/number_of_employees/.*

[31] The largest small part 121 operator has 1,446 employees and 391 pilots, the largest number of pilots for any part 121 operator identified as small. The largest operator that we inferred to be small had 231 pilots.

a. One-time development and submission of an ATP CTP to the FAA for approval.

b. One-time record keeping costs for pilot training pertaining to completion of the ATP CTP.

c. One-time application to the FAA by an institution of higher education seeking the authority to certify its graduates of a degree program with an aviation major for an R–ATP certificate.

d. One-time cost per student to the institution of higher education for an academic advisor to review graduate transcripts to determine eligibility for an R–ATP certificate.

TABLE 7—ECONOMIC IMPACT OF THE FINAL RULE ON SMALL PART 121, PART 135, AND PART 91 SUBPART K OPERATORS

Operator name	Air carrier category	Primary operations	Pilot numbers	Total 2009 emp	Pilots (parts 121, 135, or 91K) (percent)	Ann. cost ($1000s)	Cost as % of operating revenue	Operating revenue ($1000)	Operating revenue source
ABX AIR INC	Cargo	Part 121	313	1435	0.54	46	0.00	1,173,146	DOT.
AEKO KULA INC (Aloha Air Cargo)	Cargo	Part 121	22	315	0.04	3	0.00	280,309	DOT.
AERO MICRONESIA INC	Cargo	Part 121	12						
AIR TRANSPORT INTERNATIONAL LLC	Cargo	Part 121	113	396	0.20	17	0.01	273,016	DOT.
AMERIJET INTERNATIONAL INC	Cargo	Part 121	56	540	0.10	8	0.01	138,372	DOT.
AMERISTAR AIR CARGO INC	Cargo	Part 121	17		0.03	3	0.04	6,942	DOT.
ARROW AIR INC	Cargo	Part 121	50	613	0.09	7	0.00	206,805	DOT.
ASTAR AIR CARGO INC	Cargo	Part 121	85	631	0.15	13	0.00	347,018	DOT.
AVIATION SERVICES LTD	Cargo	Part 121	18						
CAPITAL CARGO INTERNATIONAL AIRLINES INC.	Cargo	Part 121	100	223	0.17	15	0.03	53,209	DOT.
CENTURION AIR CARGO INC	Cargo	Part 121	47	567	0.08	7	0.00	164,905	DOT.
CORPORATE AIR	Cargo	Part 121	75						
EVERGREEN INTERNATIONAL AIRLINES INC.	Cargo	Part 121	132	442	0.23	19	0.00	518,843	DOT.
FALCON AIR EXPRESS INC	Cargo	Part 121	25		0.04	4	0.03	11,665	DOT.
FLORIDA WEST INTERNATIONAL AIRWAYS INC.	Cargo	Part 121	32	51	0.06	5	0.00	113,736	DOT.
GULF AND CARIBBEAN CARGO INC	Cargo	Part 121	42	63	0.07	6	0.02	25,270	DOT.
KALITTA AIR LLC	Cargo	Part 121	231	860	0.40	34	0.01	666,161	DOT.
KALITTA CHARTERS II LLC	Cargo	Part 121	23		0.04	3	0.02	14,048	DOT.
LYNDEN AIR CARGO L L C	Cargo	Part 121	49	175	0.08	7	0.01	88,289	DOT.
MERIDIAN ASSOCIATES	Cargo	Part 121	8						
MIAMI AIR INTERNATIONAL INC	Cargo	Part 121	80	409	0.14	12	0.01	151,868	DOT.
MOUNTAIN AIR CARGO INC	Cargo	Part 121	126						
NATIONAL AIR CARGO GROUP INC	Cargo	Part 121	23	500	0.04	3	0.02	20,882	DOT.
NORTHERN AIR CARGO INC	Cargo	Part 121	24	197	0.04	4	0.01	47,197	DOT.
OMNI AIR INTERNATIONAL INC	Cargo	Part 121	255	1032	0.44	38	0.01	438,327	DOT.
PRESCOTT SUPPORT CO	Cargo	Part 121	13		0.02	2	0.02	8,614	DOT.
RHOADES AVIATION INC	Cargo	Part 121	4						
SIERRA PACIFIC AIRLINES INC	Cargo	Part 121	10		0.02	1	0.01	11,199	DOT.
SKY KING INC	Cargo	Part 121	32		0.06	5	0.03	16,583	DOT.
SKY LEASE I INC (Tradewinds Airlines)	Cargo	Part 121	49	47	0.08	7	0.01	63,683	DOT.
SOUTHERN AIR INC	Cargo	Part 121	186	589	0.32	27	0.02	170,478	DOT.
SWIFT AIR L L C	Cargo	Part 121	29		0.05	4	0.05	8,643	DOT.
TATONDUK OUTFITTERS LTD	Cargo	Part 121	47	288	0.08	7	0.02	40,371	DOT.
USA JET AIRLINES INC	Cargo	Part 121	70	244	0.12	10	0.01	128,053	DOT.
DYNAMIC AIRWAYS LLC	Charter	Part 121	8						
AERODYNAMICS INC	Charter PAX	Part 121	14	211	0.02	2	0.00	53,595	DOT.
RYAN INTERNATIONAL AIRLINES INC	Charter PAX	Part 121	151	540	0.26	22	0.02	142,069	DOT.
TEM ENTERPRISES INC (Xtra Airways)	Charter PAX	Part 121	40	120					
VISION AIRLINES INC	Charter PAX	Part 121	116	131	0.20	17	0.03	62,366	DOT.
WORLD AIRWAYS INC	Charter PAX	Part 121	391	1446	0.68	58	0.01	653,144	DOT.
BRENDAN AIRWAYS LLC (USA 3000 Airlines).	Mainline	Part 121	54	390	0.09	8	0.00	227,850	DOT.
MN AIRLINES LLC (Sun Country Airlines)	Mainline	Part 121	143	642	0.25	21	0.01	224,232	DOT.
VIRGIN AMERICA INC	Mainline	Part 121	330	1421	0.57	49	0.01	326,023	DOT.
CHAMPLAIN ENTERPRISES INC (CommutAir).	Regional	Part 121	150	300					
EMPIRE AIRLINES INC	Regional	Part 121	111	250					
ERA AVIATION INC (In Frontier Alaska Group).	Regional	Part 121	57						
GREAT LAKES AVIATION LTD	Regional	Part 121	231		1.12	128	0.13	100,033	10–K.
GULFSTREAM INTERNATIONAL AIRLINES INC.	Regional	Part 121	156						
HAWAII ISLAND AIR INC	Regional	Part 121	38		0.18	21	0.08	24,907	DOT.
HYANNIS AIR SERVICE INC	Regional	Part 121	212	850					
PENINSULA AIRWAYS INC	Regional	Part 121	119						
SEABORNE VIRGIN ISLAND INC	Regional	Part 121	21		0.10	12	1.73	670	CLEAR.
USA JET AIRLINES INC		Part 135	45		0.62	6	0.02	27,380	DOT.
AVIATION CONCEPTS		Part 135	10		0.14	1	0.05	2,568	DOT.
VICTORY AIR TRANSPORT INC.		Part 135	4		0.05	0	0.02	2,745	DOT.
AIRSPRINT US		Part 91K	5	27	0.16	1			
AVANTAIR		Part 91K	136	340	4.25	17	0.01	149,001	CLEAR.
CORPORATE EAGLE MGT SVCS		Part 91K	13	33	0.41	2	0.01	11,419	CLEAR.
EXECUTIVE FLT SVCS		Part 91K	60	100	1.87	7	0.00	2,024,000	CLEAR.
PLANE SENSE		Part 91K	61	160	1.90	7	0.01	94,000	CLEAR.

Other Compliance Requirements

This final rule will require the following:

1. An ATP certificate for all pilots operating in part 121. This requirement codifies the Congressionally-mandated 1,500 hours flight time required for an ATP certificate, but will allow an R–ATP certificate to be held by (a) military pilots with 750 hours of flight experience and (b) graduates of four-year or two-year degree programs with aviation majors who obtain their commercial pilot certificate with instrument rating from an affiliated part 141 pilot school. To be eligible for an R–ATP, graduates of a four-year program will be required to have 1,000 hours of flight experience, while graduates of a two-year program will be required to have 1,250 hours of flight experience.

a. The R–ATP certificate will allow a pilot to serve in part 121 air carrier operations as an SIC only. With an R–ATP certificate, however, part 121 SICs need only hold a second class medical certificate, not the first class medical certificate that is the requirement for PICs.

b. The minimum age for an R–ATP certificate will be reduced to 21 years.[32] The current age requirement for an ATP certificate will remain at 23 years.

2. A minimum of 50 hours of multiengine flight experience. This requirement will apply not just to pilots serving in part 121 operations, but to all pilots who apply for an ATP certificate with an airplane category multiengine class rating.[33] This will include PICs in part 135 operations that require an ATP certificate, and PICs in part 91, subpart K, Fractional Ownership Programs, which require the PIC to hold an ATP certificate.

3. An ATP Certification Training Program for applicants for an ATP certificate with an airplane category multiengine class rating or an ATP certificate obtained concurrently with an aircraft type rating. This is a foundational course that will include academic study as well as flight training in FSTDs to meet the Act's requirements that pilots have the necessary training and experience discussed previously to function effectively in an air carrier environment. The course will provide training necessary to overcome the knowledge gap (between the commercial pilot certificate and the knowledge required for an air carrier SIC) and will address the current lack of a training requirement for ATP certification. These competencies include crew coordination, checklist/briefing items, low energy states/stalls, and adverse weather conditions, including icing, thunderstorms, and crosswinds with gusts. The course topics will be incorporated into the ATP knowledge test. In addition to applying to all pilots in part 121 operations, this requirement will apply to PICs in part 135 operations that require an ATP certificate, and PICs in part 91, subpart K, Fractional Ownership Operations, which require the PIC to hold an ATP certificate.

4. An aircraft type rating for all SICs serving in part 121 operations. The FOQ ARC made the same recommendation and this requirement responds to the objectives of section 216 of the Act, which requires the Administrator to determine the appropriate multiengine airplane flight experience for pilot flightcrew members. Currently only PICs in part 121 operations, and SICs in flag or supplemental operations requiring three or more pilots, are required to hold an aircraft type rating. The FAA has determined that requiring aircraft type ratings for all pilots in part 121 operations will improve safety by further exposing pilots to an advanced multiengine aircraft and a multicrew environment. Also the provision for an airplane type rating requires a pilot who serves as SIC to be tested to the same standard as the PIC and to demonstrate proficiency in difficult operational conditions, including adverse weather and high altitude operations.

5. A minimum of 1,000 hours in air carrier operations to serve as PIC in part 121 operations. Under the final rule, SICs must accumulate 1,000 flight hours in air carrier operations before becoming eligible for upgrade to PIC. Without the 1,000-hour requirement, SICs with an unrestricted ATP certificate would be eligible to upgrade to PIC as soon as they attain 1,500 flight hours, regardless of their experience. The 1,000-hour requirement will ensure that a pilot will have at least one full year of relevant operational experience before upgrading to PIC. The final rule allows a pilot to count PIC time in part 135 operations that require an ATP and in part 91, subpart K, operations, as well as SIC time in part 121 operations. Pilots with experience as PICs in military transport operations will be allowed to count up to 500 hours of such experience as well.

The FAA estimates that cost will be minimal for the requirement of 50 hours of multiengine time for the ATP certificate with an airplane category multiengine class rating. As noted in the regulatory evaluation and preamble, multiengine hours are typically acquired while engaged in other commercial aviation activities such as flight instruction or part 135 operations on the way to obtaining the ATP certificate. Moreover, minimums for multiengine time vary among airlines from 50 hours to as much as 1,500 hours.[34]

The FAA also estimates as minimal the costs of the requirement that a part 121 SIC have 1,000 hours of air carrier operating experience before upgrade from SIC to PIC. According to a 2010 FAA survey of industry, the average number of years to upgrade is about five years for regional airlines and more than ten years for major airlines. Even without air carrier operating experience in part 135 or part 91, subpart K operations, at an average number of 750 flight hours a year, an SIC will accumulate the required hours in less than one and a half years.

Compliance Cost by Part 121 Operators

Table 5 shows the cost of the final rule for the part 121 operators. Costs of the ATP CTP are allocated between the regional airlines and the major/cargo airlines by the percentage of pilots employed by the two airlines (Nov. 2010 part 121 pilots, 78,258: Regionals—20,565 [26.3%], Major/cargo airlines—57,693 [73.7%]).

As explained in the regulatory evaluation, the FAA expects that the compliance cost of the ATP CTP for part 121 air carriers will fall heavily, if not exclusively, on the regional airlines. So in assessing the economic impact on small regional airlines, we assume the entire ATP CTP costs fall on regional airlines. But in order to assess the economic impact on small cargo airlines, we assume the impact is proportional to the number of pilots. We do the same with the type rating costs, although the magnitudes are small compared to the ATP CTP costs.

Economic Impact on Small Entities

In order to assess the economic impact of this final rule on small firms, we allocate annualized costs to small firms based on the number of affected pilots and measure the economic impact on small firms by each firms' annualized costs as a percentage of their average 5-year, 2005–2009 operating revenues.[35] While the economic burden

[32] This is a change from the NPRM that will allow pilots of age 21 or 22, with 1,500 hours flight time, to obtain the R–ATP certificate.

[33] The rule applies to the airplane class, so applicants for an ATP certificate with single-engine class rating will be required to have 50 hours of single-engine time.

[34] Kit Darby, President, *www.KitDarby.com,* Aviation Consulting, LLC, Peachtree City, GA.

[35] Operating Revenue—*www.transtat.bts.gov,* Air Carrier Financial Reports (Form 41 Financial Data), Schedules P1.1 & P1.2. We average for as many of the five years of data as is available. Operating

of this rule will have a disproportionate impact on small entities, the compliance cost will not result in a significant economic cost on small entities. This analysis measures the economic impact on small entities in a two-step process. All of the compliance costs are training costs for new pilots (plus type rating costs for part 121 operators). Again, the Congressional mandate that all pilots have an ATP certificate is self-enacting and not an FAA requirement. Thus the 1,500 hour requirement costs are not included in these compliance costs. While the FAA believes the annual estimates of new pilots are reasonably accurate for the part 121, part 135, or part 91 subpart K industry, we do not know the turnover per operator. The annual new pilot hires per operator are estimated as a percentage of total industry pilots (part 121, part 135, or par 91 subpart K) multiplied by the system-wide number of new pilots. The estimated new pilot hires for each operator are then multiplied by the annualized training cost to obtain the total annualized cost per operator.

The annual training cost is simply the per-pilot training cost multiplied by the annual number of newly hired pilots. The annualized training cost is less than $3,300 per pilot. This per-pilot training cost estimate is $3,242 for a part 121 operator and $3,178 for a part 135 operator and also for a part 91 subpart K operator. The higher cost for part 121 operators is due to the additional type rating cost. As a point of reference, the average cost per pilot over the 20-year estimation period of the rule is approximately $4,000 (based on total cost, not present value). Clearly the per-pilot training cost is not a significant economic impact.

The number of new pilots per year equals the number of retired pilots plus the additional pilots above the previous year (net growth). On average the annual number of new pilots is 3,531 for part 121; 282 for part 135; and 124 for part 91, subpart K. The estimated number of new pilots per operator equals the operator's current percentage of industry pilots (part 121, part 135, or part 91 subpart K) [36] multiplied by the total number of new pilots. Table 7 lists that percentage for many small entities. To calculate the cost per operator, that percentage per operator is then multiplied by the total annualized cost, $11.51 million for part 121 operators, $0.897 million for part 135 operators, and $0.394 million for part 91, subpart K operators. These annualized costs are based on the present value training costs (and type rating costs for part 121 operators) calculated in the regulatory evaluation.

While Table 7 provides economic impact estimates for many operators, a generic estimate more simply makes the point that the compliance costs of this rule do not create a significant economic impact per operator. In general, the annual number of new pilots per operator is substantially less than 10 percent of the operator's total pilots. For this case, an operator with a 100 pilots will have no more than 10 new pilots per year. With training costs of $3,300 per pilot the annual training cost is less than $33,000. As long as the operator receives operating revenue greater than $2 million these costs will be less than 2 percent of annual operating revenue. The FAA does not believe costs less than 2 percent of annual operating revenue to have a significant economic impact. As Table 7 shows the percentage of annual compliance cost is nearly always less than 0.05 percent and never over 2 percent of annual operating revenue.

The rule will have a disproportionate impact on small entities. Given the Congressional mandate that all pilots have an ATP certificate and that this mandate disproportionally affects small entities, the FAA considered, but had limited alternatives with which to provide more relief to small operators. In considering the economic impact of this rule, the FAA created the R–ATP certificate based on education credits, and for pilots with 1,500 flight hours, a minimum age of 21, instead of age 23. This rule imposes only training costs on new pilots and small type rating costs on part 121 pilots. The compliance period for the type rating requirement for those pilots serving in part 121 by July 31, 2013, has been extended in the final rule. As both the per-pilot training costs are modest and the annual number of new pilots is small, the compliance cost relative to annual operating revenue is always less than 2 percent and almost always less than 0.05 percent. Therefore, as the FAA Administrator, I certify that this final rule will not have a significant economic impact on a substantial number of small entities.

C. International Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96–39), as amended by the Uruguay Round Agreements Act (Pub. L. 103–465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such the protection of safety, and does not operate in a manner that excludes imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this final rule and determined that it would have only a domestic impact and therefore would not create unnecessary obstacles to the foreign commerce of the United States.

D. Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of $100 million or more (adjusted annually for inflation with the base year 1995) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a ''significant regulatory action.'' The FAA currently uses an inflation-adjusted value of $143.1 million. Excluding the Congressionally driven costs, the compliance costs of this rule never exceed $100 million in any one year. This final rule does not contain such an unfunded mandate; therefore, the requirements of Title II of the Act do not apply.

E. Paperwork Reduction Act

Title: Pilot Certification and Qualification Requirements for Air Carrier Operations.

This proposal contains the following new information collection requirements. As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA has submitted the information requirements associated with this proposal to the Office of Management and Budget for its review.

The Office of Management and Budget approved these new information collection requirements associated with this final rule and assigned OMB Control Number 2120–0755.

Summary: The paperwork burden is comprised of two areas. First, this final rule amends the requirements for

revenue for Great Lakes Aviation is from its SEC 10–K filing. Operating revenues for part 91 subpart K air carriers is from the CLEAR database and is for 2011.

[36] For part 121 operations since regional airlines and major/cargo airlines are analyzed separately, operator pilot percentages are calculated with respect to the total number of pilots in the relevant group.

obtaining an airline transport pilot (ATP) certificate by requiring pilot applicants for an ATP certificate with an airplane category multiengine class rating or an ATP certificate obtained concurrently with an airplane type rating to complete a new ATP Certification Training Program. Any part 142 training center, part 141 pilot school, or air carrier wishing to offer the new training program would be required to submit the curriculum to the FAA for approval.

In addition, the final rule provides a method for an institution of higher education to seek the authority to certify its graduates of a degree program with an aviation major to apply for a restricted privileges ATP certificate. The final rule will require the institution to hold a part 141 pilot school certificate from the FAA to provide pilot training within the degree program(s) listed in their letter of authorization. The institution of higher education seeking this authority will be required to submit an application on a new form that was developed for this purpose.

Public Comments: With regard to the FAA's paperwork estimates, NAFI was the only commenter. Their comment stated—without providing specific details—that ''the accuracy of the agency's estimate of the burden is significantly lacking in areas of consideration that have been included, representative estimates of costs, and the effects that will result from the proposed changes.'' NAFI added that it was unaware of any data that has been developed that accurately allows for proper costing of these effects and recommended ''that this data be sought prior to any long term changes in order to more accurately study and make decisions regarding proposed changes.''

Without additional detail from the commenter, the FAA is uncertain how to respond to NAFI's concerns regarding the accuracy of its estimates. The FAA believes that the estimates in the NPRM accurately reflected the paperwork burden of the proposal. Notwithstanding, the FAA has reevaluated the paperwork burden of the final rule and has made some adjustments to the ATP CTP paperwork costs. In addition, the FAA has added additional paperwork costs for institutions of higher education who seek the authority to certify its graduates of a degree program with an aviation major to apply for a restricted privileges ATP certificate by requiring them to submit an application.

Use of: The information collection for the ATP Certification Training Program will ensure pilots seeking employment in an air carrier environment are adequately trained on the knowledge and skills they need to function in a multicrew environment in a variety of operating conditions. The requirement to submit the ATP Certification Training Program curriculum to the FAA for approval will provide greater oversight of the training programs and ensure consistency of both course and instructional quality among the training centers, pilot schools, and air carriers. Part 121, 135, 141, or 142 certificate holders that wish to offer or provide the ATP Certification Training Program are required to develop and submit a course for approval by the FAA. For those that provide this training, additional pilot training record keeping would also be required.

Industry ATP CTP Development Costs

Initial number of certificate holders offering the ATP CTP = 20
Time needed to develop the ATP CTP = 120 hours
Salary of a ground instructor = $32.55
First-Year Cost (2014) [37]
Cost: $20 \times 120 \times \$32.55 = \$78,120$
Time: $20 \times 120 = 2,400$ hours
Subsequent Years: Per-Year Costs
Cost: $1 \times 120 \times \$32.55 = \$3,906$
Time: $1 \times 120 = 120$ hours
Total Costs Over 20 Years (2013–2032)
Cost: $\$78,120 + (18 \times \$3,906) = \$148,428$
Time: $2,400 + (18 \times 120) = 4,560$ hours
Average per Year
Cost: $148,428/20 = \$7,421$
Time: $4,560/20 = 228$ hours

Industry Record Keeping Costs

Initial number of ATP certificate applicants = 3,731
Time needed for record keeping per pilot = 0.1 hours
Salary of a ground instructor = $32.55
First-Year Cost (2014)
Cost: $3,731 \times 0.1 \times \$32.55 = \$12,145$
Time: $3,731 \times 0.1 = 373$ hours
Subsequent Years Costs (assume 0.6% annual growth rate)
Cost: $231,501
Time: 7,112 hours
Total Costs Over 20 Years (2013–2032)
Cost: $12,145 + $231,501 = $243,646
Time: 373 + 7,112 = 7,485 hours
Average per Year
Cost: $243,646/20 = $12,182
Time: 7,485/20 = 374 hours

FAA ATP CTP Review Costs

Initial number of certificate holders requesting ATP CTP approval = 20
Time needed to review the ATP CTP for initial and final approval = 44 hours
Salary of an aviation safety inspector = $61.50
First-Year Cost (2014)
Cost: $20 \times 44 \times \$61.50 = \$54,120$
Time: $20 \times 44 = 880$ hours
Subsequent Years: Per-Year Costs
Cost: $1 \times 44 \times \$61.50 = \$2,706$
Time: $1 \times 44 = 44$ hours
Total Over 20 Years (2013–2032)
Cost: $\$54,120 + (18 \times \$2,706) = \$102,828$
Time: $880 + (18 \times 44) = 1,672$ hours
Average per Year
Cost: $102,828/20 = \$5,141$
Time: $1,672/20 = 83.6$ hours

FAA Approval Letter Costs

Initial number of certificate holders requesting ATP CTP approval = 20
Time needed to issue the approval letter = 0.5 hours
Salary of clerk/secretary = $24.67
First-Year Cost (2014)
Cost: $20 \times 0.5 \times \$24.67 = \$246.70$
Time: $20 \times 0.5 = 10$ hours
Subsequent Years: Per-Year Costs
Cost: $1 \times 0.5 \times \$24.67 = \$12.34$
Time: $1 \times 0.5 = 0.5$ hours
Total Over 20 Years (2013–2032)
Cost: $\$246.70 + (18 \times \$12.34) = \$469$
Time: $10 + (18 \times 0.5) = 19$ hours
Average per Year
Cost: $469/20 = \$23$
Time: $19/20 = 0.95$ hours

The information collection for the authority to certify graduates of a degree program in an aviation major will ensure pilots who seek eligibility for a restricted privileges ATP certificate based on academic training at an institution of higher education have the option to complete aviation coursework designed to improve and enhance the knowledge and skills of a person seeking a career as a professional pilot. Institutions of higher education who seek the authority to certify its graduates of a degree program with an aviation major to apply for a restricted privileges ATP certificate are required to submit the necessary information about the degree program(s), including aviation and aviation-related coursework, in order to obtain the authority to certify a graduate has met the restricted privileges ATP certificate requirements established in this final rule.

Institution of Higher Education Application Costs

Initial number of institutions of higher education applying for the authority to certify graduates = 150
Time needed to complete the application = 8 hours
College professor hourly wage = $53.33
First-Year Cost (2013)
Cost: $150 \times 8 \times \$53.33 = \$63,966$

[37] For 2013 there are no Paperwork Reduction Act costs for the ATP CTP. All costs begin in 2014.

Time: 150 × 8 = 1,200 hours
Subsequent Years: Per-Year Costs
Cost: 1 × 8 × $53.33 = $427
Time: 1 × 8 = 8 hours
Total Over 20 Years (2013–2032)
Cost: $63,966 + (19 × $427) = $72,109
Time: 1,200 + (19 × 8) = 1,352 hours
Average per Year
Cost: $72,109/20 = $3,605
Time: 1,352/20 = 68 hours

Review of Transcripts Costs

Initial number of graduates = 648
Time needed to review a graduate's transcript = 0.5 hours
Academic advisor hourly wage = $53.33
First-Year Cost (2013)
Cost: 648 × 0.5 × $53.33 = $17,279
Time: 648 × 0.5 = 324 hours
Subsequent Years Costs (assume 0.6% annual growth rate)
Cost: $348,696
Time: 6,538 hours
Total Over 20 Years (2013–2032)
Cost: $17,279 + $348,696 = $365,973
Time: 324 + 6,538 = 6,862 hours
Average per-Year
Cost: $365,973/20 = $18,299
Time: 6,862/20 = 343 hours

FAA Review of Application Costs

Initial number of applications to review = 150
Time needed to review the application = 6 hours
Salary of an aviation safety inspector = $61.50
First-Year Cost (2013)
Cost: 150 × 6 × $61.50 = $55,350
Time: 150 × 6 = 900 hours
Subsequent Years: Per-Year Costs
Cost: 1 × 6 × $61.50 = $369
Time: 1 × 6 = 6 hours
Total Over 20 Years (2013–2032)
Cost: $55,350 + (19 × $369) = $62,361
Time: 900 + (19 × 6) = 1,014 hours
Average per Year
Cost: $62,361/20 = $3,118
Time: 1,014/20 = 51 hours

F. International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to conform to International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has identified the following differences.

The FAA notes that, although pilots will be able to obtain a restricted privileges ATP certificate in fewer than the ICAO standard of 1,500 hours, those pilots will not have the pilot in command privileges of pilots who hold unrestricted ATP certificates. This pilot in command restriction will be reflected on the pilot's certificate. The experience and qualifications of the pilots who hold restricted privileges ATP certificates will exceed the ICAO standards for second-in-command.

The FAA also notes certain long-standing U.S. differences on file with certain ICAO Medical Assessment standards continue to apply under this action. Although this rule permits SICs in part 121 to hold only a second-class medical certificate, those SICs who serve in international operations will need to obtain an FAA first-class medical certificate to compensate for the electrocardiography difference between a first class medical certificate and a second class medical certificate. As such, U.S. pilots who fly internationally must continue to comply with this international aviation standard.

G. Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this rulemaking action qualifies for the categorical exclusion identified in paragraph 308(c) and involves no extraordinary circumstances.

V. Executive Order Determinations

A. Executive Order 13132, Federalism

The FAA has analyzed this final rule under the principles and criteria of Executive Order 13132, Federalism. The agency determined that this action will not have a substantial direct effect on the States, or the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, and, therefore, does not have Federalism implications.

B. Executive Order 13211, Regulations that Significantly Affect Energy Supply, Distribution, or Use

The FAA analyzed this final rule under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). The agency has determined that it is not a ''significant energy action'' under the executive order and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

VI. How To Obtain Additional Information

A. Rulemaking Documents

An electronic copy of a rulemaking document may be obtained by using the Internet—

1. Search the Federal eRulemaking Portal (*http://www.regulations.gov*);
2. Visit the FAA's Regulations and Policies Web page at *http://www.faa.gov/regulations_policies/* or
3. Access the Government Printing Office's Web page at *http://www.gpoaccess.gov/fr/index.html.*

Copies may also be obtained by sending a request (identified by notice, amendment, or docket number of this rulemaking) to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue SW., Washington, DC 20591, or by calling (202) 267–9680.

B. Comments Submitted to the Docket

Comments received may be viewed by going to *http://www.regulations.gov* and following the online instructions to search the docket number for this action. Anyone is able to search the electronic form of all comments received into any of the FAA's dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.).

C. Small Business Regulatory Enforcement Fairness Act

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires FAA to comply with small entity requests for information or advice about compliance with statutes and regulations within its jurisdiction. A small entity with questions regarding this document, may contact its local FAA official, or the person listed under the **FOR FURTHER INFORMATION CONTACT** heading at the beginning of the preamble. To find out more about SBREFA on the Internet, visit *http://www.faa.gov/regulations_policies/rulemaking/sbre_act/*.

List of Subjects

14 CFR Part 61

Aircraft, Airmen, Aviation safety.

14 CFR Part 121

Air carriers, Aircraft, Airmen, Aviation safety.

14 CFR Part 135

Air taxis, Aircraft, Airmen, Aviation safety.

14 CFR Part 141

Airmen, Educational facilities.

14 CFR Part 142

Airmen, Educational facilities.

The Amendment

In consideration of the foregoing, the Federal Aviation Administration amends Chapter I of Title 14, Code of Federal Regulations, as follows:

PART 61—CERTIFICATION: PILOTS, FLIGHT INSTRUCTORS, AND GROUND INSTRUCTORS

■ 1. The authority citation for part 61 is revised to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701–44703, 44707, 44709–44711, 45102–45103, 45301–45302.

■ 2. Amend § 61.1 as follows:
■ A. Remove paragraph designations (b)(1) through (b)(19);
■ B. Add new definitions of *Accredited, Institution of higher education,* and *Nationally recognized accrediting agency* to paragraph (b) in alphabetical order;
■ C. Revise paragraph (iii) of the definition of *Authorized instructor* in paragraph (b);
■ D. Revise the definition of *Cross country time;* and
■ E. Remove definitions of *Flight simulator* and *Flight training device.*

The additions and revisions read as follows:

§ 61.1 Applicability and definitions.

* * * * *

(b) * * *

Accredited has the same meaning as defined by the Department of Education in 34 CFR 600.2.

* * * * *

Authorized instructor means—

* * * * *

(iii) A person authorized by the Administrator to provide ground training or flight training under part 61, 121, 135, or 142 of this chapter when conducting ground training or flight training in accordance with that authority.

Cross-country time means—

(i) Except as provided in paragraphs (ii) through (vi) of this definition, time acquired during flight—

(A) Conducted by a person who holds a pilot certificate;

(B) Conducted in an aircraft;

(C) That includes a landing at a point other than the point of departure; and

(D) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems to navigate to the landing point.

(ii) For the purpose of meeting the aeronautical experience requirements (except for a rotorcraft category rating), for a private pilot certificate (except for a powered parachute category rating), a commercial pilot certificate, or an instrument rating, or for the purpose of exercising recreational pilot privileges (except in a rotorcraft) under § 61.101 (c), time acquired during a flight—

(A) Conducted in an appropriate aircraft;

(B) That includes a point of landing that was at least a straight-line distance of more than 50 nautical miles from the original point of departure; and

(C) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems to navigate to the landing point.

(iii) For the purpose of meeting the aeronautical experience requirements for a sport pilot certificate (except for powered parachute privileges), time acquired during a flight conducted in an appropriate aircraft that—

(A) Includes a point of landing at least a straight line distance of more than 25 nautical miles from the original point of departure; and

(B) Involves, as applicable, the use of dead reckoning; pilotage; electronic navigation aids; radio aids; or other navigation systems to navigate to the landing point.

(iv) For the purpose of meeting the aeronautical experience requirements for a sport pilot certificate with powered parachute privileges or a private pilot certificate with a powered parachute category rating, time acquired during a flight conducted in an appropriate aircraft that—

(A) Includes a point of landing at least a straight line distance of more than 15 nautical miles from the original point of departure; and

(B) Involves, as applicable, the use of dead reckoning; pilotage; electronic navigation aids; radio aids; or other navigation systems to navigate to the landing point.

(v) For the purpose of meeting the aeronautical experience requirements for any pilot certificate with a rotorcraft category rating or an instrument-helicopter rating, or for the purpose of exercising recreational pilot privileges, in a rotorcraft, under § 61.101(c), time acquired during a flight—

(A) Conducted in an appropriate aircraft;

(B) That includes a point of landing that was at least a straight-line distance of more than 25 nautical miles from the original point of departure; and

(C) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems to navigate to the landing point.

(vi) For the purpose of meeting the aeronautical experience requirements for an airline transport pilot certificate (except with a rotorcraft category rating), time acquired during a flight—

(A) Conducted in an appropriate aircraft;

(B) That is at least a straight-line distance of more than 50 nautical miles from the original point of departure; and

(C) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems.

(vii) For a military pilot who qualifies for a commercial pilot certificate (except with a rotorcraft category rating) under § 61.73 of this part, time acquired during a flight—

(A) Conducted in an appropriate aircraft;

(B) That is at least a straight-line distance of more than 50 nautical miles from the original point of departure; and

(C) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems.

* * * * *

Institution of higher education has the same meaning as defined by the Department of Education in 34 CFR 600.4.

* * * * *

Nationally recognized accrediting agency has the same meaning as defined by the Department of Education in 34 CFR 600.2.

* * * * *

■ 3. Amend § 61.23 as follows:
■ A. Revise paragraphs (a)(1) and (a)(2);
■ B. Revise paragraphs (d)(1)(i) and (ii) and (d)(2)(i).

The additions and revisions read as follows:

§ 61.23 Medical certificates: Requirement and duration.

(a) * * *

(1) Must hold a first-class medical certificate:

(i) When exercising the pilot-in-command privileges of an airline transport pilot certificate;

(ii) When exercising the second-in-command privileges of an airline transport pilot certificate in a flag or supplemental operation in part 121 of this chapter that requires three or more pilots; or

(iii) When serving as a required pilot flightcrew member in an operation conducted under part 121 of this chapter if the pilot has reached his or her 60th birthday.

(2) Must hold at least a second class medical certificate when exercising:

(i) Second-in-command privileges of an airline transport pilot certificate in part 121 of this chapter (other than operations specified in paragraph (a)(1)(ii) of this section); or

(ii) Privileges of a commercial pilot certificate; or

* * * * *

(d) *Duration of a medical certificate.* Use the following table to determine duration for each class of medical certificate:

If you hold	And on the date of examination for your most recent medical certificate you were	And you are conducting an operation requiring	Then your medical certificate expires, for that operation, at the end of the last day of the
(1) A first-class medical certificate.	(i) Under age 40	an airline transport pilot certificate for pilot-in-command privileges, or for second-in-command privileges in a flag or supplemental operation in part 121 requiring three or more pilots.	12th month after the month of the date of examination shown on the medical certificate.
	(ii) Age 40 or older	an airline transport pilot certificate for pilot-in-command privileges, for second-in-command privileges in a flag or supplemental operation in part 121 requiring three or more pilots, or for a pilot flightcrew member in part 121 operations who has reached his or her 60th birthday..	6th month after the month of the date of examination shown on the medical certificate.
*	*	* * *	* *
(2) A second-class medical certificate.	(i) Any age	an airline transport pilot certificate for second-in-command privileges (other than the operations specified in paragraph (d)(1) of this section), a commercial pilot certificate, or an air traffic control tower operator certificate.	12th month after the month of the date of examination shown on the medical certificate.
*	*	* * *	* *

■ 4. Amend § 61.35 by removing the word ''and'' at the end of paragraph (a)(1), redesignating paragraph (a)(2) as paragraph (a)(3), adding a new paragraph (a)(2), and revising redesignated paragraph (a)(3)(iii) to read as follows:

§ 61.35 Knowledge test: Prerequisites and passing grades.

(a) * * *

(2) After July 31, 2014, for the knowledge test for an airline transport pilot certificate with an airplane category multiengine class rating, a graduation certificate for the airline transport pilot certification training program specified in § 61.156; and

(3) * * *

(iii) Date of birth, which shows:

(A) For issuance of certificates other than the ATP certificate with an airplane category multiengine class rating, the applicant meets or will meet the age requirements of this part for the certificate sought before the expiration date of the airman knowledge test report; and

(B) For issuance of an ATP certificate with an airplane category multiengine class rating obtained under the aeronautical experience requirements of § 61.159 or § 61.160, the applicant is at least 18 years of age at the time of the knowledge test;

* * * * *

■ 5. Amend § 61.39 to revise paragraphs (a) and (b); redesignate paragraphs (c) through (e) as paragraphs (e) through (g); and add paragraphs (c) and (d) to read as follows:

§ 61.39 Prerequisites for practical tests.

(a) Except as provided in paragraphs (b), (c), and (e) of this section, to be eligible for a practical test for a certificate or rating issued under this part, an applicant must:

(1) Pass the required knowledge test:

(i) Within the 24-calendar-month period preceding the month the applicant completes the practical test, if a knowledge test is required; or

(ii) Within the 60-calendar month period preceding the month the applicant completes the practical for those applicants who pass the knowledge test after completing the airline transport pilot certification training program in § 61.156;

(2) Present the knowledge test report at the time of application for the practical test, if a knowledge test is required;

(3) Have satisfactorily accomplished the required training and obtained the aeronautical experience prescribed by this part for the certificate or rating sought;

(4) Hold at least a third-class medical certificate, if a medical certificate is required;

(5) Meet the prescribed age requirement of this part for the issuance of the certificate or rating sought;

(6) Have an endorsement, if required by this part, in the applicant's logbook or training record that has been signed by an authorized instructor who certifies that the applicant—

(i) Has received and logged training time within 2 calendar months preceding the month of application in preparation for the practical test;

(ii) Is prepared for the required practical test; and

(iii) Has demonstrated satisfactory knowledge of the subject areas in which the applicant was deficient on the airman knowledge test; and

(7) Have a completed and signed application form.

(b) An applicant for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate with an airplane type rating may take the practical test with an expired knowledge test only if the applicant passed the knowledge test after July 31, 2014, and is employed:

(1) As a flightcrew member by a part 119 certificate holder conducting operations under parts 125 or 135 of this chapter at the time of the practical test and has satisfactorily accomplished that operator's approved pilot-in-command training or checking program; or

(2) As a flightcrew member by a part 119 certificate holder conducting operations under part 121 of this chapter at the time of the practical test and has satisfactorily accomplished that operator's approved initial training program; or

(3) By the U.S. Armed Forces as a flight crewmember in U.S. military air transport operations at the time of the practical test and has completed the pilot in command aircraft qualification training program that is appropriate to the pilot certificate and rating sought.

(c) An applicant for an airline transport pilot certificate with a rating other than those ratings set forth in paragraph (b) of this section may take the practical test for that certificate or rating with an expired knowledge test report, provided that the applicant is employed:

(1) As a flightcrew member by a part 119 certificate holder conducting operations under parts 125 or 135 of this chapter at the time of the practical test and has satisfactorily accomplished that operator's approved pilot-in-command training or checking program; or

(2) By the U.S. Armed Forces as a flight crewmember in U.S. military air transport operations at the time of the practical test and has completed the pilot in command aircraft qualification training program that is appropriate to the pilot certificate and rating sought.

(d) In addition to the requirements in paragraph (a) of this section, to be eligible for a practical test for an airline transport pilot certificate with an airplane category multiengine class rating or airline transport pilot certificate obtained concurrently with an airplane type rating, an applicant must:

(1) If the applicant passed the knowledge test after July 31, 2014, present the graduation certificate for the airline transport pilot certification training program in § 61.156, at the time of application for the practical test;

(2) If applying for the practical test under the aeronautical experience requirements of § 61.160(a), the applicant must present the documents required by that section to substantiate eligibility; and

(3) If applying for the practical test under the aeronautical experience requirements of § 61.160(b), (c), or (d), the applicant must present an official transcript and certifying document from an institution of higher education that holds a letter of authorization from the Administrator under § 61.169.

* * * * *

■ 6. Amend § 61.55 by revising paragraph (a)(3) and by removing the phrase ''part 121,'' from paragraph (e) introductory text to read as follows:

§ 61.55 Second-in-command qualifications.

(a) * * *

(3) At least a pilot type rating for the aircraft being flown unless the flight will be conducted as domestic flight operations within the United States airspace.

* * * * *

■ 7. Amend § 61.57 by revising paragraph (e)(2) to read as follows:

§ 61.57 Recent flight experience: Pilot in command.

* * * * *

(e) * * *

(2) This section does not apply to a pilot in command who is employed by an air carrier certificated under part 121 or 135 and is engaged in a flight operation under part 91, 121, or 135 for that air carrier if the pilot is in compliance with §§ 121.435 or 121.436, as applicable, and § 121.439, or §§ 135.243 and 135.247 of this chapter, as appropriate.

* * * * *

■ 8. Amend § 61.71 by revising paragraphs (b) and (c) to read as follows;

§ 61.71 Graduates of an approved training program other than under this part: Special rules.

* * * * *

(b) A person may apply for an airline transport pilot certificate, type rating, or both under this part, and will be considered to have met the applicable requirements under § 61.157, except for the airline transport pilot certification training program required by § 61.156, for that certificate and rating, if that person has:

(1) Satisfactorily accomplished an approved training program and a proficiency check for that airplane type that includes all the tasks and maneuvers required to serve as pilot in command in accordance with the requirements of subparts N and O of part 121 of this chapter; and

(2) Applied for an airline transport pilot certificate, type rating, or both within the 60-day period from the date the person satisfactorily accomplished the requirements of paragraph (b)(1) for that airplane type.

(c) A person who holds a foreign pilot license and is applying for an equivalent U.S. pilot certificate on the basis of a Bilateral Aviation Safety Agreement and associated Implementation Procedures for Licensing may be considered to have met the applicable aeronautical experience, aeronautical knowledge, and areas of operation requirements of this part.

■ 9. Amend § 61.153 as follows:

■ A. Revise paragraph (a);

■ B. Redesignate paragraphs (e) through (h) as paragraphs (f) through (i); and

■ C. Add a new paragraph (e).

The addition and revisions read as follows:

§ 61.153 Eligibility requirements: General.

* * * * *

(a) Meet the following age requirements:

(1) For an airline transport pilot certificate obtained under the aeronautical experience requirements of §§ 61.159, 61.161, or 61.163, be at least 23 years of age; or

(2) For an airline transport pilot certificate obtained under the aeronautical experience requirements of § 61.160, be at least 21 years of age.

* * * * *

(e) After July 31, 2014, for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate obtained concurrently with an airplane type rating, receive a graduation certificate from an authorized training provider certifying completion of the airline transport pilot certification training program specified in § 61.156 before applying for the knowledge test required by paragraph (g) of this section;

* * * * *

■ 10. Amend § 61.155 as follows:

■ A. Remove the word ''and'' after the semicolon in paragraph (c)(12);

■ B. Remove the period from the end of paragraph (c)(13) and add the phrase ''; and'' in its place; and

■ C. Add paragraphs (c)(14) and (d).

The additions read as follows:

§ 61.155 Aeronautical knowledge.

* * * * *

(c) * * *

(14) After July 31, 2014, for airplane category multiengine class rating or airplane type rating, the content of the airline transport pilot certification training program in § 61.156.

(d) An applicant who successfully completes the knowledge test for an airline transport pilot certificate prior to August 1, 2014, must successfully complete the practical test within 24 months from the month in which the knowledge test was successfully completed. An applicant who passes the knowledge test prior to August 1, 2014, but fails to successfully complete the practical test within 24 months must complete the airline transport pilot certification training program specified

in § 61.156 and retake the knowledge test prior to applying for the practical test.

■ 11. Add § 61.156 to read as follows:

§ 61.156 Training requirements: Airplane category—multiengine class rating or airplane type rating concurrently with airline transport pilot certificate.

After July 31, 2014, a person who applies for the knowledge test for an airline transport pilot certificate with an airplane category multiengine class rating must present a graduation certificate from an authorized training provider under part 121, 135, 141, or 142 of this chapter certifying the applicant has completed the following training in a course approved by the Administrator.

(a) *Academic training.* The applicant for the knowledge test must receive at least 30 hours of classroom instruction that includes the following:

(1) At least 8 hours of instruction on aerodynamics including high altitude operations;

(2) At least 2 hours of instruction on meteorology, including adverse weather phenomena and weather detection systems; and

(3) At least 14 hours of instruction on air carrier operations, including the following areas:

(i) Physiology;

(ii) Communications;

(iii) Checklist philosophy;

(iv) Operational control;

(v) Minimum equipment list/configuration deviation list;

(vi) Ground operations;

(vii) Turbine engines;

(viii) Transport category aircraft performance;

(ix) Automation, navigation, and flight path warning systems.

(4) At least 6 hours of instruction on leadership, professional development, crew resource management, and safety culture.

(b) *FSTD training.* The applicant for the knowledge test must receive at least 10 hours of training in a flight simulation training device qualified under part 60 of this chapter that represents a multiengine turbine airplane. The training must include the following:

(1) At least 6 hours of training in a Level C or higher full flight simulator qualified under part 60 of this chapter that represents a multiengine turbine airplane with a maximum takeoff weight of 40,000 pounds or greater. The training must include the following areas:

(i) Low energy states/stalls;

(ii) Upset recovery techniques; and

(iii) Adverse weather conditions, including icing, thunderstorms, and crosswinds with gusts.

(2) The remaining FSTD training may be completed in a Level 4 or higher flight simulation training device. The training must include the following areas:

(i) Navigation including flight management systems; and

(ii) Automation including autoflight.

(c) *Deviation authority.* The Administrator may issue deviation authority from the weight requirement in paragraph (b)(1) of this section upon a determination that the objectives of the training can be met in an alternative device.

■ 12. Amend § 61.157 by revising paragraph (c) to read as follows:

§ 61.157 Flight proficiency.

* * * * *

(c) *Exceptions.* A person who applies for an aircraft type rating to be added to an airline transport pilot certificate or an aircraft type rating concurrently with an airline transport pilot certificate, and who is an employee of a certificate holder operating under part 121 or part 135 of this chapter, does not need to comply with the requirements of paragraph (b) of this section if the applicant presents a training record that shows completion of that certificate holder's approved training program for the aircraft type rating.

* * * * *

■ 13. Amend § 61.159 as follows:

■ A. Redesignate paragraphs (a)(3) through (a)(5) as paragraphs (a)(4) through (a)(6);

■ B. Add a new paragraph (a)(3);

■ C. Remove the phrase ''paragraph (a)(3)(ii)'' from newly redesignated paragraph (a)(4)(i) and add the phrase ''paragraph (a)(4)(ii)'' in its place;

■ D. Remove the phrase ''paragraph (a)(3)'' from newly redesignated paragraph (a)(4)(ii) and add the phrase ''paragraph (a)(4)'' in its place; and

■ E. Revise newly redesignated paragraph (a)(5).

The addition and revision read as follows

§ 61.159 Aeronautical experience: Airplane category rating.

(a) * * *

(3) 50 hours of flight time in the class of aircraft for which the rating is sought. A maximum of 25 hours of training in a full flight simulator representing a multiengine airplane may be credited toward the flight time requirement of this paragraph if the training was accomplished as part of an approved training course in parts 121, 135, 141, or 142 of this chapter. A flight training device or aviation training device may not be used to satisfy this requirement.

* * * * *

(5) Not more than 100 hours of the total aeronautical experience requirements of paragraph (a) of this section may be obtained in a full flight simulator or flight training device that represents an airplane, provided the aeronautical experience was accomplished as part of an approved training course in parts 121, 135, 141, or 142 of this chapter.

* * * * *

■ 14. Add § 61.160 to read as follows:

§ 61.160 Aeronautical experience—airplane category restricted privileges.

(a) Except for a person who has been removed from flying status for lack of proficiency or because of a disciplinary action involving aircraft operations, a U.S. military pilot or former U.S. military pilot may apply for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate concurrently with an airplane type rating with a minimum of 750 hours of total time as a pilot if the pilot presents:

(1) An official Form DD–214 (Certificate of Release or Discharge from Active Duty) indicating that the person was honorably discharged from the U.S. Armed Forces or an official U.S. Armed Forces record that shows the pilot is currently serving in the U.S. Armed Forces; and

(2) An official U.S. Armed Forces record that shows the person graduated from a U.S. Armed Forces undergraduate pilot training school and received a rating qualification as a military pilot.

(b) A person may apply for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate concurrently with an airplane type rating with a minimum of 1,000 hours of total time as a pilot if the person:

(1) Holds a Bachelor's degree with an aviation major from an institution of higher education, as defined in § 61.1, that has been issued a letter of authorization by the Administrator under § 61.169;

(2) Completes 60 semester credit hours of aviation and aviation-related coursework that has been recognized by the Administrator as coursework designed to improve and enhance the knowledge and skills of a person seeking a career as a professional pilot;

(3) Holds a commercial pilot certificate with an airplane category and instrument rating if:

(i) The required ground training was completed as part of an approved part 141 curriculum at the institution of higher education; and

(ii) The required flight training was completed as part of an approved part 141 curriculum at the institution of higher education or at a part 141 pilot school that has a training agreement under § 141.26 of this chapter with the institution of higher education; and

(4) Presents official transcripts or other documentation acceptable to the Administrator from the institution of higher education certifying that the graduate has satisfied the requirements in paragraphs (b)(1) through (3) of this section.

(c) A person may apply for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate concurrently with an airplane type rating with a minimum of 1,250 hours of total time as a pilot if the person:

(1) Holds an Associate's degree with an aviation major from an institution of higher education, as defined in § 61.1, that has been issued a letter of authorization by the Administrator under § 61.169;

(2) Completes at least 30 semester credit hours of aviation and aviation-related coursework that has been recognized by the Administrator as coursework designed to improve and enhance the knowledge and skills of a person seeking a career as a professional pilot;

(3) Holds a commercial pilot certificate with an airplane category and instrument rating if:

(i) The required ground training was completed as part of an approved part 141 curriculum at the institution of higher education; and

(ii) The required flight training was completed as part of an approved part 141 curriculum at the institution of higher education or at a part 141 pilot school that has a written training agreement under § 141.26 of this chapter with the institution of higher education; and

(4) Presents official transcripts or other documentation acceptable to the Administrator from the institution of higher education certifying that the graduate has satisfied the requirements in paragraphs (c)(1) through (3) of this section.

(d) A graduate of an institution of higher education who completes fewer than 60 semester credit hours but at least 30 credit hours and otherwise satisfies the requirements of paragraph (b) may apply for airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate concurrently with an airplane type rating with a minimum of 1,250 hours of total time as a pilot.

(e) A person who applies for an airline transport pilot certificate under the total flight times listed in paragraphs (a), (b), and (c) of this section must otherwise meet the aeronautical experience requirements of § 61.159, except that the person may apply for an airline transport pilot certificate with 200 hours of cross-country flight time.

(f) A person who has 1,500 hours total time as a pilot, 200 hours of cross-country flight time, and otherwise meets the aeronautical experience requirements of § 61.159 may apply for an airline transport pilot certificate under this section.

(g) An airline transport pilot certificate obtained under this section is subject to the pilot in command limitations set forth in § 61.167(b) and must contain the following limitation, ''Restricted in accordance with 14 CFR 61.167.'' The pilot is entitled to an airline transport pilot certificate without the limitation specified in this paragraph when the applicant presents satisfactory evidence of having met the aeronautical experience requirements of § 61.159 and the age requirement of § 61.153(a)(1).

(h) An applicant who meets the aeronautical experience requirements of paragraphs (a), (b), (c), and (d) of this section is issued an airline transport pilot certificate with the limitation, ''Holder does not meet the pilot in command aeronautical experience requirements of ICAO,'' as prescribed under Article 39 of the Convention on International Civil Aviation if the applicant does not meet the ICAO requirements contained in Annex 1 ''Personnel Licensing'' to the Convention on International Civil Aviation. An applicant is entitled to an airline transport pilot certificate without the ICAO limitation specified under this paragraph when the applicant presents satisfactory evidence of having met the ICAO requirements and otherwise meets the aeronautical experience requirements of § 61.159.

■ 15. Amend § 61.165 as follows:

■ A. Redesignate paragraphs (c)(2) through (c)(5) as paragraphs (c)(3) through (c)(6);

■ C. Add new paragraph (c)(2);

■ D. Revise newly redesignated paragraphs (c)(3) and (c)(5);

■ E. Revise paragraph (e) introductory text and paragraph (e)(1);

■ F. Redesignate paragraph (f) as paragraph (g);

■ G. Add new paragraph (f);

■ H. Remove the phrase ''paragraphs (a) through (e)'' from newly redesignated paragraph (g) introductory text and add the phrase ''paragraphs (a) through (f)'' in its place; and

■ I. Remove the phrase ''paragraph (f)(1)'' from newly redesignated paragraph (g)(3) and add the phrase ''paragraph (g)(1)'' in its place.

The revisions and additions read as follows:

§ 61.165 Additional aircraft class category and ratings.

* * * * *

(c) * * *

(2) After July 31, 2014, successfully complete the airline transport pilot certification training program specified in § 61.156;

(3) Pass a knowledge test for an airplane category multiengine class rating or type rating on the aeronautical knowledge areas of § 61.155(c);

* * * * *

(5) Meet the aeronautical experience requirements of § 61.159 or § 61.160; and

* * * * *

(e) *Additional class rating within the same aircraft category.* Except as provided in paragraph (f) of this section, a person applying for an airline transport pilot certificate with an additional class rating who holds an airline transport certificate in the same aircraft category must—

(1) Meet the eligibility requirements of § 61.153, except paragraph (g) of that section;

* * * * *

(f) *Adding a multiengine class rating or airplane type rating to an airline transport pilot certificate with a single engine class rating.* A person applying to add a multiengine class rating or airplane type rating to an airline transport pilot certificate with an airplane category single engine class rating must—

(1) Meet the eligibility requirements of § 61.153;

(2) Pass a required knowledge test on the aeronautical knowledge areas of § 61.155(c), as applicable to multiengine airplanes;

(3) Comply with the requirements in § 61.157(b), if applicable;

(4) Meet the applicable aeronautical experience requirements of § 61.159; and

(5) Pass a practical test on the areas of operation of § 61.157(e)(2).

* * * * *

■ 16. Revise § 61.167 to read as follows:

§ 61.167 Airline transport pilot privileges and limitations.

(a) *Privileges.* (1) A person who holds an airline transport pilot certificate is entitled to the same privileges as a person who holds a commercial pilot certificate with an instrument rating.

(2) A person who holds an airline transport pilot certificate and has met the aeronautical experience requirements of § 61.159 and the age requirements of § 61.153(a)(1) of this part may instruct—

(i) Other pilots in air transportation service in aircraft of the category, class, and type, as applicable, for which the airline transport pilot is rated and endorse the logbook or other training record of the person to whom training has been given;

(ii) In flight simulators, and flight training devices representing the aircraft referenced in paragraph (b)(1) of this section, when instructing under the provisions of this section and endorse the logbook or other training record of the person to whom training has been given;

(iii) Only as provided in this section, except that an airline transport pilot who also holds a flight instructor certificate can exercise the instructor privileges under subpart H of this part for which he or she is rated; and

(iv) In an aircraft, only if the aircraft has functioning dual controls, when instructing under the provisions of this section.

(3) Excluding briefings and debriefings, an airline transport pilot may not instruct in aircraft, flight simulators, and flight training devices under this section—

(i) For more than 8 hours in any 24-consecutive-hour period; or

(ii) For more than 36 hours in any 7-consecutive-day period.

(4) An airline transport pilot may not instruct in Category II or Category III operations unless he or she has been trained and successfully tested under Category II or Category III operations, as applicable.

(b) *Limitations.* A person who holds an airline transport pilot certificate and has not satisfied the age requirement of § 61.153(a)(1) and the aeronautical experience requirements of § 61.159 may not:

(1) Act as pilot in command in operations conducted under part 121, § 91.1053(a)(2)(i), or § 135.243(a)(1) of this chapter, or

(2) Serve as second in command in flag or supplemental operations in part 121 of this chapter requiring three or more pilots.

■ 17. Add § 61.169 to read as follows:

§ 61.169 Letters of authorization for institutions of higher education.

(a) An institution of higher education that is accredited, as defined in § 61.1, may apply for a letter of authorization for the purpose of certifying its graduates for an airline transport pilot certificate under the academic and aeronautical experience requirements in § 61.160. The application must be in a form and manner acceptable to the Administrator.

(b) An institution of higher education must comply with the provisions of the letter of authorization and may not certify a graduate unless it determines that the graduate has satisfied the requirements of § 61.160, as appropriate.

(c) The Administrator may rescind or amend a letter of authorization if the Administrator determines that the institution of higher education is not complying or is unable to comply with the provisions of the letter of authorization.

PART 121—OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

■ 18. The authority citation for part 121 is revised to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 40119, 41706, 44101, 44701–44702, 44705, 44709–44711, 44713, 44716–44717, 44722, 46105.2.

■ 19. Amend § 121.409 by revising paragraph (b) introductory text to read as follows:

§ 121.409 Training courses using airplane simulators and other training devices.

* * * * *

(b) Except for the airline transport pilot certification training program approved to satisfy the requirements of § 61.156 of this chapter, a course of training in an airplane simulator may be included for use as provided in § 121.441 if that course—

* * * * *

■ 20. Add § 121.410 to read as follows:

§ 121.410 Airline transport pilot certification training program.

(a) A certificate holder may obtain approval to establish and implement a training program to satisfy the requirements of § 61.156 of this chapter. The training program must be separate from the air carrier training program required by this part.

(b) No certificate holder may use a person nor may any person serve as an instructor in a training program approved to meet the requirements of § 61.156 of this chapter unless the instructor:

(1) Holds an airline transport pilot certificate with an airplane category multiengine class rating;

(2) Has at least 2 years of experience as a pilot in command in operations conducted under § 91.1053(a)(2)(i) or § 135.243(a)(1) of this chapter, or as a pilot in command or second in command in any operation conducted under this part;

(3) Except for the holder of a flight instructor certificate, receives initial training on the following topics:

(i) The fundamental principles of the learning process;

(ii) Elements of effective teaching, instruction methods, and techniques;

(iii) Instructor duties, privileges, responsibilities, and limitations;

(iv) Training policies and procedures; and

(v) Evaluation.

(4) If providing training in a flight simulation training device, hold an aircraft type rating for the aircraft represented by the flight simulation training device utilized in the training program and have received training within the preceding 12 months from the certificate holder on:

(i) Proper operation of flight simulator and flight training device controls and systems;

(ii) Proper operation of environmental and fault panels;

(iii) Data and motion limitations of simulation;

(iv) Minimum equipment requirements for each curriculum; and

(v) The maneuvers that will be demonstrated in the flight simulation training device.

(c) A certificate holder may not issue a graduation certificate to a student unless that student has completed all the curriculum requirements of the course.

(d) A certificate holder must conduct evaluations to ensure that training techniques, procedures, and standards are acceptable to the Administrator.

■ 21. Revise § 121.419 to read as follows:

§ 121.419 Pilots and flight engineers: Initial, transition, and upgrade ground training.

(a) Except as provided in paragraph (b) of this section, initial, transition, and upgrade ground training for pilots and flight engineers must include instruction in at least the following as applicable to their assigned duties:

(1) General subjects—

(i) The certificate holder's dispatch or flight release procedures;

(ii) Principles and methods for determining weight and balance, and runway limitations for takeoff and landing;

(iii) Enough meteorology to insure a practical knowledge of weather phenomena, including the principles of frontal systems, icing, fog, thunderstorms, and high altitude weather situations;

(iv) Air traffic control systems, procedures, and phraseology;

(v) Navigation and the use of navigation aids, including instrument approach procedures;

(vi) Normal and emergency communication procedures;

(vii) Visual cues prior to and during descent below DA/DH or MDA;

(viii) Approved crew resource management initial training; and

(ix) Other instructions as necessary to ensure competence.

(2) For each airplane type—

(i) A general description;

(ii) Performance characteristics;

(iii) Engines and propellers;

(iv) Major components;

(v) Major airplane systems (e.g., flight controls, electrical, hydraulic); other systems as appropriate; principles of normal, abnormal, and emergency operations; appropriate procedures and limitations;

(vi) Procedures for—

(A) Recognizing and avoiding severe weather situations;

(B) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear, and

(C) Operating in or near thunderstorms (including best penetrating altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions;

(vii) Operating limitations;

(viii) Fuel consumption and cruise control;

(ix) Flight planning;

(x) Each normal and emergency procedure; and

(xi) The approved Airplane Flight Manual.

(b) Initial ground training for pilots who have completed the airline transport pilot certification training program in § 61.156 must include instruction in at least the following as applicable to their assigned duties:

(1) Ground training specific to the certificate holder's—

(i) Dispatch or flight release procedures;

(ii) Method for determining weight and balance and runway limitations for takeoff and landing;

(iii) Meteorology hazards applicable to the certificate holder's areas of operation;

(iv) Approved departure, arrival, and approach procedures;

(v) Normal and emergency communication procedures; and

(vi) Approved crew resource management training.

(2) The training required by paragraph (a)(2) of this section for the airplane type.

(c) Initial ground training for pilots and flight engineers must consist of at least the following programmed hours of instruction in the required subjects specified in paragraph (a) of this section and in § 121.415(a) unless reduced under § 121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 64 hours; and

(ii) Turbopropeller powered, 80 hours.

(2) Group II airplanes, 120 hours.

(d) Initial ground training for pilots who have completed the airline transport pilot certification training program in § 61.156 must consist of at least the following programmed hours of instruction in the required subjects specified in paragraph (b) of this section and in § 121.415(a) unless reduced under § 121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 54 hours; and

(ii) Turbopropeller powered, 70 hours.

(2) Group II airplanes, 110 hours.

■ 22. Add § 121.435 to read as follows:

§ 121.435 Pilot qualification: Certificate and experience requirements.

(a) No pilot may act as pilot in command of an aircraft (or as second in command of an aircraft in a flag or supplemental operation that requires three or more pilots) unless he holds an airline transport pilot certificate and an appropriate type rating for that aircraft.

(b) No certificate holder may use nor may any pilot act as a pilot in a capacity other than those specified in paragraph (a) of this section unless the pilot holds at least a commercial pilot certificate with appropriate category and class ratings for the aircraft concerned, and an instrument rating. Notwithstanding the requirements of § 61.63(b) and (c) of this chapter, a pilot who is currently employed by a certificate holder and meets applicable training requirements of subpart N of this part, and the proficiency check requirements of § 121.441, may be issued the appropriate category and class ratings by presenting proof of compliance with those requirements to a Flight Standards District Office.

(c) The requirements of this section will expire on July 31, 2013. After that date, the requirements of § 121.436 apply.

■ 23. Add § 121.436 to read as follows:

§ 121.436 Pilot Qualification: Certificates and experience requirements.

(a) No certificate holder may use nor may any pilot act as pilot in command of an aircraft (or as second in command of an aircraft in a flag or supplemental operation that requires three or more pilots) unless the pilot:

(1) Holds an airline transport pilot certificate not subject to the limitations in § 61.167 of this chapter;

(2) Holds an appropriate aircraft type rating for the aircraft being flown; and

(3) If serving as pilot in command, has 1,000 hours as second in command in operations under this part, pilot in command in operations under § 91.1053(a)(2)(i) of this chapter, pilot in command in operations under § 135.243(a)(1) of this chapter, or any combination thereof. For those pilots who are employed as pilot in command in part 121 operations on July 31, 2013, compliance with the requirements of this paragraph (a)(3) is not required.

(b) No certificate holder may use nor may any pilot act as second in command unless the pilot holds an airline transport pilot certificate and an appropriate aircraft type rating for the aircraft being flown. A second-in-command type rating obtained under § 61.55 does not satisfy the requirements of this section.

(c) For the purpose of satisfying the flight hour requirement in paragraph (a)(3) of this section, a pilot may credit 500 hours of military flight time obtained as pilot in command of a multiengine turbine-powered, fixed-wing airplane in an operation requiring more than one pilot.

(d) Compliance with the requirements of this section is required by August 1, 2013. However, for those pilots who are employed as second in command in part 121 operations on July 31, 2013, compliance with the type rating requirement in paragraph (b) of this section is not required until January 1, 2016.

§ 121.437 [Removed]

■ 24. Remove § 121.437.

■ 25. Amend § 121.543(b)(3)(i) to read as follows:

§ 121.543 Flight crewmembers at controls.

* * * * *

(b) * * *

(3) * * *

(i) In the case of the assigned pilot in command during the en route cruise portion of the flight, by a pilot who holds an airline transport pilot certificate not subject to the limitations in § 61.167 of this chapter and an

appropriate type rating, is currently qualified as pilot in command or second in command, and is qualified as pilot in command of that aircraft during the en route cruise portion of the flight. A second in command qualified to act as a pilot in command en route need not have completed the following pilot in command requirements: The 6-month recurrent flight training required by § 121.433(c)(1)(iii); the operating experience required by § 121.434; the takeoffs and landings required by § 121.439; the line check required by § 121.440; and the 6-month proficiency check or simulator training required by § 121.441(a)(1); and

* * * * *

Appendix H to Part 121 [Amended]

■ 26. Amend Appendix H to Part 121 by removing the reference ''§ 61.153(g)'' from the last paragraph of the appendix and adding the reference ''§ 61.153(h)'' in its place.

PART 135—OPERATING REQUIREMENTS: COMMUTER AND ON DEMAND OPERATIONS AND RULES GOVERNING PERSON ONBOARD SUCH AIRCRAFT

■ 27. The authority citation for part 135 is revised to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 41706, 40113, 44701–44702, 44705, 44709, 44711–44713, 44715–44717, 44722, 45101–45105.

■ 28. Add § 135.336 to read as follows:

§ 135.336 Airline transport pilot certification training program.

(a) A certificate holder may obtain approval to establish and implement a training program to satisfy the requirements of § 61.156 of this chapter. The training program must be separate from the air carrier training program required by this part.

(b) No certificate holder may use a person nor may any person serve as an instructor in a training program approved to meet the requirements of § 61.156 of this chapter unless the instructor:

(1) Holds an airline transport pilot certificate with an airplane category multiengine class rating;

(2) Has at least 2 years of experience as a pilot in command in operations conducted under § 91.1053(a)(2)(i) of this chapter, § 135.243(a)(1) of this part, or as a pilot in command or second in command in any operation conducted under part 121 of this chapter;

(3) Except for the holder of a flight instructor certificate, receives initial training on the following topics:

(i) The fundamental principles of the learning process;

(ii) Elements of effective teaching, instruction methods, and techniques;

(iii) Instructor duties, privileges, responsibilities, and limitations;

(iv) Training policies and procedures; and

(v) Evaluation.

(4) If providing training in a flight simulation training device, holds an aircraft type rating for the aircraft represented by the flight simulation training device utilized in the training program and have received training and evaluation within the preceding 12 months from the certificate holder on:

(i) Proper operation of flight simulator and flight training device controls and systems;

(ii) Proper operation of environmental and fault panels;

(iii) Data and motion limitations of simulation;

(iv) Minimum equipment requirements for each curriculum; and

(v) The maneuvers that will be demonstrated in the flight simulation training device.

(c) A certificate holder may not issue a graduation certificate to a student unless that student has completed all the curriculum requirements of the course.

(d) A certificate holder must conduct evaluations to ensure that training techniques, procedures, and standards are acceptable to the Administrator.

■ 29. Amend § 135.341 by adding a sentence to the end of paragraph (a) to read as follows:

§ 135.341 Pilot and flight attendant crewmember training programs.

(a) * * * This deviation authority does not extend to the training provided under paragraph (c) of this section.

* * * * *

PART 141—PILOT SCHOOLS

■ 30. The authority citation for part 141 is revised to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701–44703, 44707, 44709, 44711, 45102–45103, 45301–45302.

■ 31. Amend § 141.11 by adding paragraph (b)(2)(viii) to read as follows:

§ 141.11 Pilot school ratings.

* * * * *

(b) * * *

(2) * * *

(viii) Airline transport pilot certification training program.

* * * * *

■ 32. Revise § 141.26 to read as follows:

§ 141.26 Training agreements.

(a) A training center certificated under part 142 of this chapter may provide the training, testing, and checking for pilot schools certificated under this part and is considered to meet the requirements of this part, provided—

(1) There is a training agreement between the certificated training center and the pilot school;

(2) The training, testing, and checking provided by the certificated training center is approved and conducted under part 142;

(3) The pilot school certificated under this part obtains the Administrator's approval for a training course outline that includes the training, testing, and checking to be conducted under this part and the training, testing, and checking to be conducted under part 142; and

(4) Upon completion of the training, testing, and checking conducted under part 142, a copy of each student's training record is forwarded to the part 141 school and becomes part of the student's permanent training record.

(b) A pilot school that provides flight training for an institution of higher education that holds a letter of authorization under § 61.169 of this chapter must have a training agreement with that institution of higher education.

■ 33. Amend § 141.33 by adding paragraph (a)(4) to read as follows:

§ 141.33 Personnel.

(a) * * *

(4) In addition to meeting the requirements of paragraph (a)(3) of this section, each instructor used for the airline transport pilot certification training program in § 61.156 of this chapter must:

(i) Hold an airline transport pilot certificate with an airplane category multiengine class rating;

(ii) Have at least 2 years of experience as a pilot in command in operations conducted under § 91.1053(a)(2)(i) or § 135.243(a)(1) of this chapter, or as a pilot in command or second in command in any operation conducted under part 121 of this chapter; and

(iii) If providing training in a flight simulation training device, have received training and evaluation within the preceding 12 months from the certificate holder on—

(A) Proper operation of flight simulator and flight training device controls and systems;

(B) Proper operation of environmental and fault panels,

(C) Data and motion limitations of simulation;

(D) Minimum equipment requirements for each curriculum; and

(E) The maneuvers that will be demonstrated in the flight simulation training device.

* * * * *

■ 34. Amend Appendix K to Part 141 as follows:

■ A. Revise paragraph 4.(b) and 4.(c).

■ B. Add paragraph 13.

Appendix K to Part 141—Special Preparation Courses

* * * * *

4. * * *

(b) Except for the airline transport pilot certification program in paragraph 13 of this appendix, training in a flight simulator that meets the requirements of § 141.41(a) of this part, may be credited for a maximum of 10 percent of the total flight training hour requirements of the approved course, or of this section, whichever is less.

(c) Except for the airline transport pilot certification program in paragraph 13 of this appendix, training in a flight training device that meets the requirements of § 141.41(b) of this part, may be credited for a maximum of 5 percent of the total flight training hour requirements of the approved course, or of this section, whichever is less.

* * * * *

13. Airline transport pilot certification training program. An approved airline transport pilot certification training program must include the academic and FSTD training set forth in § 61.156 of this chapter. The FAA will not approve a course with fewer hours than those prescribed in § 61.156 of this chapter.

PART 142—TRAINING CENTERS

■ 35. The authority citation for part 142 is revised to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 40119, 44101, 44701–44703, 44705, 44707, 44709–44711, 45102–45103, 45301–45302.

■ 36. Amend § 142.1 by revising paragraphs (a) and (b)(2) to read as follows:

§ 142.1 Applicability.

(a) This subpart prescribes the requirements governing the certification and operation of training centers. Except as provided in paragraph (b) of this section, this part provides an alternative means to accomplish training required by parts 61, 63, 65, 91, 121, 125, 135, or 137 of this chapter.

(b) * * *

(2) Approved under subpart Y of part 121 of this chapter, Advanced Qualification Programs, for the authorization holder's own employees;

* * * * *

■ 37. Amend § 142.3 by revising paragraph (3) of the definition of *Course* and the definition of *Flight training equipment* to read as follows:

§ 142.3 Definitions.

* * * * *

Course means—

* * * * *

(3) A curriculum, or curriculum segment, as defined in subpart Y of part 121 of this chapter.

* * * * *

Flight training equipment means full flight simulators, as defined in § 1.1 of this chapter, flight training devices, as defined in § 1.1 of this chapter, and aircraft.

* * * * *

■ 38. Amend § 142.49 by revising paragraph (c)(3)(iv) to read as follows:

§ 142.49 Training center instructor and evaluator privileges and limitations.

* * * * *

(c) * * *

(3) * * *

(iv) If instructing or evaluating in an aircraft in flight while serving as a required crewmember, holds at least a valid second class medical certificate; and

* * * * *

■ 39. Add § 142.54 to read as follows:

§ 142.54 Airline transport pilot certification training program.

No certificate holder may use a person nor may any person serve as an instructor in a training program approved to meet the requirements of § 61.156 of this chapter unless the instructor:

(a) Holds an airline transport pilot certificate with an airplane category multiengine class rating;

(b) Has at least 2 years of experience as a pilot in command in operations conducted under § 91.1053(a)(2)(i) or § 135.243(a)(1) of this chapter, or as a pilot in command or second in command in any operation conducted under part 121 of this chapter;

(c) Except for the holder of a flight instructor certificate, receives initial training on the following topics:

(1) The fundamental principles of the learning process;

(2) Elements of effective teaching, instruction methods, and techniques;

(3) Instructor duties, privileges, responsibilities, and limitations;

(4) Training policies and procedures; and

(5) Evaluation.

(d) If providing training in a flight simulation training device—

(1) Holds an aircraft type rating for the aircraft represented by the flight simulation training device utilized in the training program and have received training and evaluation within the preceding 12 months from the certificate holder on the maneuvers that will be demonstrated in the flight simulation training device; and

(2) Satisfies the requirements of § 142.53(a)(4).

(e) A certificate holder may not issue a graduation certificate to a student unless that student has completed all the curriculum requirements of the course.

(f) A certificate holder must conduct evaluations to ensure that training techniques, procedures, and standards are acceptable to the Administrator.

§ 142.55 [Amended]

■ 40. Amend § 142.55 as follows:

■ A. In paragraph (a)(2), remove the phrase ''part 187'' and add in its place the phrase ''part 183''; and

■ B. In paragraph (d), remove the phrase ''SFAR 58'' and add in its place the phrase ''subpart Y of part 121 of this chapter''.

Issued in Washington, DC, under the authority provided by 49 U.S.C. 106(f), 44701(a), and Secs. 216–217, Public Law 111–216, 124 Stat. 2348 on July 10, 2013.

Michael P. Huerta,

Administrator.

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