

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

[Docket No. 28072; Amdt. No. 121-258]

RIN 2120-AF29

**Advanced Simulation Plan Revisions****AGENCY:** Federal Aviation Administration (FAA), DOT.**ACTION:** Final rule.

**SUMMARY:** This final rule: Updates the terminology used to describe simulators; eliminates the requirement that the minimum of 1 year of employment as an instructor or check airman be with the operator of the simulator; and authorizes the use of Level C simulators for initial and upgrade training and checking for second-in-command (SIC) duties. This action responds to concerns identified by certain affected certificate holders in petitions for exemption. It is intended to alleviate unnecessary training costs while maintaining an equivalent level of safety.

**EFFECTIVE DATE:** June 17, 1996.

**FOR FURTHER INFORMATION CONTACT:** Gary E. Davis, Project Development Branch, AFS-240, Air Transportation Division, Office of Flight Standards, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, Telephone (202) 267-3747.

**SUPPLEMENTARY INFORMATION:***Availability of Final Rules*

Any person may obtain a copy of this final rule by submitting a request to the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267-9677. Communications must identify the notice number of this final rule.

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*Background*

Appendix H to Title 14 Code of Federal Regulations (CFR) part 121, "Advanced Simulation Plan," provides guidelines and a means for achieving flightcrew training and checking in advanced airplane simulators. The three-phase plan provides standards for a progressive upgrade of airplane simulators so that the total scope of flightcrew training can be enhanced.

Appendix H specifically describes the simulator and visual system requirements that must be met to obtain approval to conduct certain training and checking in the particular type of simulator (Phase I, II, or III).

Appendix H was developed and adopted when there were no "advanced simulators." Currently, however, advanced simulators exist which have permitted virtual duplication of many aircraft performance characteristics and systems. As a result, the vast majority of U.S. airline pilot training is now conducted in these advanced simulators. According to industry members, however, certain limitations originally incorporated into Appendix H still require a small, yet relatively expensive, amount of training to be completed in the actual airplane.

In light of their highly satisfactory experience with these simulators, some industry members believe that Level C simulators should be approved for those flightcrew training and checking maneuvers that currently are permitted only in the aircraft or in Level D simulators. (The differences between Level C and Level D simulators are discussed in more detail below.) In a petition for exemption dated October 12, 1992, the Air Transport Association, on behalf of its affected member airlines and other similarly situated airlines, petitioned for an exemption to provide for initial training in a Level C simulator. Trans World Airlines and Tower Airlines petitioned individually to use a Level C simulator to conduct limited initial and upgrade training and checking functions that would normally be conducted in a Level D simulator. Agreeing in part with the petitioners' supportive information and, based on its own experience, the FAA granted some limited relief for training and checking.

More recently, United Airlines (United) has requested similar but slightly more extensive relief than previously granted. United believes that its experience with advanced simulation, as well as the FAA's own experience, more than adequately justifies expanding the scope of flightcrew training and checking in a Level C simulator. In support of its request, United points out that: (1) The same training curricula and pilot proficiency standards would apply to a Level C or Level D simulator; (2) these curricula can be implemented and proficiency demonstrated effectively in a Level C simulator; and (3) daily local FAA oversight of training and checking programs will assure that these curricula and standards remain sufficient.

United further believes that its request would be in the public interest since it is universally acknowledged that simulator training is superior to training in an actual aircraft and the public is served best when high quality training is conducted in the safest and most cost-effective manner.

The FAA agrees with much of United's rationale in its petition; however, after consideration of the supportive information, the FAA believes that United is not alone or unique in its request. Therefore, the FAA has determined that the appropriate response to the United petition for exemption is to change the existing regulations. On February 14, 1995, the FAA published a notice of proposed rulemaking (NPRM) (60 FR 8490) in which it proposed to revise and clarify certain requirements of part 121, appendix H. The FAA received nine comments on its proposal. The commenters included the Air Transport Association (ATA), Simuflite, the Regional Airline Association (RAA), the Airline Pilots Association (ALPA), the Federal Express Corporation (FedEx), United, Atlantic Southeast Airlines, Inc. (ASA), American Airlines (American), and an individual whose affiliation was not revealed. ALPA and the individual were the only commenters who were not generally supportive of the proposal and made several recommendations. Other commenters expressed general support with minor modifications. All comments are discussed below under "Discussion of the Final Rule."

*Discussion of the Final Rule**Terminology*

Simulators historically have been referred to in terms of "phases" because it was expected that operators would be upgrading their simulator inventories in phases while exercising simulator privileges commensurate with the phase of the simulator. The upgrading of simulators in phases is now essentially complete and the designation of "phase" for identification of simulator complexity is no longer descriptive. Operators no longer begin at a lower level of qualification and upgrade in phases. The tendency is to acquire a given level simulator that best meets their needs. The agency and the industry now commonly refer to simulators in terms of "levels." The FAA received two comments, from Simuflite and United, on this proposal to modify existing appendix H terminology. Both commenters supported the FAA's proposal to replace the term "phase" with the term "level."

This rule, therefore, revises appendix H, as discussed below, to replace the old terminology with the new throughout the appendix. The new terminology will be used throughout this preamble in discussing other amendments to this rule.

The levels currently used to describe a particular simulator compared with the older phase designations are:

New terminology	Old terminology
Level A .....	Visual.
Level B .....	Phase I.
Level C .....	Phase II.
Level D .....	Phase III.

#### *Authorizing Additional Training and Checking in a Level C Simulator*

All simulators duplicate or simulate the functions of an airplane to varying levels of accuracy. The FAA currently requires that, for each higher level of simulator, the simulator duplicate the performance of the airplane over larger and more critical portions of the airplane's operating envelope. This performance must be shown by documented evidence. Level D simulators must provide the highest level of flight realism. They must perform as the airplane performs over the largest portion of the airplane's operating envelope, while providing the most complete and technically accurate environment possible. Evidence of this performance must include certain sophisticated aerodynamic modeling that allows more complete replication of the performance of the airplane.

Level C simulators are designed to operate over the same portion of the airplane's operating envelope as Level D simulators, and do so under a relatively sophisticated performance verification process. Level C simulators, however, are not required to have sophisticated aerodynamic modeling factors. Nor do they undergo the degree of performance verification that Level D simulators do.

The FAA proposed that Level C simulators may be used for initial qualification and upgrade training and checking for SIC. Because of performance differences between Level C and level D simulators, however, the FAA proposed that pilots qualified using Level C simulators meet certain prerequisite levels of experience. Further, the FAA proposed that these pilots be required to have supervised post-qualification operational experience.

Several commenters discussed the various capabilities of Level C and D simulators. The opinions of the various commenters on this issue are paraphrased as follows:

**ATA:** There is no evidence to show that a Level D simulator makes any difference in the training and qualification of pilots when compared to the training available in a Level C simulator. There is no difference in flight dynamic performance between Level C and D simulators. Level C can be treated as Level D for all training and checking functions.

**FedEx:** The only perceptible difference between a Level C and D simulator is that a Level D simulator has a daylight visual system. A Level C simulator is capable of providing the same quality of training as a Level D simulator. The pilot must pass the same flight test standards on all required maneuvers in either Level C or Level D simulators. A 1984 study concluded that a simulator, less sophisticated than a Level C simulator, will support a large majority of the events needed for ATP certification. Moreover, this study also concluded that for an ATP or type rating for students with a commercial rating (1,500 hours of flight) no requirement exists for a daylight visual system.

**United:** The continued efforts to justify uses for a Level D simulator are simply not supported by airline training experience. Level C simulators are completely adequate for all training and checking. Level D simulators cost more to buy and maintain. The aerodynamic models and performance of Level C and D simulators are identical. The real differences between Level C and Level D simulators are the availability of daylight visual scenes, some special effects, and objective tuning of sound and motion cues.

**ASA:** A Level C simulator should be allowed for full training and checking for initial SIC. The FAA also should allow partial credit for Level B under appendix H. The only significant difference is the visual system, which, except for circle-to-land maneuvers is not a factor. Level 5, 6, and 7 Flight Training Devices should be allowed credit under appendix H. This would allow a combination of flight training devices and Level B or C training.

**American:** A Level D simulator has an extremely limited training value advantage over a Level C simulator. With the recent technological advances in visual systems, a Level C simulator could be more valuable from a training perspective than some Level D simulators. The Level C simulator with the wide visual system is superior to the Level D simulator with the conventional monitor optics display in meeting training objectives.

**ALPA:** If a Level C simulator can be substituted for a Level D simulator, then how is training enhanced and safety

maintained? Level D simulators provide airframe icing effects and realistic airport lighting. They also provide airframe buffet and visual scenes such as landing illusions, overwater approaches, and rising terrain on the approach path.

**Individual:** Simulators are not all that they should be—visual cues, inflight dynamics, landing maneuvers, and total environment experiences have yet to be fully developed with current simulator technology.

**FAA response:** The discussion of the differences between Level C and Level D simulator programs includes consideration for the performance standards of each and how each level of qualification may be applied to training and checking. Application of a specific qualification level depends in turn on student experience levels and the overall curriculum. The FAA still believes, as industry did when appendix H was implemented, that lower experience levels require more accurate flight dynamic simulation and training in a wide variety of special effects such as weather and runway contaminants. The Level D simulator performance standards exceed Level C in special effects to include daylight visual scenes and more accurate testing for flight dynamics, motion, and sound. It has always been FAA's intent that the special effects required of each qualification level be used in the curriculum for initial and upgrade pilot qualification.

The FAA understands ALPA's concern that the special effects (to include daylight visual scenes) required of Level D simulators currently are not being exercised in contemporary training programs as originally intended. These effects are one of the key elements required for the different experience levels acceptable for use in Levels C and D.

One commenter, ASA, suggested that appendix H should "allow partial credit for Level B," and that "Levels 5, 6, and 7 Flight Training Devices should be credited under appendix H." The FAA believes that items 1. and 2. of the "Advanced Simulation Training Program" provide the latitude to integrate Level A, B, C, and D simulators with other simulators and training devices to maximize the total training, checking, and certification functions.

The 1984 FAA study referenced by FedEx assumed that the ATP/Type rating applicant met the experience requirements for an ATP as provided under § 61.155. While this is a higher experience level than that required of an SI for part 121 operations, it speaks directly to the application of the

performance differences between Level C and Level D simulators and the related PIC and SIC qualifications and certification credits. For example, SIC applicants that do not meet § 61.155 experience may qualify in a Level D simulator, while those applicants that do meet this experience may qualify in a Level C simulator.

The FAA believes that further studies are needed to explore the entire issue of "out-of-the-window" visual cue requirements relative to the current and projected state of the art. A research requirement for this study has been established. Industry participation is planned and judged essential to the success of this research.

The FAA agrees with the commenters who have indicated that the aerodynamic performance of Level D has been generally accepted as the industry standard for all advanced simulators including Level C. Therefore, the FAA accepts that the aerodynamic performance of some (late model) Level C simulators may be identical to Level D simulators. Level C simulators that meet Level D aerodynamic performance standards provide training benefits in some areas equal to Level D simulators. However, the use of Level D aerodynamics is not required of Level C, and Level C simulators are not tested and qualified to Level D aerodynamic standards.

Given 13 years of experience using Level C simulators, and the rigorous qualification process and performance standards required for Level C simulators, the FAA adopts its proposal to allow Level C simulators to be used for initial qualification and upgrade training and checking for SIC.

#### *Prior Aeronautical Experience*

The FAA proposed to add a new paragraph 4 to the proposed section entitled "Level C, Training and Checking Permitted." Under this proposal, the FAA would permit SIC applicants to obtain initial and upgrade training and certification checks in Level C simulators if certain preconditions are met. This new paragraph, as proposed, would require that the applicant meet the prior aeronautical experience requirements for an ATP certificate and airplane rating under § 61.155, before beginning training in a Level C simulator and before being checked under § 61.157 in a Level C simulator for an ATP certificate or rating.

Simuflite expressed uncertainty regarding the lack of any requirement for recency of experience and no restrictions on prerequisite experience for SIC applicants who meet the

aeronautical experience requirements of § 61.155 in "the" airplane. According to Simuflite, the proposal should have stipulated that the applicants possess the experience requirements of § 61.155 in "an" airplane of equivalent class. As for the proposed revisions to the operating experience provisions, Simuflite agreed that operating experience should be acquired performing the duties of the respective crew position under the supervision of a check pilot and regardless of whether the training was done in a Level C or D simulator. However, according to Simuflite, the provision to make operating experience requirements more stringent for the SIC who received training in a Level C infers that there is some belief that the training may be insufficient and inferior.

In regard to § 121.434(f), RAA recommended that the FAA eliminate from the final rule the proposed restriction which would not permit SIC pilots trained in a Level C simulator to reduce the hours of initial operating experience by up to 50 percent by the substitution of one additional takeoff and landing for each hour of flight.

FedEx stated that it could only agree that SIC's should have to meet the flight experience requirements of § 61.155, if qualifying in a Level C simulator, if an ATP certificate is involved. If the FAA is going to require SIC's to meet the requirements of § 61.155, then it should require all pilots qualifying as SIC's to meet those requirements, regardless of the method used to qualify the individual. According to FedEx, there probably are not many part 121 SIC's who do not meet the requirements of § 61.155. Further, FedEx did not agree that § 121.434(c)(2) should be tied to all pilots trained in a Level C simulator. For FedEx, if an SIC needs supervised operating experience, then it should be made applicable to all SIC's, regardless of how they were qualified.

United supported a requirement for SIC operating experience to be gained in the SIC duty position, supervised by a check pilot. However, United did not support the proposed requirement that the operating experience consist of at least four takeoffs and four landings as the sole manipulator of the controls. According to United, experience with "pilot not flying" duties is as important as "pilot flying" duties. In this regard, United concurred with ATA's opinion on rewording § 121.434(c)(2)(ii)(B). United further noted that the question of whether or not to amend § 121.434(f) in this proposal (Notice 95-2) differed from FAA's earlier proposal to amend that same section in Notice 93-1.

American commented that, since some training in the flight training segment may actually begin in either a flight training device or Levels A or B simulators to accomplish events permitted under part 121, appendix E, the third sentence of the preamble discussion under the heading "Prior Aeronautical Experience" should have been worded as follows: "The rule would require \* \* \* under § 61.155, before beginning the flight training segment of a training program that uses a Level C simulator to accomplish the inflight training items under part 121, appendix E and the part 61, appendix A check for the ATP certificate or rating under § 61.157." Like United, American concurred with ATA's suggested rewording of § 121.434(c)(2)(ii)(B).

*FAA Response:* Regarding amendments to § 121.434, the FAA agrees with the commenters and has determined that these proposed amendments need not be retained. The FAA, in its deliberations and review of comments, agrees with United which pointed out that the questions on whether or not to amend § 121.434(f) was contradictory to an earlier FAA proposal. Some commenters also stated that the proposal to require four takeoffs and four landings for the SIC as sole manipulator of the controls was excessive and did not address pilot-not-flying duties. The FAA has decided that the changes made to § 121.434 in the final rule entitled "Pilot Operating and Experience Requirements" (60 FR 20858, April 27, 1995) satisfies these issues raised by commenters and adequately addresses the safety concerns of the FAA. Therefore, the FAA will not propose additional amendment to § 121.434.

Regarding the proposed change to require an SIC to meet the flight experience requirements of § 61.155, the FAA has determined that Level D simulators, used in an approved appendix H training program that may use the prescribed special effects for the 250-hour commercial, instrument-rated pilot, constitute the minimum acceptable level for initial and upgrade SIC qualification in part 121 today. Using a Level C simulator for training the 1500-hour ATP applicant is equal to or better than using a Level D simulator for training the 250-hour commercial, instrument-rated pilot. The FAA believes that experience requirements are a vital part of qualification, as well as any required certification within qualification. Therefore, it is appropriate to require § 61.155 experience for SIC qualification and training and paragraph 4 under proposed "Level C, Training and

Checking Permitted" is adopted as proposed.

#### *Modifying Employment Requirement*

This final rule will remove the requirement in appendix H (in paragraph 3 of the section entitled "Advanced Simulation Training Program") that each instructor and check airman have been employed for at least 1 year by the certificate holder applying for approval of the program. The FAA's intention, in originally requiring a minimum period of 1-year of employment with the operator, was to ensure suitable experience levels for individuals selected to be instructors and check airmen. The most sophisticated simulator can be of little value without an experienced, well-trained instructor or check airman to operate it. However, the agency has concluded that this goal can be achieved by 1 year of experience serving as an instructor or check airman with any part 121 operator. The FAA believes that this amount of instructor experience, in addition to the training prerequisites for these individuals in appendix H, is an adequate level of preparation for an instructor or check airman in a Level C simulator. Modifying the employment requirement in this way will not decrease safety. However, it should be noted that, instructors and check airmen may participate in more than one operator's approved training program; each operator must provide training for each instructor and check airman in its training program. Thus, an instructor or check airman who instructs for more than one operator must receive training in each operator's program.

Similarly, the FAA proposed to revise the section entitled "Phase II, Training and Checking Permitted" in appendix H to provide that pilots seeking to upgrade to pilot in command (PIC) do not have to have obtained the prerequisite SIC experience "with the operator," nor have served or be serving as SIC "with that operator." Again, the FAA believes that the level of experience required by an approved training program, in addition to the training prerequisites for these individuals in appendix H and elsewhere under the Federal Aviation Regulations, establishes an adequate level of preparation regardless of employment with any specific operator.

Commenters generally supported the FAA's proposal to remove certain employment restrictions. However, ATA suggested deleting paragraph 3 of the Advanced Simulation Plan entirely or, if not possible, modifying paragraph 3 to make clear that anyone who has 1 year of experience—namely with the

military, a manufacturer, or a foreign airline—is qualified.

RAA commented that previous experience should not be limited to airplanes of the same group. According to RAA, the FAA should require 1 year as PIC or instructor pilot, to include military time. Further, RAA indicated that pilots should have a type rating and should have completed an air carrier approved training program.

FedEx commented that the proposal should be modified to include flight instructors with experience in airplanes of the same group who gained experience in the military, with airframe manufacturers, and/or with training centers.

United supported the FAA's proposal to delete the requirement for employment "by the certificate holder" under existing paragraph 3 of "Advanced Simulation Training Program" because this relief has already been offered through exemptions issued to United and to ATA. It also supported the FAA's proposal to delete the words "with the operator" for PIC initial or upgrade training, under existing paragraphs 2(a) (ii) and (iii) of "Phase II Training and Checking Permitted."

United concurred with other commenters that equivalent military experience should be allowed.

ASA indicated that appendix H should allow established operators to introduce new aircraft with instructors currently employed without waiting 1 year to gain in-type experience.

American echoed the exemption experience mentioned by United and further stated that this experience has proven that training received by a pilot who has already served as SIC on a large jet aircraft provides an equivalent transfer of learning.

ALPA was opposed to the proposal indicating that it only addresses the issue of airplane knowledge and qualification but not familiarity with company policies and operating procedures.

*FAA response:* the FAA has carefully reviewed commenters' opinions concerning its proposal to amend the 1-year employment requirement for instructors and check airmen in part 121, appendix H and in certain exemptions. The commenters generally concurred that safety considerations should not be based on employment status but rather on prior in-flight experience in the group of airplanes in which the pilot is instructing or checking. By amending the employment provisions of appendix H, the FAA's intent is to honor all experience gained as an instructor or evaluator in group. This would include experience under

part 121, part 135, corporate, and military operations.

Further, in response to United's comment, the FAA adopts its proposal to delete the words "by the certificate holder" from paragraph 3 of "Advanced Simulation Training Program" and to delete the words "with the operator" from paragraphs 2(a) (ii) and (iii) of "Phase II Training and Checking Permitted."

The FAA understands ALPA's concern that instructors and check airmen should be familiar with "company policies and operating procedures." However, as previously stated, the FAA believes that the student entry level of experience required by an approved training program, in addition to the training prerequisites for these individuals in appendix H, and elsewhere under part 121, establishes an adequate level of preparation.

#### *Clarifying Training and Certification Check Requirements for Initial and Upgrading Training for SIC's Upgrading to PIC*

Under the proposed section entitled "Level C, Training and Checking Permitted," the FAA proposed to redesignate paragraph 2(a) as paragraph 2 and paragraph 2(b) as paragraph 3 to clearly distinguish between the prerequisites for initial versus upgrade training and checking. This paragraph restructuring was proposed in order to eliminate the need for the flush paragraph currently at the end of the section.

Current paragraph 2(a) sets forth the prerequisites for training and checking in a Level C simulator for SIC's upgrading to PIC in the same equipment. For example, a pilot serving as SIC in a Boeing 727 upgrading to PIC in the same airplane would have to meet the requirements of this paragraph. Under new paragraph 2, as proposed, these requirements would not change. The pilot would still have to have previously qualified as SIC in the equipment, be currently serving as SIC in an airplane in the same group, and have at least 500 hours of actual flight time as SIC in an airplane in the same group. These requirements are consistent with the definition of upgrade training under Subpart N—Training Program. Section 121.400(c)(3) defines "upgrade training" as the training required for crewmembers who have qualified and served as SIC or flight engineer on a particular airplane type, before they serve as PIC or SIC, respectively, on that airplane.

The requirements of current paragraph 2(b) must be read in conjunction with the final paragraph in

the section to determine that it applies to initial training and checking for SIC's upgrading to PIC in an airplane type in which the pilot has never served as SIC. This SIC has experience in the same group of airplanes, but not in the same airplane to which the pilot wants to upgrade. For example, a pilot serving as an SIC in a Boeing 737 initially upgrading to PIC in a Boeing 727 must meet the requirements of this paragraph.

New paragraph 3, as proposed, would not change this requirement, but would make it easier for the reader to see that it applies to initial training and checking. The pilot would still have to be employed by an operator, be currently serving as SIC in an airplane in the same group, have served as SIC on at least two airplanes of the same group, and have a minimum of 2500 flight hours as SIC in airplanes in the same group. Because proposed new paragraph 3 would refer to "initial" training, the language in the current last paragraph is no longer needed to explain that pilots meeting these requirements may upgrade to another airplane in that group in which that pilot has not previously qualified. The requirements in new paragraph 3 continue to be consistent with § 121.400(c)(1), which defines "initial training" as the training required for crewmembers and dispatchers who have not qualified and served in the same capacity on another airplane of the same group.

The FAA received two comments on its proposed clarifications to initial and upgrade training requirements for SICs under paragraphs (2) and (3) of the section entitled "Level C, Training and Checking Permitted." (Comments received on current flight-hour requirements are discussed below under "Modifying Current Flight-Hour Requirements.")

ATA requested that paragraph 2(c) be reworded as follows: "Is currently serving as second in command in an airplane in the same group as the type airplane to which the pilot is upgrading." It further requested that proposed paragraph 3(c), which would require a pilot to have served as SIC on at least two airplanes of the same group, be deleted.

American concurred with ATA's requested modification of paragraph 2(c) and ATA's suggestion to delete proposed paragraph 3(c). American further proposed, however, adding a new paragraph 5 to address PIC's seeking an additional type rating on an ATP within the same group without meeting flying time experience requirements.

**FAA Response:** The FAA does not agree that removing the requirement in proposed paragraph 3(c) for a PIC initial applicant to have "served as SIC on at least two airplanes of the same group" will yield an adequate level of safety. Removing this paragraph would allow an SIC flying hour credits outside of part 121 operations.

American's comment that additional language be added to allow PIC's to seek an additional type rating on an ATP within the same group without meeting flying time experience requirements may have merit. Although it would be beyond the scope of the proposal to add a new paragraph 5, as American proposes, the FAA believes that the new PIC upgrade language as adopted in paragraph 2 responds directly to this concern.

#### *Modifying Current Minimum Flight-Hour Experience Requirements*

In crafting its proposal, the FAA contemplated whether to propose revising certain flight-hour experience requirements for initial and upgrade training and checking in a Level C simulator. Currently, pilots upgrading from SIC to PIC in equipment in which they have previously qualified as SIC are required to have at least 500 hours of actual flight time while serving as SIC in an airplane in the same group. Similarly, pilots who are initially upgrading from SIC to PIC in other equipment in which the pilot has not been previously qualified, must have a minimum of 2500 hours as SIC in airplanes of the same group as the equipment to which they are upgrading.

The flight hour experience requirements ensure that a pilot has adequate experience in order to upgrade to PIC. These values were established, based on the collective opinions of the FAA and industry members, when appendix H was originally adopted. Since then, industry members have argued that the required hours are excessive. Based on the success of some industry members who have operated under exemptions that provided certain relief of these flight-hour requirements and other specific requirements for upgrade training under Subpart N, the FAA indicated in the NPRM preamble that it may propose, at some future date, to eliminate the 500 flight-hour requirement and reduce from 2500 to 500 the number of flight hours required for initial upgrade training and checking.

In its preamble, the FAA requested comments and additional information that may justify proposing to modify these current flight hour requirements

in a future rulemaking. These comments are discussed below.

ATA proposed that the FAA eliminate the requirement for an SIC to have 500 flight hours in an airplane in the same group and reduce from 2500 to 500 the number of flight hours required for initial upgrade training and checking. ATA recommended that the 500-hour requirement apply to any pilot initially upgrading to PIC regardless of whether the qualification was based on the use of a Level C simulator. If this is not done, the perception will remain, according to ATA, that training and checking in a Level C simulator is inferior to other methods of pilot qualification.

FedEx concurred with ATA.

United commented that there need be no prerequisites for SIC or PIC training or checking in Level C simulators, either initial, upgrade, transition, or recurrent in an airline training program.

American indicated that it has successfully exercised an ATA exemption provision which allows the upgrading PIC, who is previously qualified in the equipment, to train and check in a Level C simulator. Under this exemption there is no requirement for the SIC to possess 500 hours flying time with the operator as an SIC. Further this exemption allows the initial PIC candidate, not previously qualified in the equipment, to possess only 500 hours flying time with the operator as an SIC instead of 2500 hours in two different airplanes of the same group.

ALPA did not agree with the current regulations that allow a pilot to receive initial training exclusively in a Level D simulator without experience prerequisites. According to ALPA, with the possibility of low-time pilots and ab initio candidates being placed in large aircraft in the near future, training needs to be enhanced, and not reduced in quality.

**FAA Response:** The FAA appreciates the invited comments on reducing current minimum flight-hour requirements.

#### *Standardizing Language and Eliminating Obsolete References*

As discussed above, the term "phase" is no longer used to describe the various simulators referred to in Appendix H. Accordingly, the FAA proposed to replace "phase" with "level" wherever it appears and to use the current alphabetical designations for the various levels.

In addition, the FAA proposed to remove the section entitled "Phase IIA Interim Simulator Upgrade Plan for part 121 Operators" as obsolete. For the same reason, it proposed to remove

paragraph 7 of the section entitled "Advanced Simulation Training Program" which references Phase IIA. Under Phase IIA, any part 121 operator could conduct Phase II training for 3 and ½ years from the date it was approved for Phase I in a simulator approved for the landing maneuver under Phase I. The carrier's upgrade plan had to be submitted to the FAA before July 30, 1981. Thus, these provisions are no longer effective.

United supported changing the terminology and also deleting all reference to "Phase IIA." According to United, these changes certainly are appropriate and are supported.

The proposed removal of the obsolete sections is adopted as proposed.

#### *Additional Comments*

The FAA received some comments that are general in nature and that do not specifically reference the proposed amendments.

For example, United proposed deleting the word "Plan" from the title of appendix H since it is no longer, and has not been for many years, a plan.

Simuflite recommended that it would seem reasonable to place simulator and training device requirements in a separate regulatory structure, since it is clear that all segments of the aviation training industry may exercise the permitted simulation training and checking. Simulator standards should stand alone in a rule addressing the use of simulation equipment as appropriate to operations conducted under those rules. The proposed changes should be expanded to clarify that the same training and checking authority in Level C simulators be extended to those part 135 operators who will not be required to comply with subparts N and O of part 121.

ALPA would like to see an additional simulator category, perhaps Level E, which would be a Level D with all aircraft devices such as Traffic Collision Avoidance System, weather radar, Global Positioning Warning System, terrain presentations, and more realistic air traffic control communications. This would add an additional level of reality to pilot training.

*FAA response:* The FAA appreciates all of above comments and believes that they may have merit. In particular, the FAA agrees that there is room for upgrading simulation standards to include special equipment operations such as weather radar and TCAS (integrated where appropriate), and realistic air-to-ground communications (ATC, Weather, Company, etc.). These comments cannot be incorporated into this final rule, however, because they do

not address proposals that have been published for public comment and are therefore outside the scope of the proposal.

In addition, ATA commented that the comment period should have been longer than 30 days to allow for more precise comments and economic analysis.

*FAA Response:* In allotting the 30-day comment period, the FAA was responding to the large number of requests for relief from the aviation industry. The FAA considered it to be in the best interest of safety and the public to expedite the regulation by every means possible. The FAA did not violate any requirements of the Administrative Procedures Act, which does not require specific comment periods for rulemaking.

#### *Regulatory Analysis*

Executive Order 12866 established the requirement that, within the extent permitted by law, a Federal regulatory action may be undertaken only if the potential benefits to society for the regulation outweigh the potential costs to society. In response to this requirement, and in accordance with Department of Transportation policies and procedures, the FAA has estimated the anticipated benefits and costs of this rulemaking action.

The FAA has determined that this rule is not a "significant rulemaking action", as defined by Executive Order 12866 (Regulatory Planning and Review). The anticipated costs and benefits associated with this rule are summarized below. (A more detailed discussion of costs and benefits is contained in the full regulatory evaluation placed in the docket for this rule.)

#### *Costs*

The rule does not impose any additional costs on either part 121 air carrier operators or the flying public. The rule allows certain training practices that the FAA has determined to be safe and efficient methods for training pilots, and it clarifies other portions of appendix H. Thus, the rule does not impose any additional costs because it permits operators to use the least costly methods of training while maintaining an equivalent level of safety for the flying public. Since current training practices could be maintained to current standards under the rule, there is no reduction in aviation safety imposed on the flying public.

#### *Potential Cost-Relief Benefits*

The rule generates potential cost savings benefits estimated at \$21.6

million, in 1992 dollars, over the next 10 years (or \$13.3 million, discounted, using a 7.0 percent rate of interest). These potential cost savings benefits take the form of increased operational efficiency (qualitative) and cost savings (quantitative) to those part 121 operators engaged in initial simulator training, in accordance with appendix H.

The potential cost savings benefits of the rule represent the difference between the costs incurred currently by part 121 air carriers for initial training and checking of SIC pilots and the costs that incurred from the proposal becoming a rule. Currently, certain requirements for initial training and checking of SIC pilots that are not performed in a Level D simulator must be performed in the aircraft. Under the rule, those requirements that are performed in the aircraft in lieu of a Level D simulator can be performed in a Level C simulator. The costs of operating the aircraft for those requirements above the costs of operating the less expensive simulator for those same requirements is the estimated benefit of this rule.

In an effort to derive a cost-relief estimate associated with this rule, several part 121 air carriers were contacted. These air carriers provided the agency with estimated aircraft operating costs per hour, the time needed to train and check pilots for those requirements that, under the present rule, cannot be performed in a Level C simulator, and the number of pilots that it expects to train in the next 10 years.

#### *Potential Operational Efficiency Benefits*

The potential benefits of the rule would be generated in the form of increased operational efficiency. In the full regulatory evaluation placed in the docket, these potential efficiency benefits are presented qualitatively. These benefits are difficult to estimate quantitatively due, at present, to the lack of available cost information.

#### *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 government regulations. The RFA requires government agencies to determine whether rules will have "a significant economic impact on a substantial number of small entities" and, in cases where they will, conduct a Regulatory Flexibility Analysis.

According to FAA Order 2100.14A (Regulatory Flexibility and Guidance), a substantial number of small entities is

defined as a number which is not less than eleven and which is more than one-third of the small entities subject to a proposed or existing rule. A significant economic impact on a small entity is an annualized net compliance cost which, when adjusted for inflation, equals or exceeds the significant cost threshold for the entity type under review.

The entities that potentially would be affected by the rule are small part 121 operators that own, but do not necessarily operate, nine or fewer aircraft. As discussed in the cost section of this evaluation summary, the rule would not impose any costs on these operators because it is cost-relieving in nature. Therefore, the rule would not impose a significant economic impact on a substantial number of small aircraft operators.

#### International Trade Impact Assessment

The rule would have little, if any, impact on the competitive posture of either U.S. carriers doing business in foreign countries or foreign carriers doing business in the United States. This assessment is based on the fact that the rule would not impose any cost on part 121 operators because it is cost-relieving in nature. These operators do not compete directly with air carriers engaged in foreign operations (part 129).

#### Federalism Implications

The regulations contained 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 12866, it is determined that this rule would not have federalism implications requiring the preparation of a Federalism Assessment.

#### 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. The FAA is not aware of, and did not receive any

comments indicating any differences that this rule will present.

#### Paperwork Reduction Act

This rule contains no information collection requests requiring approval of the Office of Management and Budget pursuant to the Paperwork Reduction Act of 1995 (44 U.S.C. 3507 (d)).

#### 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 not significant under Executive Order 12866. In addition, it is certified that this rule 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 rule is not considered significant under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979).

#### List of Subjects in 14 CFR Part 121

Air carriers, Aircraft, Federal Aviation Administration.

#### The Rule

In consideration of the foregoing, the Federal Aviation Administration amends 14 CFR part 121 as follows:

#### **PART 121—OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS**

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

Authority: 49 U.S.C. 106(g), 40113, 40119, 44101, 44701–44702, 44705, 44709–44711, 44713, 44716–44717, 44722, 44901, 44903–44904, 44912, 46105.

2. Appendix H is amended by replacing the words “Phase I”, “Phase II”, and “Phase III” with the words “Level B”, “Level C”, and “Level D” respectively, wherever they appear; by replacing the words “Phase I, II, and III” with the words “Level B, C, and D,” wherever they appear; by replacing the words “Phase II or III” with the words “Level C or D”, wherever they appear; by replacing the words “Phase I, II, or III” with the words “Level B, C, or D”.

3. The section entitled “Advanced Simulation Training Program” in

Appendix H is amended by removing paragraph 7 and revising paragraph 3 to read as follows:

#### Appendix H to Part 121—Advanced Simulation Plan

\* \* \* \* \*

#### Advanced Simulation Training Program

\* \* \* \* \*

3. Documentation that each instructor and check airman has served for at least 1 year in that capacity in a certificate holder's approved program or has served for at least 1 year as a pilot in command or second in command in an airplane of the group in which that pilot is instructing or checking.

\* \* \* \* \*

4. Appendix H, “Phase II, Training and Checking Permitted” is amended by revising the title and paragraph 2 and by adding paragraphs 3 and 4 as follows:

#### Level C

##### *Training and Checking Permitted*

1. \* \* \*
2. Upgrade to pilot-in-command training and the certification check when the pilot—
  - a. Has previously qualified as second in command in the equipment to which the pilot is upgrading;
  - b. Has at least 500 hours of actual flight time while serving as second in command in an airplane of the same group; and
  - c. Is currently serving as second in command in an airplane in this same group.
3. Initial pilot-in-command training and the certification check when the pilot—
  - a. Is currently serving as second in command in an airplane of the same group;
  - b. Has a minimum of 2,500 flight hours as second in command in an airplane of the same group; and
  - c. Has served as second in command on at least two airplanes of the same group.
4. For all second-in-command pilot applicants who meet the aeronautical experience requirements of § 61.155 of this chapter in the airplane, the initial and upgrade training and checking required by this part, and the certification check requirements of § 61.157 of this chapter.

5. Appendix H, “Phase IIA, *Interim Simulator Upgrade Plan for Part 121 Operators*” is removed in its entirety.

Issued in Washington, DC., on May 30, 1996.

David R. Hinson,

Administrator.

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