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Part III

**Department of
Transportation**

Federal Aviation Administration

**14 CFR Part 121
Pilot Operating and Experience
Requirements; Final Rule**

DEPARTMENT OF TRANSPORTATION**Federal Aviation Administration****14 CFR Part 121**

[Docket No. 27210; Amendment No. 121-248]

RIN 2120-AD88

Pilot Operating and Experience Requirements

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The Federal Aviation Administration amends its pilot qualification requirements for air carrier and commercial operator pilots by upgrading existing operating experience requirements, establishing a new kind of operating experience requirement, and adding requirements that would reduce the potential for an inexperienced pilot in command to be scheduled to fly with an inexperienced second in command pilot. The FAA has determined that recent practices and trends necessitate revising current pilot qualification regulations in the interest of safety to upgrade minimum crew experience and to require pilots to use newly developed knowledge and skills in actual line operations within a short time after training.

EFFECTIVE DATE: August 25, 1995.

FOR FURTHER INFORMATION CONTACT: Mr. Larry Youngblut, Project Development Branch (AFS-240), Air Transportation Division, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591; Telephone (202) 267-8096.

SUPPLEMENTARY INFORMATION:**Background**

The FAA is amending part 121 pilot qualification requirements. The FAA published a Notice of Proposed Rulemaking (NPRM), Notice No. 93-1, on the subject (58 FR 15730, March 23, 1993). Most of these amendments are based on a joint government/industry task force committee's recommendation. Three proposals, on second in command (SIC) operating experience, FAA inspector observation of a pilot in command (PIC), and "satisfactory" completion of operating experience, are not committee recommendations but are parallel to the basic committee's recommendation. The final amendments are as follows:

1. The present requirement in § 121.434(a), which prohibits a certificate holder from using any person

"as a required crewmember on an airplane unless he has completed, on that type airplane and in that crewmember position, the operating experience requirements required," is revised by inserting the work "satisfactorily" before the word "completed."

2. Operating experience requirements in § 121.434 are amended to require that a PIC completing initial or upgrade training be observed during at least one flight leg by an FAA inspector in all cases, not just when the certificate holder's training program includes simulator training.

3. Operating experience requirements in § 121.434 are amended to require that an SIC must perform SIC duties under the supervision of an appropriately qualified check pilot and to eliminate the current option allowing an SIC to observe the performance of the duties on the flight deck.

4. The hours of operating experience required in § 121.434 are increased for PICs transitioning in Group II airplanes, and reductions in hours are no longer allowed for PIC initial training in Group II airplanes or for initial or transition training for SICs in Group II airplanes.

5. Operating experience requirements for both PICs and SICs in § 121.434 are amended to include requiring four operating cycles (at least two of which must be flown by the pilot). "Operating cycle" is defined in the rule as a complete flight segment consisting of a takeoff, climb, enroute portion, descent, and a landing.

6. Operating experience requirements in § 121.434 are amended to require that each PIC and SIC acquire 100 hours of line operating experience for consolidation of knowledge and skills within 120 days after completion of an airman certification practical test or completion of a proficiency check in the new airplane. "Consolidation" is defined as the process by which a person through practice and practical experience increases proficiency in newly acquired knowledge and skills. "Line operating flight time" is defined as flight time performed in operations under part 121.

7. A new section on operating limitations, § 121.438, requires a PIC, when flying with an SIC who has fewer than 100 flight hours in the type airplane being flown, to make all takeoffs and landings during certain situations. This new section also requires that either a PIC or SIC have at least 75 hours of line operating flight time for that type airplane in order to be assigned to the same flight crew. (This is commonly called "crew pairing.")

History

The FAA determined that these amendments were necessary because of airplane accidents and incidents that had occurred at least in part because of inexperienced flight crews. An accident that occurred in Denver in 1987 involved a Continental Airlines McDonnell Douglas DC-9-14 which crashed on takeoff. The National Transportation Safety Board (NTSB) found that the PIC, though an experienced pilot, had very little total flying time in the DC-9 and was not experienced in supervising first officers. The SIC, who was flying the aircraft when it crashed, had little experience in the DC-9 and had not flown for the previous 24 days. A second accident that occurred in New York in 1989 involved a USAir B-737. The NTSB found that the PIC, though experienced as an SIC, had only 138 hours as a PIC in air transport aircraft; the SIC, who had been recently hired and had just qualified for B-737 service, was conducting his first non-supervised line takeoff in a B-737, and also his first takeoff after a 39-day non-flying period.

In response to the problem of inexperienced crews, the FAA issued Air Carrier Operations Bulletin (ACOB) 8-88-1 (January 21, 1988) and guidance to FAA field staff (July 19, 1988). The guidance to field staff requested that principal operations inspectors (POIs) review their certificate holders' policies on crew pairing and scheduling and send copies of these policies to FAA headquarters.

The NTSB recommended (November 3, 1988), based on its investigation of the Denver accident, that the FAA issue requirements that establish minimum experience levels for each PIC and each SIC that would, in effect, "prohibit the pairing on the same flight of pilots who have less than the minimum experience in their respective positions."

The FAA reviewed accident data, NTSB recommendations on crew experience, as well as past and present practices and trends in the aviation environment that are affecting crew experience levels. For example, the practice of bidding for flight crew schedules, which is used by air carriers, results in the most experienced pilots obtaining the most desirable schedules and the least experienced pilots obtaining the least desirable schedules. Often the least experienced pilots are assigned to a reserve pool and may have to wait days or weeks before they receive a flight assignment. This system often prevents newly qualified pilots from using and perfecting their new flight skills immediately after qualifying

on a new aircraft. It also increases the likelihood of pairing inexperienced pilots on the same flight.

Also, in recent years manufacturers have introduced a greater number of new aircraft containing more equipment and systems variations within type. Pilots must not only learn different aircraft handling characteristics but they must also be able to work with a variety of aircraft equipment such as automated flight control and flight management systems.

In response to these concerns about the experience level of crews, the FAA requested the Joint Government/industry Task Force on Flight Crew Performance, which was established in 1987, to form a committee to develop recommendations for establishing crew pairing requirements.¹ On September 13, 1990, the committee recommended requiring all certificate holders operating under part 121 to provide a minimum level of experience for pilot crews. Specifically, the committee recommended the consolidation requirements, operating restrictions, and crew pairing restrictions. The FAA has incorporated, with some modifications, those recommendations in this rulemaking.

Comments Discussion

The FAA received 14 comments on the proposed rule. These comments were from air carriers, pilot organizations, the NTSB, and one individual. Most of the commenters voice general support for the rule as a whole but have suggestions for changes to specific requirements. The following is a discussion of general comments and specific comments on each requirement in the rule.

General Comments

NTSB says that the proposed rule effectively responds to its safety recommendations following two accidents involving the pairing of inexperienced pilots (Safety Recommendations A-88-107 and A-90-107 and -108).

The Air Transport Association (ATA) and an individual airline say that the proposed rule is not justified because Air Carrier Operations Bulletin 8-88-1 (issued in 1988 and revised in 1991) effectively provides guidelines in the scheduling and pairing of pilots as well as recommended actions for pilots with low experience levels. ATA says that

the proposed rule would add further, unjustified restrictions to this ACOB.

The Boeing Company (Boeing) generally agrees with the proposed rule but says that the changes do not address the practice whereby commercial transport manufacturers' pilots help air carriers to introduce new airplane models into revenue service. Boeing says that the proposed rule would prevent manufacturers from providing this support to air carriers and that this support is needed for safe initial line operations when air carriers do not have pilots with significant experience in airplane models new to carriers.

FAA Response

While the FAA recognizes that many air carriers have initiated crew pairing policies based on the ACOB, the guidance is not mandatory. The FAA intended the guidance as an interim action to be followed by mandatory rules. The FAA believes that the seriousness of the situation warrants rulemaking. Since most air carriers are already complying with the guidance, the FAA does not believe the rulemaking will be an excessive burden to the industry as a whole.

The FAA does not believe this rulemaking will interfere with commercial transport airplane manufacturers providing pilots to assist air carriers during the introduction of new airplane types into revenue service. The FAA believes that this can be accomplished within the rule as proposed and adopted. Sections 121.434(h)(5) and 121.438(b) provide for the Administrator to issue deviations to certificate holders from the line operating experience requirements of § 121.434(g) and the crew pairing limitations of § 121.438(b) if special circumstances warrant.

Comments on Specific Sections

Section 121.431(b)—Applicability

Currently, § 121.431(b) states that the airplane groups and definitions prescribed in § 121.400 apply to subpart O. The amended paragraph (b) adds definitions for the terms "consolidation," "line operating flight time," and "operating cycle."

Four comments were received on the definitions and applicability. One commenter says that rather than use the term "line operating flight time," the term "flight time" should be used so that all flight time (not just FAR part 121 flying) is counted towards consolidation. Two commenters say that the term "consolidation" is misleading in the NPRM because it describes a process by which proficiency is gained

through practice and practical experience. Since, currently, pilots take proficiency checks prior to consolidation, commenters suggest that a different term be used.

The Air Line Pilots Association (ALPA) says that the proposed rule should apply to part 135 operations as well. According to ALPA, this would be responsive to NTSB recommendation A-88-137 which recommends minimum experience levels for PICs and SICs in part 135 operations.

FAA Response

The FAA intended that only line operating flight time, which is flight time performed in part 121 operations, be counted towards consolidation. The purpose of consolidation is to provide pilots flight experience in line operations in the airplane type that the pilot is newly qualified within a reasonable time after training in order to consolidate their skills and knowledge. Other flight time outside of a certificate holder's line operations may not provide the same experience.

As stated in the NPRM, the FAA used the term "consolidation," as recommended by the task force committee, with some reservation because the term is used in psychology books to identify a period of time that is part of the training/learning process or that occurs almost immediately after a training or teaching session. While it is true that a defined consolidation period may begin after a pilot has completed a proficiency check, proficiency is increased throughout a pilot's line operating flying experience and proficiency checks are conducted regularly throughout a pilot's career. The FAA believes that "consolidation" is an acceptable term for the concept but to avoid any confusion the definition has been revised by changing the words "becomes proficient" to "increases proficiency."

The FAA is not extending these requirements to part 135 in this rulemaking since it is beyond the scope of the notice. However, the FAA has issued a notice of proposed rulemaking proposing to require that part 135 certificate holders who conduct commuter operations with airplanes for which two pilots are required, or have a passenger seating configuration of 10 or more seats, train and qualify crewmembers in accordance with the requirements of part 121, subparts N and O. [See Federal Register 59 FR 64272, dated December 13, 1994.]

¹ This task force was later subsumed by the Air Transportation Personnel Training and Qualifications Advisory Committee, established by FAA Order 1110.115, May 2, 1990, which committee was subsequently subsumed under the Aviation Rulemaking Advisory Committee.

Section 121.434(c)(1)(ii)—Observation by FAA Inspector (Operating Experience)

Currently § 121.434(c)(1)(ii) requires that when a PIC is obtaining operating experience at least one flight leg that includes a takeoff and landing must be observed by an FAA inspector if the certificate holder's approved training program includes simulator training under § 121.409(c) and if a qualifying pilot in command is completing initial or upgrade training specified in § 121.424. The revised paragraph deletes the reference to simulator training in the certificate holder's approved training program. The FAA inspector observation requirement will, therefore, apply to all PICs obtaining operating experience if they are completing initial or upgrade training.

Five comments were received on this issue. Two commenters point out that the original purpose of requiring FAA inspector observation was to validate simulator training. Since the onset of the advanced simulation program (FAR Appendix H) tens of thousands of pilots have been successfully trained using advanced simulation. According to commenters, in view of the excellent experience with advanced simulation, the requirement for FAA observation should now be dropped, not expanded. Adding to this requirement would not enhance safety and would be administratively and financially burdensome. These commenters, as well as three others, say that there is a shortage of available, qualified FAA inspectors and this requirement will cause scheduling programs if personal observation of flight legs by an FAA inspector is required. The result will be costly delays in an airline's ability to use newly qualified PICs. One commenter points out that even under the current system, carriers face significant and expensive delays awaiting the availability of an FAA inspector and that the proposal would exacerbate this problem.

ATA, United, and the Regional Airline Association (RAA) recommend that this proposal be eliminated. ATA points out that if the proposal is implemented, the observation could take place on a pilot's first line trip and could be administered by an inspector who is not qualified on the aircraft being flown.

Three commenters, including American Airlines and RAA, recommend that Designated Examiners and Aircrew Program Designees be allowed to observe the flight leg when FAA inspector schedules are not

compatible and completion of the operating experience would be delayed.

FAA Response

The initial observation requirement was implemented to provide an opportunity for the FAA to observe a pilot in performance of his or her duties before the pilot completes initial operating experience if the certificate holder's training program included simulator training. Since almost all certificate holder training programs under part 121 now include simulator training, deleting the reference to simulator training does not significantly affect the current practices of certificate holders or the FAA. The FAA finds that the initial purpose of the observation requirement is still valid: to provide the FAA an opportunity to observe the PIC before he or she assumes unsupervised operations in an airplane; to validate the certificate holder's training program; and to provide the FAA with a quality control mechanism for evaluating the certificate holder's designated check pilot program.

The FAA finds that allowing Designated Examiners or Aircrew Program Designees to substitute for FAA inspectors would not satisfy the purpose of this observation as described above.

Section 121.434(c)(2)—SIC Supervised Operating Experience

Current § 121.434(c)(2) requires that an SIC pilot perform the duties of an SIC under the supervision of a check pilot or observe the performance of the duties on the flight deck. The revision eliminates the option to observe. The revised rule requires that an SIC pilot acquire operating experience by performing actual SIC duties (and not simply by observing another SIC) under the supervision of a qualified check pilot.

Two comments were received on this requirement. Both commenters agree with the proposal and say that it would ensure that newly trained SICs immediately begin consolidating newly developed skills by actually performing line operations and flying the airplane. Both commenters point out that the current system of gaining credit toward operating experience by passively observing another SIC is ineffective and does not promote proficiency. In addition, NTSB says that the proposal is responsive to NTSB recommendation A-88-138 which was issued after a Continental Airlines accident in Denver in November 1987.

Section 121.434(c)(3)—Hours of Operating Experience and Operating Cycles

The current rule requires specific numbers of hours of operating experience for all pilots for initial and transition training in Group I and II airplanes as follows: (1) For initial training: 15 hours in Group I reciprocating powered airplanes, 20 hours in Group I turbopropeller airplanes, and 25 hours in Group II airplanes; (2) For transition training: 10 hours in Group I reciprocating powered airplanes, 12 hours in Group I turbopropeller powered airplanes, and 15 hours for Group II airplanes. The amended rule changes transition training hours for Group II to 25 hours for PICs; 15 hours continues to apply for SICs. The amended rule also requires that operating experience include at least 4 operating cycles (at least 2 as the pilot flying the airplane).

Three comments were received on this issue. Two of the comments overlap with reduction requirements of revised § 121.434(f)(1) and will be discussed in that section of this preamble.

ALPA supports the proposed rule's requirement that the pilot receiving the supervised operating experience be the pilot flying the aircraft in at least two operating cycles. ALPA agrees that this will ensure that qualifying pilots obtain experience in all critical phases of a flight operation (takeoff, climb, en route portion, descent, and landing) and provide safeguards against meeting supervised operating hours without completing all aspects of a cycle (as in long range flights).

Section 121.434(f)—Reduction of Operating Experience Hours

The current rule allows the hours required in § 121.434(c)(3), among other sections, to be reduced up to 50 percent for all pilots by substituting one additional takeoff and landing for each hour of flight. The amended rule continues to allow the reduction for Group I airplanes for initial and transition operating experience and for Group II airplanes for PIC transitional operating experience. The amended rule would not allow PICs meeting initial training operating experience requirements in Group II airplanes or SICs meeting either initial or transition training operating experience in Group II airplanes to reduce the number of required hours of operating experience in these type airplanes.

Two comments were received on this issue, plus two that were submitted as comments on the number of hours required but are discussed here since

they pertain to reducing the required hours. Two commenters state that since the rule requires at least 4 operating cycles (at least 2 as the pilot flying), then PICs and SICs should be allowed to reduce the operating experience time by one hour for each takeoff and landing following the two operating cycles that are required. These commenters also say that the reduction should apply to initial, upgrade, and transition categories.

United Airlines says that "hour requirements for transition training PICs should be reducible for cycles for Group II airplanes just as is proposed for Group I airplanes" and that "if transition training SICs in Group II airplanes also had a 25-hour requirement instead of 15 hours, that time should also be reducible for cycles."

RAA says that the proposed rule "appears to limit the reduction option in Group I airplanes to transition only" and that this option should also apply to initial and upgrade training.

ALPA agrees with the proposal because it would "eliminate the capability to reduce the required hours of supervised operating experience according to the number of takeoffs and landings for all pilots except those transitioning as pilot in command" and that "this will allow an additional amount of time for pilots to become comfortable in their operating seat in their operational environment while under supervision."

FAA Response

The proposed and final rule state that flight crewmembers may substitute one additional takeoff and landing for each hour of flight up to a maximum reduction of 50 percent (with the exceptions described above). The FAA intends that after completing the four required cycles, a pilot may achieve a reduction in required flight hours for each additional takeoff and landing. This is intended to ensure that pilots obtain adequate hours of line flight experience while still recognizing that short flights, with frequent takeoffs and landings, may provide experience equal to longer flights.

The change that will not allow a reduction for PICs meeting initial operating experience is necessary because of the importance of PICs gaining additional experience operating an aircraft's sophisticated automated equipment during initial operating experience. Both the increase in hours in this category and not allowing any reduction in hours reflect the need for thorough experience in operating the different equipment installed in the airplane. Likewise the reduction for

SICs in Group II airplanes has been eliminated because SICs have more responsibilities in the more sophisticated aircraft that have two-person cockpits.

The reduction continues to apply to all pilots in Group I airplanes.

Although the FAA has made no substantive changes to the rule language in the NPRM, paragraph (f) has been rewritten to make the intent clearer.

Section 121.434(g)—Consolidation

This new rule requires that PICs and SICs acquire at least 100 hours of line operating flight time for consolidation of knowledge and skills within 120 days after satisfactory completion of a type rating practical test or an initial proficiency check. In the NPRM, the FAA specifically requested comments on the feasibility and adequacy of the 120-day period. The committee recommended that consolidation consist of 100 hours of line operating flight time and that if the 100 hours was not completed in 120 days, an airman must receive additional training before extending the consolidation period.

Seven comments were received on this requirement. Three commenters say that the 75-hour threshold used for crew pairing (121.438(b)) should also be used for consolidation rather than 100 hours. These commenters say that 75 hours would be sufficient as a minimum number of flight hours within the 120 days to ensure that the newly-acquired piloting skills are not lost once training and testing have ended. In addition, using 75 hours would simplify tracking and recordkeeping requirements associated with both consolidation and crew pairing. Finally, RAA comments that using a 75-hour requirement is further supported because this was the number originally used in the Task Force recommendation.

ALPA recommends that the consolidation period be reduced to 100 days or that refresher training be required. This would ensure the newly trained pilot a timely completion of consolidation with as little interruption as possible.

ALPA also responds to the FAA's projection that 10 percent of crewmembers would not be able to complete consolidation in the required time by saying that airlines should be able to allow crewmembers in consolidation to get the required flight time. ALPA states that during a pilot's consolidation period, instead of being assigned to reserve status, airlines should be able to schedule these crewmembers on a regular basis without any additional costs being incurred. Further, ALPA says that if an airline

displaces a line holding pilot to let a reserve pilot fly, there should be no net cost increase because pilots assigned to reserve status are guaranteed monthly minimum pay by the airline regardless of how many hours they fly.

Two commenters, United Airlines and ATA, say that in certain short range operations, consolidation will occur long before the 100-hour requirement is met because of the cycles flown. ATA says that the experience gained by pilots involved in short haul operations from multiple departures and takeoffs should be recognized by the FAA. These commenters therefore recommend a reduction of required consolidation line operating flight time at a rate of one hour for one cycle to a maximum of 50 percent reduction in hours.

RAA says that the proposed rule does not ensure that the clock (to complete consolidation) would begin at the same time for individual pilots. RAA says that it is possible that a PIC and SIC who were checked the same day in the simulator and completed their checks the same day in the aircraft would not have the same time remaining to complete the 100 hours of experience. Thus, RAA recommends that the phrase "Any part of" be removed from § 121.434(g)(1).

Alaska Airlines says that the consolidation requirement would have a great economic impact on air carriers because senior pilots would be displaced by junior pilots needing to complete consolidation requirements. Alaska adds that labor unions might not be willing to "forgo the seniority benefits assured within their agreements without first demanding compensation for those affected by the loss of their seniority rights."

FAA Response

There is no reduction in consolidation hours allowed for the number of takeoffs and landings. While operating experience hours may be reduced in accordance with revised § 121.434(f), consolidation hours may not be reduced. As stated in the NPRM preamble, the crew pairing committee concluded and the FAA agrees that it is important for a pilot who has qualified in an airplane to have an opportunity to consolidate the newly developed piloting skills and procedural knowledge through substantial line operating experience in the airplane within a reasonably short time after completing training and satisfactorily demonstrating proficiency. Pilots who have satisfactorily completed training and demonstrated proficiency in an airplane and who do not soon thereafter consolidate the newly acquired

knowledge and skills in actual line operations may lose proficiency in the newly acquired knowledge and skills.

The FAA recognizes that the 120-day consolidation period may not start at the same time for every pilot since it either begins after the satisfactory completion of a § 121.441 proficiency check or after the satisfactory completion of any part of the flight maneuvers and procedures portion of either an airline transport pilot certificate with type rating practical test or an additional type rating practical test. The purpose in stating the rule this way with respect to a practical test is to ensure that a pilot certificate rating program will not be extended to the point that a loss of knowledge and skills would occur. By requiring the consolidation period to begin at the completion of any portion of the program, the carrier has an incentive to complete the pilot's rating program within a reasonable period.

The FAA recognizes that the consolidation requirement may affect crew scheduling. How much it will affect scheduling depends on the way carriers are now scheduling pilots who have recently acquired a type rating. The FAA recognizes that there may be some incremental increase in costs to comply with this final rule. However given that carriers have 120 days to complete the consolidation period for its pilots, and that a 30-day extension is available in certain circumstances, with careful scheduling, this consolidation can be accomplished without an excessive burden. It is in the interests of the air carrier, the pilots, and the public that these pilots obtain experience in the airplane within a reasonable time after being qualified.

In response to Alaska Airlines, the FAA notes that although senior pilots may require compensation, reserve pilots normally are paid on a fixed base salary; thus, the total cost of remuneration for both pilots should be the same.

In response to RAA, the FAA has no knowledge of a Task Force recommendation that included a 75-hour consolidation period.

A 100-day consolidation period suggested by ALPA would be beyond the scope of this rulemaking. In addition, the FAA notes that this suggestion was not part of ALPA's minority opinion filed with the Task Force recommendations.

Section 121.434(h)—Exceptions (Pilots Who Have Completed Line Operating Flight Time as an SIC on a Particular Type Airplane)

In the NPRM paragraph (h)(1) said that pilots who have qualified and

served as second in command on a particular type airplane (before the effective date of the rule) are not required to complete line operating flight time for consolidation as pilot in command. Similarly, paragraph (h)(2) said that pilots who have completed line operating flight time for consolidation of knowledge and skills while serving as second in command on a particular type airplane (after the effective date) are not required to meet consolidation requirements on the same type airplane.

The one comment received on these requirements does not agree with the proposal. ALPA says that the knowledge and skills required of PICs and SICs differ, and that there may also be substantial differences between aircraft even though they have common type ratings. ALPA also comments that there could be a considerable lapse of time between flying as SIC and PIC with another aircraft flown in between. Thus, ALPA believes that all crewmembers should go through the consolidation process.

FAA Response

The exception permitted by § 121.434(h) addresses upgrade training, specifically, upgrading from SIC to PIC in the same airplane type. It does not include upgrading from flight engineer to SIC in the same type airplane. By definition, upgrade training is that training required for crewmembers who have qualified and served on a particular type airplane before they can serve in another duty position on the same type airplane. In other words, the upgrading pilot would by definition be familiar with that airplane, and the FAA believes that the operational experience requirement along with previous experience on that type airplane adequately addresses consolidation.

The FAA has determined that the language in proposed § 121.434(h)(1) unintentionally limited the grandfathering of current pilots to SICs who may upgrade to PIC at some future point. The FAA intended that all PICs and SICs who have qualified for their positions before the effective date of the final rule would not need to complete consolidation. The rule language has been changed to reflect this intent.

Section 121.434(h)(3)—Refresher Training

New paragraph (h)(3) requires a pilot who flies another airplane type before completing the required 100 hours of line operating flight time to complete refresher training in the airplane for which the pilot has newly qualified.

The NPRM states that training must be conducted by a qualified check pilot.

Four comments were received on this requirement. One commenter says that the proposal is not necessary, but if it is kept, then it should also include restrictions from flying other types of aircraft including military reserve aircraft.

Alaska Airlines says that the term "refresher training" is vague and could result in inconsistent requirements that were minimal in some cases and stringent in others. Alaska points out that "re-qualification programs" are designed to provide students with training to reacquaint them with an aircraft type from which they have been absent for a specific period of time, such as extended military leaves. Alaska says that the proposed rule, in contrast, would deal with students who are current with no appreciable lapses in exposure to the equipment type they would be trained on. This commenter adds that its own re-qualification training program does not require additional flight training for those absent less than 90 days.

United Airlines and ATA say that refresher training should not require a check airman and that it should be conducted by a qualified flight instructor. Thus, the proposed rule should be modified accordingly.

FAA Response

The amount of refresher training depends on the extent of the lapse and what skills and knowledge have been lost during the lapse. As the FAA stated in the NPRM preamble, each certificate holder must develop training objectives for refresher training for each make and model airplane used in part 121 operations. Refresher training should ensure that pilots have retained, or are allowed to regain, the level or proficiency needed to serve in part 121 operations. This qualification training should focus on, among other things, procedural knowledge regarding the operation of the aircraft (e.g., programming the aircraft's flight management system) and other critical skills such as engine inoperative approaches and missed approaches. Refresher training may consist of special purpose operational training or an airplane flight training period when a flight simulator or flight training device is unavailable. Special purpose operational training is described in AC 120-35b, "Line Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, and Line Operational Evaluation."

The FAA agrees with the comment that refresher training could be conducted by a check pilot or qualified flight instructor and has changed this final rule accordingly.

The requirement specifies types of aircraft operated by the part 121 certificate holder; it does not include military reserve aircraft or any other aircraft not operated under part 121.

Section 121.434(h)(4)—Extension of Consolidation Period From 120 to 150 Days

New paragraph (h)(4) allows the consolidation period to be extended from 120 days to 150 days if the pilot satisfactorily completes refresher training or a check pilot determines that the pilot has retained an adequate level of proficiency after observing the pilot in a supervised line operating flight.

Four comments were received on this requirement. Alaska Airlines does not believe that any limit on the consolidation period will affect safety or proficiency. As long as a student is determined to be continually proficient through reevaluation by a qualified check pilot, there is no need to limit the length of the consolidation period. Another commenter recommends that the consolidation period be extendable to 180 days; not 150 days.

RAA recommends that carriers have the option of selecting a five-month period for consolidation, rather than 120 days, because most carriers observe a monthly cycle. If consolidation were to start at the beginning of a month, carriers would be limited in the number of flying assignments they could make to new PICs and SICs. RAA states that as many as 25 or 30 days could be lost under this circumstance and that a five-month option would give carriers a greater ability to make assignments to achieve the consolidation objective.

NTSB believes that the 120-day consolidation period is feasible under virtually all circumstances but also supports an extension to 150 days if the required 100 hours of operating flight time cannot be completed in 120 days. However, NTSB stresses that such extensions should be approved only under extenuating circumstances and in strict compliance with the additional requirements of the proposed rule as a whole. Otherwise, the intended consolidation and stabilization of a pilot's newly acquired knowledge and skills would be compromised.

FAA Response

The FAA has determined that extending the consolidation period beyond 150 days is not in the interest of consolidating a newly trained pilot's

skills and knowledge. Once training and checking are completed, the pilot needs to practice recently learned skills in line operations in order to master the skills.

The FAA finds that 180 days would be too long to achieve 100 hours of consolidation.

The problem raised by RAA is a scheduling problem; requiring 100 hours of line operating flight time within a 120-day period should not present a problem that cannot be managed since the average pilot flies approximately 60–70 hours per month.

The FAA recognizes that consolidation of skills within 120 days is preferable to an extension; however, for those instances, for any reason, when a pilot has had less than 100 hours in 120 days, it does not seem reasonable to require that the pilot repeat the entire qualification program. A refresher training course should be sufficient to compensate for the lapsed time.

Section 121.434(h)(5)—Deviations From Consolidation Requirements

New paragraph (h)(5) allows the Administrator to authorize deviations from consolidation requirements when: (1) A new certificate holder does not employ any pilots who have met the consolidation requirements, or (2) a certificate holder is adding new airplanes to its fleet, or (3) a certificate holder is reassigning pilots to a new domicile where they will be operating a different aircraft type.

One comment was received on this requirement. Boeing recommends specific language changes to this paragraph so that it would apply to manufacturers as well as to certificate holders and to training programs as well as to certificate holders' operations specifications. Boeing states that without these changes the rule will "prevent manufacturers from providing the level of support for initial line operations that is required for a safe operation when an air carrier does not have pilots with a significant experience base in an airplane new to the carrier."

FAA Response

Paragraph (h)(5)(ii) provides that, as one of the circumstances for being eligible for a deviation, a certificate holder adds to its fleet a type airplane not before proven for use in its operations. If a manufacturer provides pilots for the certificate holder's operations and these pilots do not meet the requirements of paragraph (g), the certificate holder would apply for the deviation. Since manufacturers are not part 121 certificate holders, they cannot apply for the deviation.

Section 121.438(a)—Operating Limitations—Takeoffs and Landings

The new rule requires PICs (other than check airmen), when paired with SICs with less than 100 hours of line operational flight time in that type airplane, to make all takeoffs and landings at special airports or under certain conditions.

Two comments on the general nature of the requirement were received. Alaska Airlines says that takeoff and landing decisions should be made by the PIC and be based on the conditions present during the operation. In some cases, the SIC may have more hours in the type airplane than the PIC and would be more experienced in takeoffs and landings in that type airplane. The proposed rule could, therefore, compromise safety.

ALPA agrees with the intent of the proposed rule and supports PICs making takeoffs and landings in cases where SICs have minimal flight hours in the type of airplane being flown. However, ALPA believes that the PIC should have more latitude in making takeoff and landing decisions. For example, in cases of many short flights and poor weather conditions, it could become very fatiguing for the PIC to make every takeoff and landing; in cases such as these, it may be more appropriate for the SIC to make a takeoff or landing.

United Airlines and ATA believe that the proposed rule on special airports is too restrictive and that PICs should have discretion in making this decision on a case-by-case basis determined by operational considerations. United says that certain operations at some special airports are "entirely unremarkable" and that PICs should be given the ability to allow SICs to land at such airports. On a similar note, ATA says that in cases where a crew must fly several turnarounds to another special airport in a single day's flying, the PIC should be given the option of allowing the SIC to complete a takeoff and landing.

RAA and another commenter say that proposed § 121.438(a)(2)(vii) would provide an acceptable alternative to the special airports requirement; it would give PICs the prerogative to permit or deny SICs to land or takeoff at a special airport (or for any other conditions).

Alaska Airlines says that the proposed rule would restrict its operations by preventing new first officers from making landings in 30 percent of Alaska's airports and 100 percent of Russia's airports. This would also adversely affect the training process because pilots would be restricted from gaining experience at special airports while their "procedural awareness is at

its highest level." This would detract from the preparation already given the pilot and have a negative impact on safety.

Alaska Airlines states that § 121.438(a)(2)(iii) is too restrictive. Paragraph (a)(2)(iii) requires a PIC to make the takeoff and landing if the runway has water, snow, slush, or similar conditions that may adversely affect airplane performance. Alaska Airlines says that this limitation would force the airlines's PICs to make all landings during the months between September and April or May. This commenter says that proposed § 121.438(a)(2)(iv) which sets forth operating limitations based on the level of braking action on runways would adequately cover the issue of poor runway conditions. Alaska Airlines also points out that the task force originally recommended that "runway braking action of less than 'good' be the limiting factor in determining when a PIC must make the landing."

FAA Response

If the SIC has more than 100 hours in the type airplane, the restrictions do not apply. The rule will not restrict SICs from gaining experience at special airports or under certain adverse conditions after they have 100 hours of experience in the type airplane; however, the rule will restrict SICs from gaining that experience within the first 100 hours under circumstances that could compromise safety.

The FAA has determined that requiring PICs to make takeoffs and landings at special airports even though the assigned SIC may have more operational experience in the aircraft is consistent with the operational responsibilities of the PIC. The PIC, by designation, is always in control of the aircraft. If a PIC is too fatigued to make a takeoff or landing, the PIC should not be on duty.

Section 121.438(b)—75-hour Limit (Pairing Limitations)

This new rule requires that either a PIC or SIC have at least 75 hours of line operating flight time for that type airplane in order to be assigned to the same flightcrew. In the NPRM preamble the FAA specifically requested comments on whether the 75-hour limit should be increased to 100 hours as recommended by ALPA. The FAA also requested comments on how this requirement should be applied. The FAA explained in the NPRM preamble that the committee recommendation applies these crew pairing restrictions only to PICs and SICs who are qualifying for those positions for the

first time in the airplane, i.e., initial PICs and SICs. The committee recommendation does not apply the restrictions if a pilot is upgrading from SIC to PIC on the same airplane type or is transitioning from one airplane type to another. Under the committee recommendation, a new PIC in a particular type airplane with only 25 hours of operating experience in that airplane could be paired with an SIC who has transitioned from another airplane type and who has only 15 hours of operating experience in the airplane type. This is in contrast to the ALPA recommendation that the restrictions also apply to transitioning pilots.

The FAA proposed in the NPRM that the 75-hour minimum crew pairing restrictions also apply to transitioning pilots.

The rule also provides for authorizing deviations (in paragraphs (b)(1) through (b)(3)) when: (1) A new certificate holder does not employ any pilots who meet the minimum requirements of this paragraph; (2) an existing certificate holder adds to its fleet a type airplane not before proven for use in its operations; or (3) an existing certificate holder establishes a new domicile to which it assigns pilots who will be required to become qualified on the airplanes operated from that domicile.

Eleven comments were received on this subject. Five of these commenters, including United, RAA, and ATA, believe that the 75-hour requirement is sufficient and that it should not be increased to 100 hours as recommended. Supporters of the proposed rule say that any additional hours would increase the burden on air carriers and complicate the crew scheduling process by extending the number of months necessary to complete the required number of hours. RAA says that any of the three components of the entire proposed rule (consolidation, operating limitations, and crew pairing) would achieve what the FAA is seeking since none of these constraints currently exist; thus, additional hourly requirements related to crew pairing are unnecessary. Finally, United, ATA, and RAA say that 75 hours may be an arbitrary number but that it will achieve the FAA's objective without being overly burdensome.

Three commenters are against the 75-hour requirement and recommend using a 100-hour requirement. ALPA says that these hours should apply to crew position and airplane type and that the hours should begin after supervised operating experience. ALPA also states that previous time in another crew position in the same airplane type

should not be counted in the 100 hours. ALPA concludes that 100 hours would more realistically allow a crewmember to become comfortable in the aircraft without concerns for the experience level of other crewmembers.

Similarly, the NTSB believes that 75 hours is insufficient for a crewmember to become comfortable and experienced enough with the airplane type to safely handle a problem if one arises. NTSB recommends that an initial PIC and initial SIC each have at least 100 hours in their respective positions on the airplane in which they have most recently qualified.

The International Federation of Air Line Pilots' Associations believes that the 75 hour requirement should be increased to at least 100 hours post-supervision time for PICs and SICs on airplane type.

Alaska Airlines Expresses concern that 75 hours seems arbitrary and asks whether lengthening the period would improve safety. This commenter further says that "the longer the period of the pairing restriction, the greater the number of reserve pilots that will be required in order to insure sufficient pilots are available to staff every possible pairing."

Horizon Air supports the 75 hour requirement but recommends that if it is issued as a final rule, the consolidation requirement in § 121.434(g) be dropped. Horizon estimates that up to 20 percent of its pilots would not complete their consolidation in the requisite time, resulting in refresher training which would be very costly.

Five commenters address the issue of including transitioning pilots in the proposed crew pairing requirement. United Airlines does not object to the requirement applying to all pilots, including transitioning and upgrading pilots although it currently applies pairing restrictions only to initial training pilots.

Similarly, the NTSB believes that crew pairing restrictions (of 100 hours) should apply to upgrading and transitioning pilots. NTSB says that including upgrading pilots would provide PICs with additional seasoning experience before being paired with an inexperienced SIC; and that including transitioning pilots would ensure that they receive the operating experience they need in the newer glass cockpit, automated airplanes before being paired with an inexperienced PIC or SIC.

RAA does not support the inclusion of transitioning pilots and says that "the event which have been used as a basis for issuing this rule have involved only crewmembers following initial training for their position." RAA adds that

transition training is currently successful for hundreds of thousands of pilots and that this should be reason enough to exclude them from the proposed rule.

Alaska Airlines is against the inclusion of transitioning pilots in the proposed rule because they believe that a transitioning pilot is very experienced in an employer's routes and procedures. Because of this overall experience, transitioning to a new airplane type is not that difficult and should not be subject to any crew pairing limitations.

Two commenters address the proposed rule's deviation authority. AMR Eagle, Inc. says that deviation authority should be designed so that carriers can adjust crew pairing guidelines to the complexity of the operation while insuring schedule reliability and safety. AMR recommends that an additional condition be allowed for deviation authority: Operations during the day, VMC where no critical flight conditions are expected.

RAA says that the conditions for deviation authority presented in §§ 121.438(b)(1) through (b)(3) are too limiting and recommends that a fourth paragraph be added which states: "The certificate holder identifies circumstances not covered in (1), (2) or (3) which are acceptable to the Administrator in granting a deviation to these requirements."

Finally, Boeing requests that the deviation applicability be extended to manufacturers.

FAA Response

The FAA believes that the increased level of safety attained in this final rule is accomplished through the combination of its requirements (i.e., strengthening initial operating experience requirements, requiring a 100-hour knowledge and skill consolidation period for both SICs upgrading to PIC and PICs transitioning to new or different types of airplanes; requiring PICs, when paired with SICs with fewer than 100 hours of pilot flight time in that aircraft type, to make all takeoffs and landings under certain conditions; and the 75-hour pilot pairing restriction) rather than any one single requirement.

Requiring 75 hours of pilot experience in the type aircraft being flown for either the PIC or the SIC provides an additional level of crew qualification experience. By including transitioning pilots in this rule the FAA establishes that the most important aspect of pilot pairing is total pilot flight experience in the airplane rather than requiring seat-specific experience. Also, rather than experience in the air carrier's

procedures or route structure, the purpose of this pairing restriction is to ensure a minimum number of hours of combined pilot experience in that specific type aircraft.

The FAA believes that total pilot crew experience required to meet the 75-hour pilot pairing restriction as proposed and adopted in this rule, in combination with the other requirements contained in this rule and the various pilot training and checking requirements contained in subpart N of part 121, accomplish the FAA's objective of increased safety while not being overly burdensome on the affected certificate holders.

As stated in § 121.438(b), the Administrator may authorize, upon application by the certificate holder, deviations from the pairing requirement that would allow certificate holders to use aircraft manufacturers' pilots to assist in the introduction of new aircraft types into the certificate holder's fleet under certain conditions.

Effective Date

The FAA proposed a 30-day period after issuance of the final rule for carriers to plan and implement a system for scheduling flight crews to meet the new requirements. However, the FAA, in the NPRM, recognized that 30 days may be insufficient and invited comments on a realistic effective date.

Five comments were received on the date. Four commenters say that 30 days is inadequate and recommend a 120-day period. RAA says that the complexity of training programs and crew scheduling warrant additional time to implement changes. ATA says that revisions in crew scheduling software, personnel training, and policy manuals would require a minimum of 120 days. United Airlines recommends a 90-day period between issuance of the final rule and its effective date.

FAA Response

The FAA agrees that a 30-day effective date would not allow enough time for certificate holders to comply with the requirements of this rule. The final rule is effective 120 days after the date of publication in the **Federal Register**.

Response to Comments

Northwest Airlines states that the FAA assumed that including transitioning pilots in the NPRM added no cost to airlines. It presents data showing its costs would amount to \$3.7 million for transitional pilots and \$380,000 for initial pilots. Northwest's additional costs come from scheduling constraints and from union

requirements to pay a previously scheduled pilot who is displaced by a pilot in training.

FAA Response

The FAA estimated the cost of not pairing two inexperienced pilots, transitional or initial, would be the expense of developing an enhanced scheduling computer program. The FAA estimated the cost of developing this program to be \$92,000. The FAA contends that through more efficient scheduling via enhanced scheduling software, the industry can avoid paying for displaced pilots.

Alaska Airlines states that it would face higher costs to meet qualification requirements because of its older fleet. It argues that additional training in a simulator or in an aircraft (where modern simulation is unavailable) would require that "operators have earlier vintage visual or phase I simulators for their older aircraft types. This will automatically create higher costs to fulfill these requirements."

FAA Response

The NPRM did not require a different training level for older fleets. Obtaining the additional operating experience and consolidation time should not vary significantly from company to company. However, the FAA did not account for each airline's cost structure when costing the proposed rule. The analysis assumed an average cost. If Alaska Airlines had significantly higher training costs, it incurred these costs not as a result of the NPRM, but from other corporate business decisions.

The Airline Pilots Association (ALPA) states that the FAA did not present the assumptions it used to estimate costs. Also, ALPA believes that airlines could minimize costs through efficient scheduling.

FAA Response

The FAA included a list of assumptions it used to estimate the costs of the NPRM in an appendix in detailed regulatory evaluation. The FAA agrees with ALPA that airlines can reduce the cost of the NPRM through efficient scheduling.

Miscellaneous Comments

ATA comments that the objectives of the proposed rule are identical to those contained in FAR 121.652 (High Minimums). ATA says that this rule is obsolete and that if the proposed rule is implemented, then § 121.652 should be rescinded.

FAA Response

Rescinding § 121.652 is beyond the scope of this rulemaking. The FAA does not consider § 121.652 to be obsolete but rather finds that the requirements of that section are necessary.

Editorial Changes

In addition to the changes described above for § 121.434, two editorial changes have been made to improve the organization of the section: (1) The flush paragraph that currently appears after paragraph (b)(3) has been incorporated into new paragraph (a)(3); and (2) the flush paragraph that currently appears after paragraph (f) has been designated as paragraph (i) to appear after new paragraph (h).

In § 121.434(c)(2), a second in command pilot must perform the duties of a second in command under the supervision of an appropriately trained check pilot. In the NPRM, both in the preamble and in the rule language, the FAA used the term "pilot check airman" and should have used the term "check pilot" as it is presently stated in the rule. A check pilot is a subset of check airman; a check flight engineer is also a subset of check airman. Consequently, the more accurate and precise term for the person supervising a SIC's IOE is "check pilot." Thus, the FAA retains the terminology of "check pilot" in this final rule. The FAA considers this a minor, editorial change.

Regulatory Evaluation Summary

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs 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 requires agencies to analyze the economic effect of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effect of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this rule: (1) Would generate benefits that justify its costs and is not "a significant regulatory action" as defined in the Executive Order; (2) is significant as defined in Department of Transportation's Regulatory Policies and Procedures; (3) would not have a significant impact on a substantial number of small entities; and (4) would not constitute a barrier to international trade. These analyses, available in the docket, are summarized below.

Costs

The FAA estimates the net cost of the final rule over the next 10 years to be approximately \$45.2 million, with a present value of \$31.3 million (7 percent discount, 1993 dollars). This cost estimate includes the additional expense of a check pilot's time to supervise additional PIC transition training; the expense of consolidating an operating experience of additional flight time training for SICs and PICs; and of a computerized system to assist in pairing newly qualified pilots with experienced pilots.

Operating Experience and Operating Cycles for SIC Candidates

In the regulatory evaluation for the NPRM, the FAA estimated a present value cost of \$42.5 million to certificate holders to provide a check airman to supervise the operating experience for SIC candidates, who currently are allowed to sit in the jump seat and observe the performance of SIC duties to gain initial operating experience (IOE). This cost was based on the following assumptions:

- (1) The highest level of check airman (check pilot—all checks) was required to supervise the SIC candidate's IOE;
- (2) This level of check airman would be paid at a much higher rate than a PIC; and
- (3) A previously scheduled PIC and SIC would be displaced by the check airman and the SIC candidate, and these displaced pilots would be compensated for not flying the trip.

For the final rule, the FAA has clarified that the level of "check airman" required is not the highest designation level of check airman who can administer all checks, but is instead a lower level most commonly called "check pilot." This line check pilot, (designated as Line Check Pilot-All Seats) is also a check airman, but only to a level which at minimum will allow supervision of IOE with an SIC candidate. This level of check pilot is normally much more numerous within a carrier's pilot population than the check airman originally envisioned, and these pilots normally fly the line as PICs. They receive no additional pay for their status as check pilots, and the difference is best likened to that between a flight instructor and an FAA designated examiner in general aviation.

Since the FAA has clarified that the check pilot supervising the SIC candidate can be a line or regular PIC with the check pilot designation, the original assumptions no longer hold. The FAA has revised these assumptions as follows:

(1) Operators are only required to provide a check pilot who is designated to the minimum level necessary to supervise IOE;

(2) There is a greater availability of check pilots designated to a sufficient level to supervise IOE than the previously estimated higher level "check airman-all checks";

(3) There is little if any difference in salary between a PIC and a PIC "check pilot"; and

(4) A previously scheduled PIC and SIC would not be displaced by the check pilot and the SIC candidate because normal scheduling can pair these two pilots without displacing other pilots.

The additional operating experience requirements for SIC candidates impose an additional constraint on how operators schedule their pilots. Some of the costs of these constraints can be alleviated by making adjustments in the pilot scheduling system. Costs related to changing the scheduling system are discussed later in this regulatory evaluation. (See the section on Developing Computer Programming.) Other potential costs that cannot be alleviated by changes in the scheduling system have not been quantified because they are difficult to estimate. However, the FAA contends that based on the above set of assumptions, those costs will be considerably smaller than the \$42.5 million estimated in the regulatory evaluation for the NPRM.

Operating Experience and Operating Cycles for PIC Candidates

The final rule will increase the number of hours of observed supervised operating experience for transitioning PICs in Group II airplanes and will add operating cycle requirements for both initial and transitional PICs in both Group I and Group II airplanes. The current requirement for transitioning PICs in Group II airplanes is 15 hours of operating experience; the new requirement will increase the hours to 25. The potential cost of this requirement will be the cost to provide a check pilot to observe the PIC candidate for the additional 10 hours.

The FAA estimates that there will be 3,119 transition PICs in Group II airplanes in 1994 assuming that 10 percent of the PICs in Group II airplanes require transition training each year. The cost of this section to air carriers will be to provide a check pilot for the 10 additional hours of supervised operating experience for these transitioning PICs. Check pilots in Group II airplanes are compensated at \$127 per hour. The cost of compliance in 1994, therefore, would be \$4 million.

Over the years 1994–2003, the requirement that transitioning PIC candidates of Group II airplanes receive an additional 10 hours of supervised operating experience will cost \$45.6 million, with a present value of \$31.5 million.

Section 121.434(f) of the existing rule allows air carriers to reduce the number of hours of required PIC operating experience by 50 percent by substituting an additional takeoff and landing for each hour of flight. The hours of operating experience for PICs who meet transition training requirements may be reduced by one hour per landing. Although the final rule increases the number of hours of operating experience for transitioning PICs, the allowance for landings in this provision results in a smaller increase in the costs of the additional operating experience hours. The FAA estimates that the savings will be 10 percent of the incremental costs of additional PIC transitional operating experience requirements in Group II airplanes. Over the years 1994 to 2003, the cost savings will be \$4.6 million, with a present value of \$3.2 million.

The final rule will prohibit the reduction of the required number of operating experience hours for initial Group II PICs. The FAA estimates that under the current rule, the hourly requirements could be reduced by 10 percent by the allowance of one hour per landing and takeoff. Because the final rule removes this allowance, however, it will add the expense of a check pilot for those hours currently reduced. The FAA estimates that the additional cost of prohibiting a reduction of operating experience hours for initial Group II PICs in 1994 equals \$99,000 (312 pilots \times 25 hrs. \times \$127/hr. \times 10%). Over the next 10 years, the total cost will be \$1.1 million, with a present value of \$789,000. When this cost is added to the other costs of complying with the new PIC operating experience requirements over the next 10 years, the total cost will be \$42.1 (45.6 – 4.6 + 1.1) million, with a present value of \$29 million.

Consolidation of Learning and Skills

Section 121.434(g) of the final rule will require candidate PICs and SICs to acquire 100 hours of line operating experience for consolidation of knowledge and skills within 120 days after the completion of one of the following requirements:

- An airline transport pilot certificate with type rating practical test;
- An additional type rating practical test; or

—A proficiency check for those pilots who already possess a type rating in that particular aircraft.

The final rule will also require that if a pilot who is consolidating his or her skills performs any flight time in another type of airplane operated by the certificate holder before completing the 100 hours, that pilot will have to successfully complete refresher training before returning to the new airplane type. This refresher training will have to be conducted by a qualified instructor or check pilot. If the pilot did not complete the required 100 hours of line operating flight time, the certificate holder could extend the 120-day period to 150 days. In this instance, however, the pilot could be subject to refresher training if a check pilot determined that the pilot had not retained an adequate level of proficiency in the new airplane type.

Section 121.438(a) of the final rule will prohibit SICs who have less than 100 flight hours in the airplane being flown from making takeoffs and landings, unless the PIC is a check pilot, when certain adverse weather and/or runway conditions exist or when the PIC determined that it was prudent to exercise his or her prerogative and make the takeoff or the landing. This restriction will not significantly interfere with the consolidation of learning and skills requirements for SICs, who should be able to acquire 100 hours of operating experience within the 120 days. Therefore, there are no costs associated with this restriction.

The current bidding systems that most air carriers use have resulted in some newly type-rated or proficiency-checked pilots being placed on reserve for the airplanes in which they have recently received practical tests and/or proficiency checks. Thus, these newly rated pilots may not have the opportunity to consolidate their skills.

The Joint Government/Industry Task Force on Flight Crew Performance included a consolidation requirement among their recommendations to the FAA. The FAA finds, therefore, that the current bidding systems could be modified to ensure that affected pilots could consolidate their skills within a 120-day period. To the extent that they fail to do so, there would be additional costs of compliance. The FAA estimates that with current flight times of about 75 hours per month, 90 percent of the affected pilots would consolidate their skills within the 120 days, and all of them would complete consolidation within 150 days. The costs of compliance associated with the 10 percent who could not complete

consolidation within 120 days can be separated into two categories: (1) The cost of a supervised line observation flight conducted by a check pilot; or (2) the cost of refresher training.

Supervised Line Observation

A supervised line observation flight for a pilot is conducted if the pilot is going to take longer than 120 days to complete the 100 hours of operating experience. This flight is estimated to take an average of 2 hours. The cost that this requirement will impose will be the cost of providing a check pilot for those 2 hours. For SIC candidates, the check pilot can serve as PIC. Since there is little if any wage differential between PICs and check pilots, little if any additional cost will be imposed by this requirement. For PIC candidates, the check pilot will act as SIC for that supervised observation flight. This would impose an additional cost since check pilots earn more than SICs. The difference in wage between a PIC check pilot and an SIC ranges from \$62/hour for Group II pilots and \$15/hour for Group I pilots. The total cost of this requirement over the next 10 years is \$508,200 dollars with a present value of \$351,000.

Refresher Training

If a pilot who is consolidating his or her skills performs any flight time in another type of airplane operated by the certificate holder before completing the 120 hours, he or she will have to successfully complete refresher training before returning to the new airplane type. The FAA estimates that half of the PICs and SICs who do not consolidate their skills will require some refresher training. Air carriers have modules that they use to teach different aspects of a training program. The FAA expects that operators will use these modules to provide pilots the additional training in those areas that the check airmen find them to be deficient. The cost of compliance for the requirement for refresher training, therefore, would be the cost of instructors for those PICs and SICs. The FAA estimates that the refresher training will take an average of three hours and that Group II airplane instructors will be compensated at \$127 per hour and Group I instructors at \$55 per hour. In 1994, this cost will amount to \$218,000. Over the years 1994 to 2003, the costs will total \$2.5 million, with a present value of \$1.7 million.

Developing Computer Programming

Section 121.438(b) states that “no person may conduct operations . . . unless, for that type airplane, either the PIC or the SIC has at least 75 hours of

line operating flight time, either as PIC or SIC." The cost of implementing crew pairing guidelines would be that of developing software for a scheduling program to pair newly-qualified pilots with experienced pilots. To estimate this cost, the FAA surveyed part 121 Principal Operations Inspectors (POIs) to learn how many carriers currently have internal crew pairing guidelines that will be in compliance with the requirement. Numbers of pilots, airplanes, and airplane types were obtained from FAPA's Pilot Directory of Employers.

Based on the make-up of the airline pilot population, the FAA contends that it should not be difficult to pair a newly qualified pilot with one that already has the required operating experience. For instance, the number of pilots that need operational experience is relatively small compared to the number of experienced pilots. The FAA estimates that approximately 13 percent of pilots employed by major airlines, 7 percent employed by national airlines, and 38 percent employed by regional airlines are currently subject to crew pairing restrictions. In addition, many airlines operate only a few different types of airplanes. Among the majors, where there are an average of 14 pilots per airplane, there are 620 pilots per type of airplane. Among the national air carriers, there are 10 pilots per airplane and an average of 45 pilots per type. Finally, among the regional air carriers, there are 7 pilots per airplane and 76 pilots per type.

The crew pairing requirement could be implemented at a minimal cost to those air carriers that currently do not have crew pairing guidelines. This is because of the large number of pilots per airplane type and because of the number of air carriers that already have established crew pairing guidelines in the absence of this regulation. The cost of implementing crew pairing restrictions would be that of developing a software program to pair newly-qualified pilots with experienced pilots. The FAA estimates that this development will take one programmer one week to modify existing software programs and write the necessary documentation at a cost of \$1,300. Based on the survey of POIs, the FAA estimates that 76 air carriers will have to develop a computer program for crew pairing. Thus, the one-time cost of this requirement will be \$98,800 (\$1,300×76).

Benefits

The final rule will help to prevent accidents that result from the pairing of under-experienced pilots or in which

in-type flight skill and knowledge are not consolidated. The FAA has identified two accidents over the past 10 years in which the NTSB determined that the inexperience of the pilots was the probable cause. Of the 145 passengers that were on board these the two airplanes, 30 (20.7 percent) were killed and 31 (21.4 percent) were seriously injured. Both airplanes were destroyed. The airplane in the New York accident also caused damage to a pier and to the approach lighting at LaGuardia Airport.

The benefits of the final rule will be, in part, the number of casualties that it will help to prevent over the next 10 years. To estimate the potential fatal and serious injuries over the next 10 years, the FAA calculated the proportion of passengers killed or seriously injured in such accidents and applied those proportions to the expected average enplanement levels over the next 10 years. The FAA estimates that from 1994 to 2003, the average air carrier airplane will have 183 seats and will carry, on average, 128 people on board—121 passengers and 7 crew members. If this "average" airplane were to be involved in an accident similar to the ones in Denver and New York, the FAA estimates the casualty rate of the "average" accident would approach that of the Denver and New York accidents. Thus, the number of fatalities would be 26 (128×.207) and the number of serious inquiries would be 27 (128×.214).

The FAA uses a value of \$2.6 million to estimate the benefit value of preventing a fatality and \$500,000 to prevent a serious injury. Thus, the value of preventing the estimated number of fatalities and serious injuries will be \$67.6 million (26×\$2.6 million) and \$13.5 million (27×\$500,000) respectively. Added to these amounts are the average replacement value of an air carrier airplane, \$11 million, and the value of a major NTSB investigation, \$433,500. This brings the total value of preventing one crew-pairing related accident over the next 10 years to \$92.5 million (\$67.6 million + \$13.5 million + \$11.0 million + \$433,500).

Based on the number of air carrier operations and the number of accidents that have occurred over the past 10 years, the FAA projects that over the next 10 years, in absence of this final rule, another two accidents could occur. The benefits of preventing both of those accidents is \$185 million, with a present value of \$130 million.

How much of these benefits can be attributed to this final rule is not certain. However, since pilot error and crew inexperience were the probable

causes of the Denver and New York accidents, the FAA estimates that the final rule will prevent at least one of the future accidents. Thus, the present value benefits of this final rule will be \$65 million (\$130 million/2).

Benefit-Cost Comparison

The present value cost of the final rule to require several new and modified operating experience requirements for PICs and SICs will be \$33.4 million over the next 10 years. The present value benefit of the final rule by preventing one accident over the next ten years will \$65 million. Thus, the FAA has determined that the final rule is cost-beneficial.

Final Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by Federal regulations. The RFA requires agencies to review rules which may have "a significant economic impact on a substantial number of small entities."

The FAA has adopted criteria and guidelines for rulemaking officials to apply when determining whether a proposed or existing rule has any significant economic impact on a substantial number of small entities. Based on these criteria, a small air carrier is one that owns 9 or fewer aircraft and a substantial number of carriers is one that is not less than 11 or which is more than one-third of affected small entities.

The FAA has determined that approximately 35 air carriers operating under part 121 could be considered small entities. Based on the FAA's criteria and guidelines, a significant regulatory cost impact to these air carriers ranges from \$4,300 for an unscheduled carrier to \$61,600 for a scheduled carrier to \$110,100 for scheduled carriers whose entire fleet has a seating capacity of more than 60. These values are annualized costs and are expressed in 1993-dollars. Typically, there are about 11 pilots per aircraft for carriers operating Group II airplanes and 6 pilots per aircraft for carriers operating Group I airplanes. Approximately half of these pilots act as PICs, while the other half act as SICs.

For a small scheduled carrier having a fleet seating capacity of more than 60 seats, owning 9 group II airplanes, and employing 99 pilots, the FAA estimates that 5 PICs would need 10 hours of additional transition operating experience at a cost of \$6,350 (5×10×\$127/hr). Small entities will not

longer be able to take advantage of reducing the required number of experience hours by exchanging one hour of supervised operating experience for one landing and takeoff. Thus, for the 5 PIC candidates, this will result in a cost of \$1,600 (5×25 hours×10%×\$127/hr). Two PICs would not complete their consolidation within the 120-day period and require a supervised line observation flight by a check pilot at a cost of \$248 (2×2 hours×\$62/hr); one pilot would require refresher training at a cost of \$381 (1×3 hours×\$127). The costs of compliance to these carriers will be \$8,600, which is less than the \$110,100 threshold cost for a significant impact under the regulatory flexibility guidelines described above. Thus, the rule will not have a significant economic impact on a substantial number of these small entities.

Using the same methodology to estimate the cost for a small entity owning 9 turboprop airplanes and employing 54 pilots, 2 PICs would need 10 hours of additional transition operating experience at a cost of \$1,100 (2×10×\$55/hr). These pilots would also not be able to reduce the number of hours of supervised operating experience at a cost of \$275 (2×25 hours×10%×\$55/hr). One pilot would not complete consolidation of their learning within 120 days and require a line observation flight at a cost of \$30 (1×2 hrs×\$15), and 1 pilot needing refresher training at a cost of \$165 (1×3 hrs×\$55). The FAA estimates that the total cost to a small turboprop-owned air carrier will be \$1,570 per year, which is less than the \$61,600 threshold for a scheduled air carrier operating planes with less than 60 seats. Thus, the rule will not have a significant economic impact on a substantial number of these small entities.

Finally, a small entity owning 9 reciprocating engine airplanes and employing 54 pilots, 2 PICs would need 10 hours of additional transition operating experience at a cost of \$1,100 (2×10×\$55/hr). These pilots would also not be able to reduce the number of hours of supervised operating experience at a cost of \$275 (2×25 hours×10%×\$55/hr). One pilot would not complete consolidation of their learning within 120 days and require a line observation flight at a cost of \$30 (1×2 hrs×\$15), and 1 pilot needing refresher training at a cost of \$165 (1×3 hrs×\$55). The FAA estimates that the total cost to a small turboprop-owned air carrier will be \$1,570 per year, which is less than the \$4,300 for small unscheduled carriers. Thus, the rule will not have a significant economic

impact on a substantial number of these small entities.

International Trade Impact

The final rule will have little impact on international trade. U.S. air carriers operating in international markets would incur some additional costs, primarily for supervised operating experience requirements, whereas foreign air carriers operating in the same markets will not be affected by the final rule. If the cost of the final rule (i.e., \$33.4 million over the next 10 years) were borne entirely by U.S. carriers serving international markets, the cost would still represent a negligible amount of the international passenger revenues compared to the \$280 billion forecast to be collected between 1993 and 2002.

International Civil Aviation Organization and Joint Aviation Regulations

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with ICAO Standards and Recommended Practices (SARP) to the maximum extent practicable. For this final rule, the FAA reviewed the SARP of Annex 6, applicable to pilot training for commercial air transportation operations. The FAA has determined that these amendments would not present any differences. The SARP are more general than the FAR, with much of the pilot training to be determined by the State of the Operator.

In reviewing the JAR, the FAA finds that regulations exist that are similar to this final rule, though they are less specific. JAR-OPS 1.945 addresses Conversion Training and Checking. Paragraph (e) of that section states "Once a conversion course has been started a crew member shall not undertake flying duties on another type or variant until the course is completed or terminated."

Federalism Implications

The regulations herein would not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this regulation will not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Conclusion

For the reasons discussed in the preamble, and based on the findings in

the Regulatory Flexibility Determination and the International Trade Impact Analysis, the FAA has determined that this regulation is a significant regulatory action under Executive Order 12866. In addition, the FAA certifies that this regulation will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. This regulation is considered significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A final regulatory evaluation of the regulation, including a Regulatory Flexibility Determination and Trade Impact Analysis, has been placed in the docket. A copy may be obtained by contacting the person identified under FOR FURTHER INFORMATION CONTACT.

List of Subjects in 14 CFR Part 121

Air safety; Air transportation, Aviation safety, Drug abuse, Narcotics, Safety, and Transportation.

The Amendment

The Federal Aviation Administration amends part 121 of the Federal Aviation Regulations (14 CFR 121) as follows:

PART 121—CERTIFICATION AND OPERATIONS: DOMESTIC, FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT

1. The authority citation for part 121 continues to read as follows:

Authority: 49 U.S.C. App. 1354(a), 1355, 1356, 1357, 1401, 1421-1430, 1472, 1485, and 1502; 49 U.S.C. 106(g).

2. Section 121.431(b) is revised to read as follows:

§ 121.431 Applicability.

(b) For the purpose of this subpart, the airplane groups and terms and definitions prescribed in § 121.400 and the following definitions apply:

Consolidation is the process by which a person through practice and practical experience increases proficiency in newly acquired knowledge and skills.

Line operating flight time is flight time performed in operations under this part.

Operating cycle is a complete flight segment consisting of a takeoff, climb, enroute portion, descent, and a landing.

3. Section 121.434 is amended by revising the heading; removing the flush paragraph at the end of paragraph (b); removing the words "the certificate holder's approved training program includes a course of training in an airplane simulator under § 121.409(c)

and" in paragraph (c)(1)(ii); revising the introductory text of paragraphs (a), (b), and (c); revising paragraphs (b)(2), (c)(2), (c)(3) introductory text, (c)(3)(i), (c)(3)(ii), and (f); designating the flush paragraph following paragraph (f) as paragraph (i); and adding new paragraphs (a)(3), (g) and (h) to read as follows:

§ 121.434 Operating experience, operating cycles, and consolidation of knowledge and skills.

(a) No certificate holder may use a person nor may any person serve as a required crewmember of an airplane unless the person has satisfactorily completed, on that type airplane and in that crewmember position, the operating experience, operating cycles, and the line operating flight time for consolidation of knowledge and skills, required by this section, except as follows:

(3) Separate operating experience, operating cycles, and line operating flight time for consolidation of knowledge and skills are not required for variations within the same type airplane.

(b) In acquiring the operating experience, operating cycles, and line operating flight time for consolidation of knowledge and skills, crewmembers must comply with the following:

(2) The operating experience, operating cycles, and line operating flight time for consolidation of knowledge and skills must be acquired after satisfactory completion of the appropriate ground and flight training for the particular airplane type and crewmember position.

(c) Pilot crewmembers must acquire operating experience and operating cycles as follows:

(2) A second in command pilot must perform the duties of a second in command under the supervision of an appropriately qualified check pilot.

(3) The hours of operating experience and operating cycles for all pilots are as follows:

(i) For initial training, 15 hours in Group I reciprocating powered airplanes, 20 hours in Group I turbopropeller powered airplanes, and 25 hours in Group II airplanes. Operating experience in both airplane groups must include at least 4 operating cycles (at least 2 as the pilot flying the airplane).

(ii) For transition training, except as provided in paragraph (c)(3)(iii) of this section, 10 hours in Group I reciprocating powered airplanes, 12 hours in Group I turbopropeller powered airplanes, 25 hours for pilots in command in Group II airplanes, and 15 hours for second in command pilots in Group II airplanes. Operating experience in both airplane groups must include at least 4 operating cycles (at least 2 as the pilot flying the airplane).

(f) Flight crewmembers may substitute one additional takeoff and landing for each hour of flight to meet the operating experience requirements of this section, up to a maximum reduction of 50% of flight hours, except those in Group II initial training, and second in command pilots in Group II transition training. Notwithstanding the reductions in programmed hours permitted under §§ 121.405 and 121.409, the hours of operating experience for flight crewmembers are not subject to reduction other than as provided in this paragraph and paragraph (e) of this section.

(g) Except as provided in paragraph (h) of this section, pilot in command and second in command crewmembers must each acquire at least 100 hours of line operating flight time for consolidation of knowledge and skills (including operating experience required under paragraph (c) of this section) within 120 days after the satisfactory completion of:

(1) Any part of the flight maneuvers and procedures portion of either an airline transport pilot certificate with type rating practical test or an additional type rating practical test, or

(2) A § 121.441 proficiency check.

(h) The following exceptions apply to the consolidation requirement of paragraph (g) of this section:

(1) Pilots who have qualified and served as pilot in command or second in command on a particular type airplane in operations under this part before August 25, 1995 are not required to complete line operating flight time for consolidation of knowledge and skills.

(2) Pilots who have completed the line operating flight time requirement for consolidation of knowledge and skills while serving as second in command on a particular type airplane in operations under this part after August 25, 1995 are not required to repeat the line operating flight time before serving as pilot in command on the same type airplane.

(3) If, before completing the required 100 hours of line operating flight time, a pilot serves as a pilot in another

airplane type operated by the certificate holder, the pilot may not serve as a pilot in the airplane for which the pilot has newly qualified unless the pilot satisfactorily completes refresher training as provided in the certificate holder's approved training program and that training is conducted by an appropriately qualified instructor or check pilot.

(4) If the required 100 hours of line operating flight time are not completed within 120 days, the certificate holder may extend the 120-day period to no more than 150 days if—

(i) The pilot continues to meet all other applicable requirements of subpart O of this part; and

(ii) On or before the 120th day the pilot satisfactorily completes refresher training conducted by an appropriately qualified instructor or check pilot as provided in the certificate holder's approved training program, or a check pilot determines that the pilot has retained an adequate level of proficiency after observing that pilot in a supervised line operating flight.

(5) The Administrator, upon application by the certificate holder, may authorize deviations from the requirements of paragraph (g) of this section, by an appropriate amendment to the operations specifications, to the extent warranted by any of the following circumstances:

(i) A newly certificated certificate holder does not employ any pilots who meet the minimum requirements of paragraph (g) of this section.

(ii) An existing certificate holder adds to its fleet an airplane type not before proven for use in its operations.

(iii) A certificate holder establishes a new domicile to which it assigns pilots who will be required to become qualified on the airplanes operated from that domicile.

4. Section 121.438 is added to subpart O to read as follows:

§ 121.438 Pilot operating limitations and pairing requirements.

(a) If the second in command has fewer than 100 hours of flight time as second in command in operations under this part in the type airplane being flown, and the pilot in command is not an appropriately qualified check pilot, the pilot in command must make all takeoffs and landings in the following situations:

(1) At special airports designated by the Administrator or at special airports designated by the certificate holder; and

(2) In any of the following conditions:

(i) The prevailing visibility value in the latest weather report for the airport is at or below $\frac{3}{4}$ mile.

(ii) The runway visual range for the runway to be used is at or below 4,000 feet.

(iii) The runway to be used has water, snow, slush or similar conditions that may adversely affect airplane performance.

(iv) The braking action on the runway to be used is reported to be less than "good".

(v) The crosswind component for the runway to be used is in excess of 15 knots.

(vi) Windshear is reported in the vicinity of the airport.

(vii) Any other condition in which the PIC determines it to be prudent to exercise the PIC's prerogative.

(b) No person may conduct operations under this part unless, for that type airplane, either the pilot in command or the second in command has at least 75 hours of line operating flight time, either as pilot in command or second in command. The Administrator may, upon application by the certificate holder, authorize deviations from the requirements of this paragraph (b) by an appropriate amendment to the operations specifications in any of the following circumstances:

(1) A newly certificated certificate holder does not employ any pilots who

meet the minimum requirements of this paragraph.

(2) An existing certificate holder adds to its fleet a type airplane not before proven for use in its operations.

(3) An existing certificate holder establishes a new domicile to which it assigns pilots who will be required to become qualified on the airplanes operated from that domicile.

Issued in Washington, DC on April 21, 1995.

David R. Hinson,
Administrator.

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