DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 61, 63, 65, 108, 121, and 135

[Docket No. 25604, Amdt. Nos. 61-88, 108-8, 121-219, 135-37; SFAR-58]

RIN 2120 AC 85

Advanced Qualification Program

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This Special Federal Aviation Regulation (SFAR) establishes a voluntary, alternative method for the training, evaluation, certification, and qualification requirements of flight crewmembers, flight attendants, aircraft dispatchers, instructors, evaluators and other operations personnel subject to the training and qualification requirements of 14 CFR parts 121 and 135. The FAA has developed this alternative method in response to recommendations made by representatives from the government, airlines, aircrew professional organizations, and airline industry organizations. The SFAR is designed to improve aircrew performance and allows certificate holders that are subject to the training requirements of parts 121 and 135 to develop innovative training programs that incorporate the most recent advances in training methods and techniques.

EFFECTIVE DATE: October 2, 1990.

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SUPPLEMENTARY INFORMATION:

Background

On February 22, 1989, the FAA issued Notice of Proposed Rulemaking (NPRM) 89-1 (54 FR 7670). This notice proposed to establish a voluntary, alternative method for meeting the training, evaluation, certification, and qualification requirements for flight crewmembers, flight attendants, aircraft dispatchers, instructors, evaluators and other operations personnel subject to the training and qualification requirements of 14 CFR parts 121 and 135.

Statement of the Problem

14 CFR parts 61, 63, 65, 108, 121, and 135 contain the Federal Aviation Regulations that regulate air carrier training programs and the training and qualification requirements, including applicable certification requirements, for pilots, flight instructors, check airmen and other evaluators, flight crewmembers other than pilots, aircraft dispatchers, and other operations personnel. The most detailed and rigorous training and qualification requirements are contained in subparts N and O of part 121. The last comprehensive changes to subparts N and O were made in Amendment 121-55 issued on December 22, 1969 (35 FR 84, January 3, 1970). Current requirements do not reflect recent advancements in aircraft technology or advancements in training methods and techniques. Certain regulations regarding training, checking, and testing of persons who conduct or support airline operations of advanced technology aircraft are becoming obsolete. The FAA has been accommodating air carrier training needs by issuing exemptions to current training program requirements.

Programmed hours (i.e., the hours of training prescribed in the regulation) in the current regulations are not conducive to the most efficient use of new training methods. In addition, current certification practical test requirements no longer provide for a complete evaluation of the knowledge and skills needed to operate certain new aircraft.

Of special importance is the consensus among industry and government that training should emphasize crew coordination and the management of crew resources. Traditionally, airline training and checking has been weighted toward the pilot in command (PIC) with less stringent requirements for the other crewmembers. This has led to training and checking of pilots on an individual basis, in an environment that is not crew-task oriented. Furthermore, flight crewmember training historically has focused on flying skills and systems knowledge while neglecting factors such as communication skills, coordination and decision making.

Evidence accumulated in the last decade suggests that a high percentage of air carrier incidents and accidents have been caused, at least in part, by a failure of the flightcrew to use readily available resources. National Aeronautics and Space Administration (NASA) studies which were performed over the last ten years indicate that more than 60% of fatal air carrier accidents were not directly related to mechanical failure or lack of pilot skills but rather to a breakdown in cockpit communication. These NASA studies emphasize a deficiency in present recurrent training in skills related to human factors.

The name given to these skills is Cockpit Resource Management (CRM). CRM is generally understood to be the effective use of all resources available to the crew—hardware, software, and all persons involved in aircraft operation—to achieve safe and efficient flight operations. While some airlines have developed CRM programs, certainly not all who could benefit from such programs are doing so. Many who would like to incorporate such training need guidance in developing CRM programs.

In June of 1988, the National Transportation Safety Board (NTSB) issued a Safety Recommendation (A-88-71) on the subject of CRM training. The recommendation stemmed from an NTSB accident investigation of a Northwest Airlines crash on August 16, 1987, in which 148 passengers, 6 crewmembers, and 2 people on the ground were killed.

The NTSB noted that both pilots had received single-crewmember training during their last flight simulator training and proficiency checks and that the last CRM training they had received was 3.5 hours of ground school (general) CRM training in 1983. As a result of its investigation, the NTSB recommended that all part 121 carriers:

> Review initial and recurrent flightcrew training programs to ensure that they include simulator or aircraft training exercises which involve cockpit resource management and active coordination of all crewmember trainees and which will permit evaluation of crew performance and adherence to those crew coordination procedures.

History

On August 27, 1987, the then FAA Administrator addressed the chief pilots and certain executives of numerous air carriers at a meeting held in Kansas City. One of the issues discussed at the meeting focused on flight crewmember performance issues. This meeting led to the creation of a Joint Government-Industry Task Force (Joint Task Force) on flight crew performance comprised of representatives from major air carriers and air carrier associations, flight crewmember associations, commuter air carriers and regional airline associations, and government organizations.

The major substantive recommendations to the Administrator from the Training Working Group of the Joint Task Force were the following: (1) Require part 135 commuters whose airplane operations require two pilots to

comply with part 121 training, checking, qualification, and recordkeeping requirements. (2) Provide for a Special Federal Aviation Regulation (SFAR) and Advisory Circular (AC) to permit development of innovative training programs. (3) Establish a National Air Carrier Training Program Office to provide training program oversight at the national level. (4) Require seconds in command (SICs) to satisfactorily perform their duties under the supervision of check airmen during operating experience. (5) Require all training to be accomplished through a certificate holder's training program. (6) Provide for approval of training programs based on course content and training aids rather than using specific programmed hours. (7) Require Cockpit Resource Management (CRM) training and encourage greater use of Line-Oriented Flight Training (LOFT).

In response to the Joint Task Force recommendation to provide for an SFAR and AC to permit development of innovative training programs, the FAA issued a draft AC and a Notice of Proposed Rulemaking (54 FR 7670, February 22, 1989). The proposed SFAR and AC provided for a voluntary, alternative method for meeting the training, evaluation, certification, and qualification requirements in parts 61, 63, 65, 121, and 135. This voluntary, alternative method is called an "Advanced Qualification Program" (AQP). In effect, the proposed and final SFAR would allow a certificate holder to establish an AQP with training curriculums that depart from current requirements and that take advantage of the most advanced training techniques as long as its AQP meets the SFAR requirements and provides at least an equivalent means of compliance with current regulations in all categories of training and in all subject categories (e.g., windshear and emergency training). Because an approved AQP will build on the present system, it will be as safe as or an improvement on the safety level of the current system. The FAA considered all comments on the proposed SFAR and AC in developing this final rule and the accompanying AC.

Related Advisory Circulars

In addition to the AQP AC developed as part of this rulemaking a number of other Advisory Circulars are relevant and are referred to throughout this document. They are:

AC 120-51 Cockpit Resource Management Training.
AC 120-35A Line Operational Simulations.
AC 120-40 Airplane Simulator Qualification.
AC 120-45 Airplane Flight Training Devices Qualification.

Reorganization of Final Rule

As proposed, section 3 of the SFAR contained almost one-third of the text. For ease of usage, this text is dealt with in sections 3 through 6 of the final rule. Throughout the following discussion of comments, the proposed rule section is referred to when describing comments and the final rule section is referred to where appropriate.

Discussion of Comments

General

Twenty-six persons or organizations submitted comments on the proposed SFAR and the AC. Many submitted multiple comments. Comments were submitted by air carriers, air carrier associations, crewmember associations, commuter and regional airline associations, pilot training centers, equipment manufacturers, and individuals.

Virtually all of the commenters commend the FAA for taking rulemaking action that would allow for innovation in training and encourage CRM training. Most of the commenters raise specific concerns about the proposed SFAR and the draft AC. A discussion of the issues raised by commenters follows.

Task Force Recommendations

The preamble to the proposed SFAR stated that the Joint Task Force recommendations were separated into those that should be incorporated in an SFAR and those that would be incorporated in subsequent rulemaking actions. Five commenters state that the Joint Task Force recommendations were meant to be taken as a whole.

Response: The preamble statement was incorrect. The FAA chose to proceed immediately with the SFAR because the agency lacks the resources to implement all of the Joint Task Force recommendations at once. Also, information obtained from the voluntary programs implemented under the SFAR would be of value to the agency in determining the need for future changes to parts 121 and 135. The FAA will proceed with the other recommendations as resources permit.

Inclusion of Hazardous Materials and Security Training

The preamble to the proposed SFAR stated that, to avoid duplication of effort, an AQP would not be applicable to the training requirements in two specific areas, security training for crewmembers under 14 CFR 108.23 and 121.417(b)(3)(v) and 135.331(b)(3)(v) and hazardous materials training under 121.433a and 135.333. Regarding security training, the FAA stated that efforts were underway to provide an alternative training method similar to the methods proposed under the SFAR. Regarding hazardous materials training, the FAA stated that current requirements already reflected the content-based approach proposed in the SFAR for other training.

Seventeen commenters object to the exclusion of hazardous materials and security training from an AQP. Commenters state that, since current requirements regarding hazardous material and security training require a 12-calendar month cycle, if these areas of training are not included in the rule, far less economic incentive exists to establish an AQP. As one commenter states, an important feature of the SFAR is that higher quality training and appropriate safeguards will allow an increase in the time interval between training sessions beyond the 12-calendar month recurrent training currently required in these two areas. Therefore, if these areas of training are not covered under an AQP, 12-calendar month recurrent training in these areas would remain mandatory and destroy the flexibility and economic incentive for an AQP.

Response: The FAA has reconsidered the proposed exclusion and agrees with the commenters. Hazardous materials and security training will be included under an AQP. Section 208.23(b) concerning security training has been revised to allow for this. The AQP AC has been amended accordingly.

Section 108.23(b) has also been revised to allow flexibility for security training that is conducted under 121.417 or 135.331. Whenever a crewmember who is required to take recurrent security training completes the training in the calendar month before or the calendar month after the calendar month in which that training is required, he is considered to have completed the training in the calendar month in which it was required. This amendment is not related to AQP which otherwise provides the same flexibility for recurrent training. This amendment is being included to allow certificate holders the same flexibility in scheduling recurrent security training as they now have in scheduling other recurrent training under current 121.417 and 135.33.

Planned Hours

Proposed section 3(b)(1) stated that a qualification curriculum must include "planned hours of ground instruction, flight instruction * * * and evaluation." The planned hours would replace programmed hour requirements in part 121 subpart N and, thereby, provide more flexibility while maintaining a concept of appropriate training time needed to cover specific areas of training.

Five comments were received on this subject. One commenter questions whether the term "planned hours" refers only to ground instruction or also to flight instruction. One commenter states that programmed hours should be required to guarantee a minimum level of training. Two commenters state that hourly requirements should not exist and that all training should be objective based. One commenter states that at least planned hours should be required.

Two comments were also received on a related issue. Paragraph 71 of the draft AQP AC states that if an individual is evaluated and does not pass, the individual must complete the planned hours of the curriculum. According to the comments, this appears to be a penalty rather than an effort to train to proficiency.

Response: The "planned hours" in proposed section 3(b)(1) (final rule section 5(a)) refers to both ground training and flight training. The AQP must state how many hours are planned for each type of training; however, in both cases, the training is objective based and, therefore, the number of hours needed for a particular student is flexible—it may take more or fewer hours than what is planned for that curriculum. Ground training continues until the student can show that he or she has mastered the material. Similarly, flight training continues until the student can show that he or she has progressed successfully through the curriculum and demonstrates proficiency in the knowledge and skills needed to serve in a specific crew position for a specific make, model, and series aircraft (or variant). The AQP AC has been rewritten to clarify the requirement.

In response to the related comment on paragraph 71 of the draft AC, the FAA has changed the AQP AC language (paragraph 38(h)) to remove the apparent penalty. If an individual fails a proficiency evaluation, that individual should complete additional training as needed before being administered another proficiency evaluation.

Crew and Aircraft Curriculum Requirements

The proposed SFAR would require that each AQP curriculum specify the make, model, and series aircraft (or variant) and each crewmember position or other position to be covered by the curriculum. Positions to be covered include all flight crewmember positions, instructors, and evaluators, and may include other positions, such as flight attendants, aircraft dispatchers, and other operations personnel.

Nine comments pertain to this requirement. Several commenters state that fleet specific curriculums should not apply to flight attendants and aircraft dispatchers. Several commenters state that differences between variants of a make, model, and series aircraft should be handled by a different curriculum rather than having each curriculum specific to a variant as appropriate. One commenter states that only pilot crewmembers should be included in mandatory participation, and flight engineers should be excluded, since flight engineer training events and devices are different from those for pilots. One commenter states that eliminating traditional categories of training (initial, transition, etc.) will require the same training regardless of previous experience. One commenter requests that flight attendants be included in AQPs as soon as possible. Another requests that an AQP be allowed to cover only flight attendants or aircraft dispatchers.

A related comment concerns elimination of aircraft "groups" in the AQP. This comment states that the "group" concept is still applicable to portions of the AQP AC that refer to specific category/class and powerplants.

Response: The requirement that an AQP curriculum is specific to make, model, series aircraft (or variant) and to duty positions of crewmembers is retained in the final rule as is the provision that it may apply to flight attendants, aircraft dispatchers, and other operations personnel. The curriculum must apply to all flight crewmembers, including flight engineers, in order to incorporate CRM training effectively. It could not apply only to aircraft dispatchers and flight attendants, since a main purpose of an AQP is to develop training programs that emphasize crew coordination. While the FAA agrees with comments regarding the importance of including flight attendants and aircraft dispatchers in an AQP and encourages certificate holders to do so, it is requiring that an AQP apply to flight crewmembers since CRM training for flight crewmembers is the most urgent need. Furthermore, the studies and research being done in CRM have focused primarily on cockpit communications and coordination.

All qualification and continuing qualification curriculums must be aircraft specific because of differences among make, model, and series aircraft (or variant). These differences apply to flight attendants and aircraft dispatchers as well as to flight crewmembers. An AQP establishes proficiency objectives that are aircraft and duty position specific. A certificate holder would be required to establish a separate curriculum for a variant of a make, model, or series aircraft if the FAA determines that knowledge or skills required for safe operation are significantly different and, therefore, require a certificate holder to provide additional training or other qualifications for crewmembers and dispatchers who operate the variant aircraft. For example, if an individual moves from one aircraft to another, to a variant design configuration of an aircraft make, model, and series, or from one crewmember position to another, that individual would be subject to the qualification requirements of the specific curriculum. However, an individual would not be required to repeat any common requirements of curriculums in which he or she has already achieved proficiency. The AQP would allow the certificate holder to select from a curriculum those modules for which the individual must achieve proficiency to be qualified under a specific curriculum. Hence, the concept of an aircraft- and duty position-specific curriculum incorporates traditional differences and transition training. The AQP does not require redundant training where proficiency has already been achieved.

The FAA's purpose as stated in the preamble to the proposed SFAR is to eliminate all references to aircraft groups as defined in § 121.400. The AC contains no such references.

Frequency of Training

The proposed SFAR in Section 3(c)(1) would require continuing qualification curriculums which must include a continuing qualification cycle with, initially, a 26-calendar month limit. During this continuing qualification cycle, each person qualified under an AQP must receive a balanced mix of training and evaluation in all events and subjects that were required for original qualification. The continuing qualification cycle duration may be

extended by approval of the Administrator in 39-calendar month increments to a maximum cycle of 39 calendar months.

Under the proposal, each continuing qualification cycle must include recurring training sessions at a training facility for each person qualified under an AQP. The frequency of the sessions must be approved by the Administrator. Initially, the frequency could not exceed 13 months. Thereafter, upon demonstration that an extension is warranted, the Administrator could approve an extension in 3-month increments to a maximum of 26 months.

Seventeen comments were received on these proposed requirements, specifically on (1) the interval between recurring training sessions; (2) the overall duration for a continuing qualification cycle; and (3) the maximum 3-calendar month increments by which the intervals between recurring training sessions and the duration of continuing qualification cycles could be extended.

- Several commenters object to the 3-calendar month increment limit on extensions, stating that 6 calendar months would be more reasonable given the effort required to prove that an extension is warranted. Some commenters want no limit on increments for extending the intervals between recurring training sessions and the duration of continuing qualification cycles.
- Some commenters want no limits on continuing qualification cycles or the intervals between training sessions. They prefer that recurrent training be based solely on maintaining proficiency as evaluations indicate a need.
- Some commenters maintain that the 3-calendar month increment was too conservative since carriers have obtained exemptions that extended recurrent qualification steps by 6 calendar months, without any degradation in safety.
- Several commenters, including pilot and flight engineer associations, object to extending recurrent qualification limits.
- Several commenters are concerned that justifying an extension might be hard to do. These commenters are uncertain how they would show no loss of knowledge or skills. Other commenters question how air carriers could demonstrate no degradation in safety. One commenter believes that the FAA should eliminate extension provisions from the SFAR until the FAA has established rigid criteria for approving extensions.
- Specific issues concerning continuing qualification are (1) whether the requirements for recurrent training at a facility preclude home study; (2) whether new hires and new aircraft would be treated more restrictively; and (3) whether the language in proposed § 3(c)(1) should be changed from "the frequency of these recurring sessions" to "the intervals between recurring sessions."

Response: With a minor exception, the final rule retains the continuing qualification cycle duration as proposed. None of the comments raise significant issues that would warrant changes to the proposed requirements. The initial maximum limit on the duration of intervals between recurring training sessions is basically the minimum requirement in part 121 and part 135 now, including the exemptions issued for PIC proficiency checks.

However, the rule language and the AQP AC have been revised to clarify the relationship of the duration of the continuing qualification cycle and the maximum duration of the interval allowed between training sessions.

The final rule (Section 6(b)(1)) states that each continuing qualification cycle must include at least one evaluation period. During an evaluation period each person qualified under an AQP must receive at least one training session at a training facility. Also, each person qualified under an AQP must complete a proficiency evaluation as required under SFAR Section 6(b)(3), and each PIC must complete an online evaluation as required under SFAR Section 6(b)(3). An individual's proficiency evaluation may be accomplished over several training sessions if a certificate holder provides more than one training session in an evaluation period.

Section 6(c) states the duration of a continuing qualification cycle and evaluation period. Initially, a continuing qualification cycle may not exceed 26 calendar months, and the evaluation period may not exceed 13 calendar months. Increments for extending the duration and maximum limits remain as proposed.

The AQP AC has also been revised to be consistent with the SFAR and to provide guidance in structuring a continuing qualification curriculum in the interest of efficiency and safety. In accordance with the methodology for curriculum development recommended in the AQP AC, proficiency objectives to be evaluated during a cycle may be divided between critical and non-critical proficiency objectives. All critical proficiency objectives, as approved by the Administrator, would have to be evaluated within an evaluation period, while non-critical proficiency objectives could be evaluated periodically over the longer duration of the continuing qualification cycle. While this level of detail is not specified in the rule, the rule language allows for more efficient structuring of evaluation curriculum segments.

The purpose of a continuing qualification cycle is to provide flexibility with reasonable time limits. If either an evaluation period or a continuing qualification cycle is extended by 3 calendar months with approval by the Administrator, and proficiency evaluations thereafter indicate no loss of proficiency, then the extension is more efficient without any degradation in safety. If there is a loss of proficiency, then the certificate holder would resume its previous frequency for recurrent training and proficiency evaluation.

Concerns of commenters regarding justification for extension of an evaluation period or continuing qualification cycle are unfounded. Rigid criteria for approval of an extension are not necessary, since analysis of data collected from training and from evaluations required by the SFAR will provide continuous monitoring of the proficiency of the persons being trained and evaluated. No extensions will be approved unless collected data supports justifying an extension. The FAA considers the 3-month limit on extensions appropriate for careful monitoring of the effect of an extension on proficiency. Since an applicant will be continuously collecting proficiency data, the 3-month limit does not impose an unreasonable burden.

In response to specific comments: (1) The requirements for training under a continuing qualification curriculum do not preclude home study as long as home study has been approved as part of an AQP curriculum; (2) new hires and new aircraft would be treated more restrictively as indicated in the AQP AC, since neither the certificate holder nor the FAA in such cases would have a valid basis to justify extending evaluation periods or continuing qualification cycles; (3) the concept of evaluation periods corrects the terminology problem in "frequency of recurring sessions."

Data Collection and Recordkeeping

Proposed SFAR Section 4(c) would require that each qualification and continuing qualification curriculum include data collection procedures. Data collected from crewmembers, instructors, and evaluators will enable the FAA to determine whether the training and evaluations accomplish the overall objectives of the curriculum.

Acceptable guidelines for data collection are set forth in the AC. Proposed Section 9 would require that an applicant for an AQP establish and maintain records in sufficient detail to establish the training, qualification, and certification of each person qualified under an AQP. The AC specifies acceptable guidelines for establishing and maintaining such individual records.

As proposed and in the final rule, data collection and recordkeeping are two separate functions. The data submitted to the FAA for analysis and validation must be submitted without names or other elements that would identify an individual or group of individuals. This data will be analyzed by the FAA to monitor the effectiveness of AQP training, to determine the validity of requests for extensions of training intervals and cycles, and to monitor the effectiveness of CRM training. Individual recordkeeping by certificate holders is needed to show whether or not each crewmember, aircraft dispatcher, or other operations personnel complies with the applicable requirements of the FAR and this SFAR; e.g., qualification training, qualifications, required physical examinations, flight and duty time records, and frequency of training and evaluation.

Twelve comments were received on data collection and recordkeeping. Generally these comments show concern that the burden of data collection and recordkeeping might offset any advantages of participating in an AQP.

Response: There can be no AQP without data collection and without records on individual crewmembers, aircraft dispatchers, and other operations personnel. The FAA can only evaluate the validity of a certificate holder's AQP through the collection of data. The certificate holder must collect the data and make that data accessible, without identifying individuals, to the FAA's Air Carrier Training Branch for analysis and evaluation. The individual crewmember, aircraft dispatcher, and the other operations personnel records are to be maintained by a certificate holder, because without them there would be no record of these persons' qualifications and continuing qualifications. Thus, the requirement for individual records that must be maintained under an AQP remains the same as under present § 121.683.

The data collection requirements and recordkeeping requirements (final rule Sections 7(c) and 12) are the same as those proposed; however, the AC (Chapter 9) has been rewritten in light of specific comments to clarify the overall program validation purpose of data collection and recordkeeping functions and to establish an acceptable approach for meeting the requirements. The AC provides guidance for validation of an AQP through approval and documentation of activities throughout the development, implementation, and continuing operation of an AQP; FAA analysis and evaluation of anonymous performance/proficiency data collected by the applicant; and establishment and maintenance of individual qualification records.

Specific comments relating to data collection and recordkeeping requirements and FAA responses are as follows:

- *Comment:* Data may be used in a punitive way against an airman. *Response:* The data submitted to the FAA for analysis must not be traceable to an individual. This point has been clarified in the AC.
- *Comment:* Once a program has been validated, data should be destroyed. *Response:* The FAA is not requiring that data be destroyed after validation. Since the data is not identified by individual, destruction of it after some point would be a matter of efficiency, and does not need to be regulated.
- *Comment:* Data collection requirements should provide a method for a trainee (and instructor) to show to the approving authority his or her perception of the effectiveness of an AQP. *Response:* The FAA agrees that this would be worthwhile. A certificate holder may use an anonymous questionnaire to accomplish this. The FAA is not specifically requiring this feedback method because it is only one of many methods for evaluating a program.
- *Comment*: It may be impossible to show by data collection and analysis that an AQP curriculum maintains or exceeds past levels of crewmember competency. *Response*: The FAA recognizes that raw data alone may not indicate clearly whether an AQP curriculum maintains or exceeds past levels of crew competency. However, the FAA believes that, when analyzed, the data collected by the certificate holder will indicate trends and will provide the basis for making necessary judgments about the effectiveness of an AQP program.
- *Comment*: Once a program is validated, the data requirements should be reviewed to determine if continued collection is needed. *Response*: The FAA agrees and will do so.
- *Comment*: Duplication of recordkeeping will occur if the training center and certificate holder are both required to maintain records on airmen. *Response*: The certificate holder is responsible for ensuring that adequate records will be established and maintained. The training center could be authorized to maintain such records under the supervision of the certificate holder. Thus, duplicate records are not required.
- *Comment*: Certificate holders should not be required to keep records on training center airmen. *Response*: Neither the SFAR nor the AC requires them to do so.
- *Comment*: Certificate holders who have an approved computerized recordkeeping system under part 121 should not be required to establish a separate system. *Response*: The FAA will not automatically approve any particular computerized systems under the SFAR. However, the FAA will accept automated systems provided they adequately follow AQP AC guidelines. In some cases this may require enhancement of an existing system.
- *Comment*: The FAA should state why present basic records are not sufficient. *Response*: Present basic recordkeeping requirements are not based on proficiency training and evaluation within a continuing qualification cycle. Therefore, some changes are needed. However, the AQP recordkeeping requirements are fundamentally the same as the present requirements.
- *Comment*: Only training records should be maintained, not flight time records. *Response*: The specific reference to flight time records has been deleted from the AC (paragraph 182) since a certificate holder may choose to keep flight time records in another system while maintaining currency records in the AQP recordkeeping system. Records that pertain to qualification and continuing qualification must be maintained. This includes currency records, since currency is part of continuing qualification. Flight time records are currently required in accordance with §§ 121.683 and 135.63. The AQP SFAR recordkeeping requirements do not establish new requirements for a separate recordkeeping system for certificate holders who conduct both training and qualification in accordance with the requirements of part 121 or part 135 and the requirements of the AQP SFAR. However, in such cases a certificate holder may elect to maintain a separate recordkeeping system. With respect to flight time records, regardless of whether or not a certificate holder elects to conduct its crewmember training and qualification under an AQP

or under typical part 121 or part 135 training programs, it must maintain flight time records for applicable crewmembers in sufficient detail to show compliance with the applicable FAR.

• *Comment*: In the AQP AC, the record requirements mix personnel and scheduling records with training records. *Response*: The FAA does not agree that AQP AC does this. The AQP AC provides guidance for one means of compliance with AQP SFAR requirements and related FAR requirements. A certificate holder may develop an alternative means of compliance if it can show that the alternative means of compliance is equivalent to that described in published advisory material.

• *Comment*: The requirement in the draft AC that records for individuals who qualify under an AQP be maintained for 36 calendar months is too restrictive. *Response*: The AQP SFAR recordkeeping requirements do not provide for a particular retention period for these persons' individual records. Section 12 of this SFAR states, in pertinent part, that each certificate holder shall show that it will establish and maintain records in sufficient detail to establish the training, qualification and certification of each person qualified under an AQP. In addition, the AQP AC does not provide for a particular retention period for these records. The AQP AC merely provides guidance to certificate holders on how to document in these persons' individual records that they are qualified under an AQP. The 36 calendar-month records retention period in the AQP AC is merely a guideline. However, it should be noted that certificate holders who elect not to retain detailed individual records may lose some of the flexibility and efficiency that AQPs are capable of providing.

• *Comment*: Draft AQP AC paragraph 116(2) should indicate that the format of an AQP record will differ from the record of an airman who qualified for a position under a subpart N training program. *Response*: There is no reason to mention format differences in the AC. The guidance paragraph in question states only that records should "show the result and completion date of other training and qualification that permitted an individual to advance to his current assignment." (Paragraph 184(c) of final AC.) The format of these other records may or may not differ from AQP records format.

CRM

Section 4(b) of the proposed SFAR (final rule section 7(b)) states that "each curriculum must include training and evaluations" in CRM skills. Fourteen of the comments address the subject of CRM, and while none of these commenters objects to the inclusion of CRM in an AQP, most raise questions concerning the specifics of CRM training. Five commenters object to the requirement for evaluation of CRM training. These commenters maintain that objective criteria for evaluating CRM have not been established and further that CRM training is most effective in changing behavior when it is not evaluated.

Response: FAA has stated in the accompanying AQP AC nine elements that are appropriate in a CRM session. Initially, a participant in a CRM session would not be subject to a pass/fail decision. However, once data have been collected to validate the effectiveness of CRM training sessions, the FAA believes that objective criteria for evaluation can be developed. After that objective criteria is established, it will become part of qualification and continuing qualification curriculums. An evaluation of a CRM session will result in feedback to each participant and, as appropriate, additional individual or group training will be required.

One commenter provides suggestions concerning the availability of specific participant records and suggests several techniques that could be used to achieve maximum protection of individuals.

Response: While initially there will be no evidence in a person's file that could be interpreted as a failure of a CRM session, an individual's record would reflect that additional training in particular areas was considered necessary as a result of a CRM evaluation. However, once the FAA has developed objective criteria for evaluating CRM performance of an individual, the criteria will be used in determining whether an individual is qualified, including certification, and meets continuing qualification requirements. Thus, when CRM objective criteria are fully implemented, it will be possible for an individual to fail a CRM session.

Several of the commenters that generally support the inclusion of CRM training in each AQP suggest the need for regular renewal of CRM scenarios, and the need to make CRM a general requirement beyond the SFAR. Those commenters also suggest using the highest level of flight simulator for Line Operational Simulations and giving instructors and evaluators additional training in teaching and evaluating CRM and Line Operational Simulations.

Response: Imposing CRM as a general requirement would be beyond the scope of this rulemaking. While other suggestions are valid, the FAA does not agree that specific additional requirements should be added to the SFAR. The FAA expects that as certificate holders gain more experience in conducting CRM training, some of these suggestions may be incorporated into FAA advisory material.

PIC Online Evaluation

Proposed section 3(c)(4)(ii) states in part that for a PIC, "An online evaluation in an aircraft must be completed within 30 days of either side of the midpoint between recurring training sessions."

Nine comments were received on this proposed requirement. Most suggest that the provision for flexibility be based on the "calendar month before/calendar month after" concept now used generally in the FARs, since this provides greater flexibility and is easier to track under the systems already in use by most certificate holders. Several commenters also state that, as written, the proposal could require more frequent checks than under the present rules, since it requires an online evaluation at the midpoint between recurring training sessions.

Response: The FAA agrees that the "calendar month before/calendar month after" concept in the present rules could effectively be used here, and this section of the SFAR (section 6(b)(3)(ii)(A)) has been changed accordingly. This section has also been revised to clarify the FAA's intent that an online evaluation must occur at or near the midpoint of a PIC's evaluation period.

One commenter questions whether the FAA intends this requirement to replace the traditional line check requirement.

Response: The FAA's intent is that the required online evaluation would replace the line check. Because persons other than the PIC would be evaluated at the same time, the SFAR requirement is actually broader than the traditional line check.

A related issue raised by four commenters concerns section 3(c)(4)(iii), which proposed to require that during a PIC online evaluation, the second in command and flight engineer also must be evaluated. Commenters question (1) what criteria would apply to the flight engineer and SIC evaluations; (2) whether this is a new requirement; and (3) whether the evaluator would have to have a flight engineer rating in order to evaluate the flight engineer.

Response: This is a new requirement. Section 5(b)(3) of the SFAR states that evaluators must have appropriate training and evaluation to qualify a

person to evaluate on a particular make, model, and series aircraft (or variant). AC paragraph 40(c)(3)(ii), as clarified, states that "an evaluator for an online evaluation will hold the airman certificates and ratings for all individual positions being evaluated." The specific criteria for evaluating these other crew positions during the PIC online evaluation are not provided in the AC. This criteria will be developed by the certificate holder for FAA approval as part of the continuing qualification curriculum.

Certification under an AQP

Two commenters object to the limitation stated in the preamble that initially certification under proposed SFAR section 5 would be limited to pilots who hold a commercial pilot certificate with an instrument rating. One commenter states that it understood that the SFAR would also include certification for flight engineers and aircraft dispatchers.

Response: The rule language is not limited as assumed by the commenters. The preamble language referred to by these commenters states that initially certification under an AQP will be "limited to pilots who hold a commercial pilot certificate with an instrument rating, because the FAA has not yet developed appropriate criteria to serve as a basis for obtaining a commercial pilot certificate." However, the preamble further states that, until these criteria are developed, the FAA will review any certificate holder's request for commercial pilot certification under an AQP on a case-by-case basis. The FAA will also treat requests for flight engineer and aircraft dispatcher certification under an AQP on a case by case basis.

Proposed section 5(a) allows a person enrolled in an AQP to receive the required certificates or ratings under an AQP if certain requirements are met. One requirement is that "training and evaluation of required maneuvers and procedures under the AQP must meet minimum certification and rating criteria established by the Administrator * * *"

Five commenters thought that the criteria should be established by the certificate holder and approved by the Administrator.

Response: The language of § 8 of the final rule has been changed from required maneuvers and procedures "to knowledge and skills." The revised language is more appropriate since the regulation also applies to flight engineers and aircraft dispatchers. Also section 8(a) has been clarified to show that the applicant for certification must meet minimum certification and rating criteria in parts 61, 63, and 65. The Administrator may accept substitutes for the practical test requirements of those parts, as applicable. Guidelines for developing substitutes for the practical test are set forth in chapter 4 of the AC. The operator should show that substitute practical tests provide individual proficiency equivalent to or greater than that provided by the practical tests described in parts 61, 63, and 65 of the FAR.

One commenter expresses concern that the AQP would allow a flight engineer applicant who is the holder of a commercial pilot certificate with an instrument rating to satisfy the aeronautical experience or skill requirements of part 63 under an AQP and thereby reduce the requirements for a Flight Engineer certificate.

Response: The concern expressed is not valid; any certifications that occur under an AQP will meet the aeronautical experience requirements of part 63 and performance standards equivalent to or greater than existing standards, thus ensuring that there is no reduction in safety.

Flight Simulators and Flight Training Devices

Proposed section 6 stated that a person who wishes to use a flight training device or flight simulator must request that the Administrator evaluate the flight training device or flight simulator to assign a qualification level to it. Each flight training device or flight simulator to be used in an AQP must be evaluated for a certain qualification level and also approved for its intended use in a specified AQP. Furthermore, each flight simulator or flight training device must be part of a flight simulator or flight training device continuing qualification program. Specific guidelines for flight simulator and flight training device evaluation, approval, and continued qualification are set forth in the AQP AC.

Ten commenters address the issue of flight simulators and flight training devices. Only one commenter is in favor of the requirement as proposed. Certificate holders who commented are concerned that the draft AQP AC and the proposed SFAR would mandate more restrictive flight simulator requirements than those currently in effect. In general, these commenters express confusion about the FAA's intention, particularly since the preamble to the proposed SFAR states that the advisory material on approval and evaluation of flight simulators and flight training devices will appear either in the AQP AC or in ACs being developed by the FAA. The draft AQP AC lists as guidelines for evaluation AC 120–40 and AC 120–45. One commenter requests that since the AQP AC references the other ACs, drafts of the others should be published for public review. Commenters also raise technical questions referring to specific portions of the draft AQP AC.

Response: To clarify the FAA's intention, the final rule and the AC have been changed. Section 9 of the rule differentiates between: (1) Flight training devices and flight simulators that will be used in an AQP for: (a) Evaluation, (b) training sessions that assess whether an individual is ready for evaluation, (c) meeting currency requirements, or (d) Line Operational Simulations (LOS); and (2) training devices that are used for other than the purposes listed in (1) above.

Flight training devices and flight simulators to be used for any of the listed purposes must be evaluated by the Administrator and assigned a qualification level in accordance with the criteria set forth in AC 120–40, as amended, and AC 120–45, as amended.

Under these procedures, the FAA's National Simulator Program Manager (NSPM) will evaluate and, if warranted, recommend approval of a flight simulator or flight training device for a specific level of simulation. The recommendation will be submitted to the Air Carrier Training Branch for appropriate action. Final approval will include the level of simulation, the flight training maneuvers and procedures allowed for airman certification (training, currency, and evaluation), and the specific AQP in which it can be used. Levels of simulation that are hybrids of two levels contained in ACs 120–40 and 120–45 will be considered. All flight training devices and flight simulators that have been qualified and approved for a certificate holder's specific AQP use must also be part of, and maintained under, the certificate holder's continuing qualification program.

Training devices to be used in an AQP for other than the listed purposes must be approved by the Administrator. An applicant for approval of such a training device must identify the device by its nomenclature and describe how it would be used. If the device and its use are approved, the device must be part of a continuing program to provide for its serviceability and fitness to perform its intended functions as approved by the Administrator.

These training equipment requirements are for the most part a continuation of present policy on flight training devices and flight simulators.

Training devices and simulators currently qualified as flight training devices and flight simulators by the FAA may be used in approved AQPs at their current qualification level without completing an additional qualification evaluation.

The FAA does not consider the inclusion of detailed charts in the AQP AC as a limiting factor on the overall process. An applicant can assume that, for the listed maneuvers and procedures, the FAA has indicated a range of classification levels for flight training devices or flight simulators that is acceptable. However, as set forth in the AQP AC, an applicant continues to have the option of requesting approval of alternatives, whether or not these alternatives are within the range set forth in the AQP AC charts.

Incentive to Participate

Several commenters point out that since participation in an AQP is voluntary, certificate holders will participate only if opportunity for innovation is allowed. These commenters are concerned that the proposed SFAR and AQP AC are too structured. One commenter stresses the need for clarity in the regulations; another expresses a concern that excessive data collection requirements would discourage participation.

Response: The FAA agrees with the need for clarity in this, as in all of its regulations and has tried to simplify and clarify this final rule whenever possible. Similarly, the FAA has required, and will continue to require, as little paperwork, recordkeeping, and data collection as possible. However, since the ultimate success of the AQP concept will depend on the success achieved by those who sign up initially, the FAA will need data adequate to validate individual programs and the overall concept.

The FAA recognizes that the details contained in the draft AQP AC may have caused some commenters to conclude that AQP is highly structured and therefore might not allow for as much innovation as they envisioned. However, a certain amount of detail in the AC is imperative to provide eligible certificate holders with an opportunity to participate. The AC recommends methods and procedures at a level of detail enabling successful implementation. This does not prohibit some certificate holders from designing their own program in ways that depart from the acceptable methods and procedures contained in the AQP AC. The FAA can approve such a program as long as the applicant can show that the proposed AQP is consistent with the AQP SFAR requirements and that any deviation from the guidance contained in the AQP AC is acceptable.

The AC has been revised to provide more detailed guidance for an acceptable AQP development and maintenance methodology that will allow for innovation through systematic development and approval of an AQP.

Training Centers

Proposed SFAR section 8 and chapter 9 of the draft AQP AC establish requirements and acceptable standards for a certificate holder who uses a training center to conduct any of its AQP training, and requirements and acceptable standards by which a training center may obtain provisional approval of an AQP curriculum. Several commenters identify concerns with the proposed SFAR and AQP AC on this subject.

- One concern is that under the proposed SFAR only a certificate holder is eligible to obtain approval of an AQP, and many training centers are not certificate holders. One commenter requests that all references to a certificate holder throughout the SFAR include the additional words "or a training center that qualifies under this SFAR."
- One commenter states that the requirements in proposed section 8 (a) and (b) are basically directed at certificate holders, not training centers. Training centers that are not certificate holders need a prescribed method of training and qualifying airmen. Neither the existing regulations nor the proposed SFAR addresses this issue. Qualifying airmen employed by a training center by the same methods required for certificate holder airmen is not workable.
- According to one commenter, a non-certificate holder training center should be eligible for obtaining approval of extensions of its continuing qualification cycle. The proposed SFAR language limits extensions to certificate holders.
- One commenter thinks that qualifying training centers should be authorized to give AQP training only if the training is identified with a specific part 121 or part 135 certificate holder. Training in the certificate holder's AQP should be required for instructors and evaluators employed by the training center. Also a certificate holder should be required to provide differences training for any differences between a training center's training equipment and the certificate holder's.
- One commenter expresses concern that since the proposed SFAR restricts eligibility of certificate holders who operate under part 135 to those who are required to have an approved training program under § 135.341, all single-pilot certificate holders would be prevented from using an AQP. While such a certificate holder would probably not develop its own AQP, it might want to use a training center's AQP curriculum for a particular aircraft.

Response: Eligibility for an AQP is targeted to certificate holders who are required to have an approved training program under § 121.401 or § 135.341. Under Section 11(a) of the SFAR a certificate holder may arrange to have AQP training, qualification, or evaluation performed by a training center if the training center's curriculum (segments and portions of segments) have been provisionally approved by the Administrator. The final rule makes clear that a training center may obtain provisional approval either independently or ir conjunction with a certificate holder that is applying for an AQP.

A training center must apply for provisional approval and must show that it has: (1) A curriculum for qualification and continuing qualification for each instructor or evaluator employed by the training center; (2) adequate facilities for any planned training; (3) curriculums (segments or portions of) specific to make, model, and series aircraft (or variant), and specific to crewmembers or other positions. (Section 11(b)(1), (2), and (3)).

Once a training center's curriculum (segment or portion) has been provisionally approved, it must be tailored to a certificate holder's specific needs before it is eligible for approval as a certificate holder's AQP curriculum. (Section 11(a)(2)).

A training center is limited to provisional approval of a curriculum. The qualification and continuing qualification curriculum it develops for its instructors and evaluators must be approved and must provide instructor and evaluator qualifications for AQP training and evaluator duties but will not be considered an AQP curriculum. However, approval of instructor and evaluator curriculums will allow a training center to develop curriculums according to the AC guidelines and to utilize the AQP qualification and continuing qualification concepts. To clarify that AC guidance applies to training centers as well as certificate holders, the AC material now addresses, where appropriate, the "applicant" rather than the "certificate holder" or "operator."

The proposed section 8(b)(1) (now section 11(b)(1)) has been changed by

requiring an applicant for provisional approval to have a curriculum for instructors and evaluators, rather than an "approved" curriculum, since approval of a curriculum would be part of the provisional approval process.

The AC (Chapter 6) has been revised to provide guidelines to training centers in the methodology they should use to obtain provisional approval.

The SFAR does not require that each instructor or evaluator in a training center complete a full indoctrination program for each certificate holder for which the training center conducts training. Rather, a training center that provides training for a number of part 121 or part 135 certificate holders can develop a generic indoctrination program and specify the elements appropriate to each certificate holder. When the Administrator gives approval to a certificate holder to use a provisionally approved training center curriculum as part of the certificate holder's AQP, the Administrator's approval is equivalent to an "initial" approval under § 121.405 or § 135.325, as applicable.

The SFAR does not prevent a certificate holder that uses only one pilot in its operations under part 135 from developing a training program using the guidelines contained in the AQP AC (or using a training center's AQP-type program).

To clarify the status of training centers and training center employees, the applicability sections of both parts 121 and 135 (§§ 121.1 and 135.1) have been amended to make it clear that training centers and their employees are subject to the applicable rules of these respective parts when they seek to and actually perform services for certificate holders. Thus, a training center and its employees would be in much the same status as a maintenance facility that provides service to a part 121 or part 135 certificate holder. However, the fact that a training center can bring itself and its employees within the jurisdiction of part 121 or part 135 by seeking provisional approval of a curriculum does not make the training center a certificate holder nor does it ensure the training center that its services will be sought by a certificate holder. Furthermore, as indicated previously, provisional approval of a curriculum does not ensure that that curriculum will automatically be approved for use by a certificate holder, if a certificate holder applies to use that provisionally approved curriculum in its AQP. In most cases specific tailoring to the certificate holder's needs will be necessary.

Submission to District Offices

Application for approval of an AQP (proposed section 7(a); final rule section 10(a)) and application for provisional approval of a curriculum by a training center (proposed section 8(a)(1); final rule section 11(a)(1)) must be made to the appropriate FAA Flight Standards District Office.

Three commenters question the need for referencing the Flight Standards District Office. One states that it confuses the process since the Administrator is mentioned also. The other states that internal FAA organizational structure is not normally addressed in the rule and that there is no reason for an exception in this case.

Response: With respect to the approval authority, the commenters are technically correct. This authority is vested in the Administrator unless the Administrator delegates the authority to another person. Since "Administrator" is defined in 14 CFR part 1 to mean the Administrator "or any person to whom he has delegated authority in the matter concerned," it is not necessary to state the level of delegation within the rule. However, there are numerous places (e.g., §§ 121.358(b)(1), 121.77(b) and its proposed successor § 119.41(c)) where the present regulations are more specific because the FAA wants to ensure that initial contact is with the appropriate FAA local office.

Five-Year Termination

Five comments were received on the proposed expiration date of the SFAR in proposed section 10 (final rule section 13). All five comments state that an expiration date 5 years after the effective date is not long enough to prove the effectiveness of an AQP, especially considering the effort involved in development, approval, and validation of an AQP curriculum.

Response: The FAA believes that 5 years is long enough to determine effectiveness of approved AQPs.

Instructor and Evaluator Qualification

Ten comments were received on the qualification and continuing qualification requirements for instructors and evaluators. Issues raised and FAA responses are as follows:

• Section 2 defines an "evaluator" as a person who meets and maintains all of the qualifications under the AQP for an instructor * * *" Several commenters point out that this requires that an evaluator must always be a qualified instructor. However, air carriers use line check pilots and initial operating experience check pilots who have never been flight instructors or evaluators.

Response: The FAA acknowledges that evaluator qualification requirements may not include all instructor requirements. For example, a person who has served as an instructor, an evaluator, or both in one make, model, and series aircraft could be an excellent evaluator in a similar aircraft without being fully qualified as an instructor in the second aircraft. Therefore, the rule and AQP AC have been changed to allow qualifying evaluators not otherwise qualified as instructors.

• Proposed section 3(b)(2) (ii) and (iii) set forth qualification curriculum requirements for instructors and evaluators. Several commenters requested that these requirements be broadened to include flight simulator, classroom, flight attendant, and dispatcher instructors. One commenter asks if the SFAR permits the use of flight simulator only instructors.

Response: The SFAR language (final rule section 5(b) (2) and (3)) has been broadened to permit the use of flight simulator, classroom, flight attendant, and dispatcher instructors, provided the FAA has approved the qualification standards under an AQP and the instructor meets those standards.

• One commenter stated that Line-Oriented Flight Training (LOFT) for 3 person crews must use instructors and evaluators that are active line qualified airmen.

Response: This rule and its accompanying AQP AC do not spell out prerequisites for instructors and evaluators conducting Line Operational Simulations (which includes LOFT). General guidance will be supplied in a Line Operational Simulations AC.

• One commenter says there is a problem with proposed section 3(c)(3)(iii) which requires instructors and evaluators who are limited to conducting their duties in flight simulators and flight training devices to have appropriate proficiency instruction in a flight training device or flight simulator on normal, abnormal, and emergency flight procedures and maneuvers. According to the commenter this would not teach an instructor or evaluator what he or she needs to know such as how to operate an instructor's console in a jump seat position. Proposed paragraph (c)(3) also requires recurring instruction for instructors and evaluators once every 26 calendar months. As proposed this instruction would be in a flight simulator and flight training device on normal, abnormal, and emergency flight procedures. This commenter states that instructors would not need recurring instruction in

procedures and maneuvers which they teach. The instruction itself should count as recurrent training.

Response: The FAA does not agree that instructors and evaluators have no need for training under a continuing qualification program in the procedures that they instruct or observe as instructors and evaluators. There is always a need to be kept current in changes in procedures, or equipment, or both. With respect to the commenter's concern that the SFAR does not require that the instructor or evaluator be trained in operating an instruction console in a jump seat position, the FAA points out that the SFAR does not duplicate all of the present FAR requirements. Sections 121.413 and 135.339 or alternative AQP requirements would ensure that each instructor or evaluator will be qualified in appropriate instruction or evaluation techniques, including operation of a console.

Flight Instruction and Evaluation Tables

The draft AQP AC presents flight instruction and evaluation tables in chapter 4, "Qualification Curriculums." Nine commenters raised questions about these flight instruction/evaluation events tables. Virtually all commenters question the appropriateness of using these tables to impose more restrictive requirements than are in the present rules. Several point out that if a carrier did not have the level of flight simulator required by these draft tables, pilots would have to perform potentially dangerous maneuvers in an airplane. They question the appropriateness of making flight simulator use less available than under present rules. Several state that if the tables are retained (and at least one commenter thinks they should be eliminated) then further introductory language is needed to explain how the tables work. The consensus of the commenters is that the tables should not be viewed as minimum standards but rather as acceptable standards. That is, that use of a media as shown in the tables is automatically approved but that to quote one commenter, "use of media outside the indicated range would be authorized if satisfactorily justified."

Response: The FAA's intent is as recommended by these commenters. The tables are intended as acceptable standards, that is, if an AQP applicant uses the tables, the applicant is assured that in this area its application will be approved automatically. However, an applicant is free to propose utilization outside the charted ranges of qualification levels. FAA approval of utilization outside the charted range will depend upon adequate justification. The AC now clarifies this intent. In reorganizing the AC, the tables were moved to Appendix C; they were also revised.

Acceptable Standards

One commenter suggested that the term "minimum standards" throughout the AQP AC be replaced by the term "acceptable standards." This commenter believes that the connotation of "minimum standards" "is not helpful to the FAA or the industry."

Response: The term "minimum standards" is used in the subtitle of title VI of the FA Act and repeatedly throughout title VI and is, the FAA believes, appropriate in describing the Federal Aviation Regulations. However, the AQP AC has been revised to use the term "acceptable" when appropriate to show that an applicant may obtain approval for an AQP that does not entirely follow the guidelines in the AQP AC but is an alternative equivalent to the guidelines in the AQP AC.

Proficiency Evaluation

Six comments were received on proposed section 3(c)(4)(i) which requires a proficiency evaluation for PICs, SICs, and flight engineers during each recurring training session. Three commenters request rewriting the paragraph because, as written, no training (including ground school sessions) could be conducted without accomplishing flight proficiency evaluations. They contend such a requirement might actually discourage frequent training sessions. Two commenters state that evaluations should be required on alternating training visits.

Response: The language of the SFAR has been clarified. The requirement for evaluation in section 6(b)(1) is tied to a certificate holder's evaluation period within an approved continuing qualification cycle and not to the number of visits that a person may make to a training facility to participate in training sessions. That is, if a certificate holder elects to divide its recurring training into more than one training session within an evaluation period, the certificate holder would only be required to conduct at least one proficiency evaluation during an evaluation period and would not be required, as proposed, to conduct one following each training session. However, a certificate holder that conducts several training sessions within an evaluation period would not be prevented from conducting proficiency evaluations as part of each training session.

One commenter asks if this proficiency evaluation requirement is related to the instrument proficiency check in § 135.297 or to the competency check required in § 135.293.

Response: The proficiency evaluation required by section 6(b)(3) (i) and (ii) would most likely consist of elements of both regulations. The SFAR requires that elements to be included must be approved as part of the continuing qualification curriculum.

Recency Requirements

Proposed section 3(c)(3)(iv) states that continuing qualification for PICs and SICs under an AQP must include recency of experience requirements in accordance with § 121.439.

Several commenters have questions about this requirement. One commenter thinks the requirement should be deleted since it is already in part 121. Another commenter asks if recency requirements of part 121 would apply or those required in an AQP. One commenter says that recency requirements are not presently tracked by training departments and so should not be part of training.

Response: In the final rule the FAA has changed the recency requirement of section 6(b)(4) by deleting the reference to § 121.429 and addinq the word "approved" to recency requirements. The reference to recency requirements has been retained to make it clear that compliance with these requirements is an element of a continuing qualification curriculum. Guidelines on recency requirements are contained in the AQP AC.

Dual Operators

One commenter states that the part 135 proposed SFAR requirements are not compatible with parts 91 and 61. A PIC for an operator who operates under parts 91 and 135 would still be required to have a check every 12 calendar months as required by § 61.58.

Response: The FAA agrees that the proposed SFAR would not allow the flexibility intended for dual operators under parts 91 and 135. Therefore, the FAA is amending § 61.58 to provide that pilots maintaining continuing qualification under an approved AQP are considered to have met these check requirements.

Advisory Committee

In the preamble to the proposed SFAR, the FAA states that it is considering establishing a training advisory committee under the Federal Advisory Committee Act. Three commenters state strong support for this

idea. Two focus on the makeup of the committee. One states that it should be apolitical and the other states that it is essential that the line pilot be represented on the committee.

FAA Response: The FAA is in the process of establishing an advisory committee under the Federal Advisory Committee Act.

Curriculum Development

Four commenters point out that the draft AQP AC Chapter 2 "Overview: Components of an Advanced Qualification Program" is not as helpful as it should be for developing an AQP curriculum.

FAA Response: The FAA has revised the AQP AC to provide more detailed guidelines for developing AQP curriculums. Chapter 2 of the AQP AC provides an overview and new chapter 7 provides details on how to develop, implement, and maintain an AQP.

Principal Operations Inspectors and Approval

A comment from a training center expresses concern about the approval process. The commenter believes that Principal Operations Inspectors (POI) might frustrate the application of the AQP concept, particularly for training centers that have received provisional approval and may be asked to alter that curriculum to the specific needs of a certificate holder by a POI. What was approved in the first stage may be disapproved by the POI at the second stage.

Another commenter states that the FAA should provide for a central authority to review and approve AQPs to assure standardization.

Response: The FAA has established the Air Carrier Training Branch to ensure standardization of the AQP approval process. While AQP applications must be submitted to the Flight Standards District Office charged with the overall inspection of the certificate holder's or training center's operations, the application will be forwarded to the Air Carrier Training Branch for review and appropriate action.

The AQP AC has been revised to show procedures of the approval process in greater detail than the draft AC showed. The Air Carrier Training Branch will lead the review and analysis for each phase of the approval process. The review and analysis team will include an instructional system design specialist, air carrier operations specialists, a data management specialist, a civil aviation security inspector, an inspector from the National Simulator Program Staff, and the designee of the applicant's operations inspector. The review and analysis findings will be documented in a report with recommendations for acceptance or rejection to the Manager, Air Carrier Training Branch.

Review and analysis procedures will be the same for certificate holders and training centers, except that for training centers the development process ends in provisional approval until the provisionally approved curriculum is tailored to a certificate holder's operations and reevaluated for approval as the certificate holder's AQP.

At no stage of the approval process would a POI or any member of the team act alone to accept or reject an application for an AQP. The initial submission of required documents to a POI would not be forwarded to the Air Carrier Training Branch if it was incomplete or otherwise not in compliance with submission procedures in the AQP AC.

Indoctrination

The proposed SFAR requires in section 3(a) that each AQP have separate curriculums for indoctrination that cover: (1) Company policies and practices for all newly hired persons; (2) general aeronautical knowledge for newly hired flight crewmembers and dispatchers; (3) methods and theories of instruction and the knowledge needed to use flight training devices and flight simulators for instructors; and (4) requirements, methods, policies, and practices of evaluating for evaluators.

Several commenters state that they did not think indoctrination curriculums should be mandatory. They should be optional as needed, for example, with entry level aircraft.

Response: Having an indoctrination curriculum as part of an AQP is required. If crewmembers have already completed indoctrination, repeating the curriculum will not be required. As discussed earlier, the presence of a curriculum in an AQP does not mean that each module of the curriculum must be used in every instance. It means that the curriculum objectives have been included in the program and if those objectives have not already been accomplished by a trainee, they must be.

Comment Period

Two commenters state that the 60-day comment period was insufficient. One of these commenters requests an additional 6 months and also requests that helicopter operations be considered in any future actions.

Response: The 60-day comment period for the proposed SFAR was considered to be adequate given the previous consultation between FAA, other government agencies, and industry associations.

Beyond the Scope of the Notice

A few comments were received that did not directly relate to the proposal. These comments included information on training and training equipment, as well as an objection to the increase in the use of 2-person flight crews.

Miscellaneous Technical Comments

Several comments were received that request changes or clarifications of specific wording in the proposal. None of these comments would involve significant substantive changes. The FAA has considered these comments and, if appropriate, has changed or clarified the language accordingly.

Revision of the Advisory Circular

Certain revisions necessitated by comments have led to a reorganization of portions of the AC and the addition of new material. In particular AC Chapter 7, "Five Phases of the Advanced Qualification Program," Chapter 8, "Approval Process for an Advanced Qualification Program," and Chapter 9, "Advanced Qualification Program Validation" provide more detailed guidance than that provided in the draft AQP AC.

Regulatory Evaluation

The AQP is not mandatory; it is left up to the discretion of the individual certificate holder as to whether to adopt the AQP, and the FAA assumes that certificate holders will do so only if it improves their training effectiveness and safety or is otherwise in their economic interest. In fact, the limited available industry data suggests that benefits to the adopter could exceed costs. Therefore, it is assumed that this SFAR will not impose any additional net cost on the industry.

These regulations might make possible some costs savings in the air carriers' crew training programs. This may occur because: (1) Training time would be related to the attainment of individual proficiency instead of set hours of training, and (2) the frequency of recurring training for PIC's could be reduced thereby reducing training costs.

This section summarizes the full regulatory evaluation prepared by the FAA that provides more detailed estimates of the economic consequences of this regulatory action. This summary and the full evaluation quantify, to the extent practicable, estimated costs to the private sector, consumers, Federal,

State and local governments, as well as anticipated benefits.

Executive Order 12291, dated February 17, 1981, directs Federal agencies to promulgate new regulations or modify existing regulations only if potential benefits to society for each regulatory change outweigh potential costs. The order also requires the preparation of a Regulatory Impact Analysis of all "major" rules except those responding to emergency situations or other narrowly defined exigencies. A "major" rule is one that is likely to result in an annual effect on the economy of $100 million or more, a major increase in consumer costs, a significant adverse effect on competition, or is highly controversial.

The FAA has determined that this rule is not "major" as defined in the executive order, therefore a full regulatory analysis, that includes the identification and evaluation of cost reducing alternatives to this rule, has not been prepared. Instead, the agency has prepared a more concise document termed a regulatory evaluation that analyzes only this rule without identifying alternatives. In addition to a summary of the regulatory evaluation, this section also contains a regulatory flexibility determination required by the 1980 Regulatory Flexibility Act (Pub. L. 96-354) and an international trade impact assessment. If more detailed economic information is desired than is contained in this summary, the reader is referred to the full regulatory evaluation contained in the docket.

Since the AQP will build upon the current system, the FAA expects it to provide levels of safety equal to or higher than that provided by current regulations. If after evaluation by the FAA's Air Carrier Training Branch, the AQP is determined to provide a higher level of safety than the current system, the FAA may consider making it mandatory for certain classes of operators under a future rulemaking action.

The only FAA costs attributable to this SFAR are those of establishing and operating an Air Carrier Training Branch with three sections with assistance from appropriate Security and Hazardous Material personnel. This branch would assume the primary responsibility for the final review and analysis of air carrier training programs submitted to the FAA for approval under the provisions of the SFAR.

The Air Carrier Training Branch will gather and analyze data to verify and validate proficiency requirements and program qualifications and will monitor and evaluate the AQP. This staff will consist of three sections, each with a GM-15 manager, a total of 21 inspectors, specialists, and analysts, one GS-11 programmer, and two GS-6 secretaries. Field sections will share 5 workstations, a printer, plotter, and a telefax machine. The estimated annual cost of the new branch is $2.2 million and a one-time cost of equipment of $50,000.

The primary benefit expected of the proposed SFAR would be a reduction of the number of air carrier accidents in which crew coordination problems are a contributing factor. A review of NTSB aviation accident data reveals that during the past 20 years, there were 17 such accidents involving part 121 air carriers and 17 accidents involving part 135 air carriers. These accidents have resulted in 697 fatalities and 190 serious injuries and the costs of these types of accidents were $1,329 million or about $66 million dollars per year.

Accidents in which crew coordination problems were a contributing factor appear to have occurred at a consistent rate during the past 20 years for part 121 departures; there were 0.17 $\pm$0.08 accidents of this type per 1 million part 121 IFR departures. For part 135 operators, these types of accidents declined during the 70's and have been level during the 80's at .84 $\pm$.40 accidents per 1 million part 135 IFR departures. To be conservative, the FAA used the upper bounds of these estimates (.26 accidents per 1 million part 121 IFR departures and 1.24 accidents per 1 million part 135 IFR departures) to project the number of future accidents in which crew coordination problems are a contributing factor. Applying accident rates to forecasted departures for the period 1991 to 1995 the projected number of part 121 and part 135 accidents of this type are 9.0 and 17.9, respectively.

The economic losses due to these projected accidents would be substantial: $609 million due to part 121 air carrier accidents and $119 million due to part 135 air carrier accidents. The average annual loss during this period is estimated to be $145 million a year. Accident trends will be closely monitored during the 5-year life of the SFAR to determine the impact of the AQP. AQP would also make possible some cost savings in the large air carriers' training programs. The limited available information suggests that large part 121 operators might have a crew training cost savings of $81.9 million per year and that large part 135 operators would have a cost savings of $5.1 million per year. Some training costs, however, would be increased by this SFAR. For the large part 121 operators, it is estimated that some training costs would be increased by $15.5 million per year; for the part 135 operators, some of their training costs are estimated to be increased by $652,000 per year. Both the large part 121 and the large part 135 operators could have an annual net cost savings as a result of this SFAR—$66.4 million for large part 121 operators, and $4.4 million for large part 135 operators. These cost savings and cost increases are explained in more detail in the regulatory evaluation.

Two benefit-cost comparisons are made in this evaluation in order to take into account the uncertainties regarding the effectiveness of this program at reducing accidents and the amount of participation of part 121 and part 135 operators in this program. In the first comparisons it is assumed that 100 percent of the large part 121 and part 135 operators will participate in this program starting in the first year. It is also assumed that this program is only 20 percent effective at reducing aviation accidents in which cockpit crew coordination problems are a contributing factor. This is an arbitrary low number chosen to be a conservative estimate of the chief benefits of this program (another benefit would be a reduction in crew training costs for the large operators); the FAA expects this proposed program to be more effective than 20 percent. In the second comparison, it is assumed that only 5 percent of the crews used by the large part 121 and part 135 operators will participate in the program and that the program will only be one percent effective at reducing the above type of accidents. The second comparison is a worst case scenario.

In both comparisons, the potential benefits of this rule exceed the estimated costs of the program. In the first comparison, the present value of the 5-year stream of benefits is $433 million which is $345 million greater than the present value of the 5-year stream of costs which is $88 million. In the second comparison, the present value of the 5-year stream of benefits is $22 million which also exceeds the present value of the 5-year stream of costs which is $10 million. Both of these ratios will be higher if the SFAR is more effective than 20 percent at reducing accidents in which cockpit crew coordination problems are a contributing factor. The FAA, therefore, determines that the benefits of the proposed SFAR will exceed the costs that may result from it.

International Trade Impact

The proposal would have little or no impact on trade for both U.S. firms doing

business overseas and foreign firms doing business in the United States. The proposals are likely to improve training efficiency and, therefore, reduce costs for U.S. air carriers.

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 agencies to review rules which may have "a significant economic impact on a substantial number of small entities."

The proposals would impact those entities regulated by part 121 and part 135. The FAA's criteria for "a substantial number" is a number which is not less than 11 and which is more than one third of the small entities subject to the rule. For air carriers a small entity has been defined as one who owns, but does not necessarily operate, nine aircraft or less. The FAA's criteria for "a significant impact" are at least $3,800 per year (1989 dollars) for an unscheduled carrier and $53,400 or $95,600 per year (1989 dollars) for a scheduled carrier depending on whether or not the fleet operated includes small aircraft (60 or fewer seats).

This SFAR does not impose any costs upon part 121 and part 135 certificate holders because the provisions in this SFAR are voluntary. It is left to the discretion of the certificate holders as to whether they will adopt the provisions of this SFAR. Those that do, will do so because adopting this SFAR will improve their operations and safety without a net increase in costs or because it is in their economic interest. The FAA believes that the larger air carriers are most likely to adopt the provisions of this SFAR and that the smaller air carriers would not. The smaller air carriers would not be able to adopt the provisions in this SFAR because they do not have the necessary facilities and equipment and because of the high turnover rate of their pilots. Flight training centers might alleviate the first problem. As a result of economies of scale, these centers could offer flight crew training programs that make maximum use of flight simulators and flight training devices to small air carriers at affordable rates. However, the high turnover rate of their pilots necessitates that small air carriers concentrate their pilot training on improving and maintaining pilot proficiency and discourages small air carriers from adopting AQP.

This SFAR imposes no additional cost on any small part 121 certificate holder nor any additional cost on any small part 135 certificate holder. Therefore, the proposed amendments to 14 CFR parts 121 and 135 will not have a significant economic impact on a substantial number of small entities.

Federalism Implications

The regulations herein will 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 not major under Executive Order 12291. 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 regulatory evaluation of the proposal, 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

14 CFR Part 61

Air safety, Air transportation, Aviation safety, Safety.

14 CFR Part 63

Air Safety, Air transportation, Airmen, Aviation safety, Safety, Transportation.

14 CFR Part 65

Airmen, Aviation safety, Air transportation, Aircraft.

14 CFR Part 108

Airplane operator security, Aviation safety, Air transportation, Air carriers, Airlines, Security measures, Transportation, Weapons.

14 CFR Part 121

Aircraft pilots, Airmen, Aviation safety, Pilots, Safety.

14 CFR Part 135

Air carriers, Air transportation, Airmen, Aviation safety, Safety, Pilots.

Adoption of the Amendment

Accordingly, the Federal Aviation Administration amends title 14, chapter I of the Code of Federal Regulations, as set forth below:

PART 61—CERTIFICATION: PILOTS AND FLIGHT INSTRUCTORS

1. The authority citation for part 61 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355, 1421, 1422, and 1427; 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983).

2. In part 61 the table of contents is amended by adding SFAR No. 58 to read as follows:

Special Federal Aviation Regulations

SFAR No. 58 [Note]

3. A section for Special Federal Aviation Regulations is added to read as follows:

Special Federal Aviation Regulations

SFAR No. 58

Editorial Note: For the text of SFAR No. 58, see part 121 of this chapter.

4. Section 61.58 is amended by revising paragraph (e) to read as follows:

§ 61.58 Pilot in command proficiency check: Operation of aircraft requiring more than one required pilot.

* * * * *

(e) This section does not apply to persons conducting operations subject to parts 121, 127, 133, 135, and 137 of this chapter or to persons maintaining continuing qualification under an Advanced Qualification Program approved under SFAR 58.

* * * * *

PART 63—CERTIFICATION: FLIGHT CREWMEMBERS OTHER THAN PILOTS

5. The authority citation for part 63 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355, 1421, 1422, 1427, 1429, and 1430; 49 U.S.C. 106(g) (revised, Pub. L. 97-449, January 12, 1983).

6. In part 63 the table of contents is amended by adding SFAR No. 58 to read as follows:

Special Federal Aviation Regulations

SFAR No. 58 [Note]

7. A section for Special Federal Aviation Regulations is added to read as follows:

Special Federal Aviation Regulations

SFAR No. 58

Editorial Note: For the text of SFAR No. 58, see part 121 of this chapter.

PART 65—CERTIFICATION: AIRMEN OTHER THAN FLIGHT CREWMEMBERS

8. The authority citation for part 65 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355, 1421, 1422, and 1427; 49 U.S.C. 106(g) (revised, Pub. L. 97-449, January 12, 1983).

9. In part 65 the table of contents is amended by adding SFAR No. 58 to read as follows:

Special Federal Aviation Regulations

SFAR No. 58 [Note]

10. A section for Special Federal Aviation Regulations is added to read as follows:

Special Federal Aviation Regulations

SFAR No. 58

Editorial Note: For the text of SFAR No. 58, see part 121 of this chapter.

PART 108—AIRPLANE OPERATOR SECURITY

11. The authority citation for part 108 continues to read as follows:

Authority: 49 U.S.C. 1354, 1356, 1357, 1358, 1421, and 1424; 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983).

12. Section 108.23(b) is revised to read as follows:

§ 108.23 Training.

* * * * *

(b) No certificate holder may use any person as a crewmember on any domestic or international flight unless within the preceding 12 calendar months or within the time period specified in an Advanced Qualification Program approved under SFAR 58 that person has satisfactorily completed the security training required by § 121.417(b)(3)(v) or § 135.331(b)(3)(v) of this chapter and as specified in the certificate holder's approved security program. With respect to training conducted under § 121.417 or § 135.331, Whenever a crewmember Who is required to take recurrent training completes the training in the calendar month before or the calendar month after the calendar month in which that training is required, he is considered to have completed the training in the calendar month in which it was required.

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

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

Authority: 49 U.S.C. 1354(a), 1355, 1356, 1357, 1401, 1421-1430, 1472, 1485, and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

14. In part 121 the table of contents of Special Federal Aviation Regulations is amended by adding SFAR No. 58 to read as follows:

Special Federal Aviation Regulations

* * * * *

SFAR No. 58

15. In part 121 the section of Special Federal Aviation Regulations is amended, by adding SFAR No. 58 to read as follows:

Special Federal Aviation Regulations

* * * * *

Special Federal Aviation Regulation No. 58—Advanced Qualification Program

Section

Contrary provisions of parts 61, 63, 65, 121, and 135 of the Federal Aviation Regulations notwithstanding—

1. *Purpose and Eligibility.*

(a) This Special Federal Aviation Regulation provides for approval of an alternate method (known as "Advanced Qualification Program" or "AQP") for qualifying, training, certifying, and otherwise ensuring competency of crewmembers, aircraft dispatchers, other operations personnel, instructors, and evaluators who are required to be trained or qualified under parts 121 and 135 of the FAR or under this SFAR.

(b) A certificate holder is eligible under this Special Federal Aviation Regulation if the certificate holder is required to have an approved training program under § 121.401 or § 135.341 of the FAR, or elects to have an approved training program under § 135.341.

(c) A certificate holder obtains approval of each proposed curriculum under this AQP as specified in section 10 of this SFAR.

(d) A curriculum approved under the AQP may include elements of present Part 121 and Part 135 training programs. Each curriculum must specify the make, model, and series aircraft (or variant) and each crewmember position or other positions to be covered by that curriculum. Positions to be covered by the AQP must include all flight crewmember positions, instructors, and evaluators and may include other positions, such as flight attendants, aircraft dispatchers, and other operations personnel.

(e) Each certificate holder that obtains approval of an AQP under this SFAR shall comply with all of the requirements of that program.

2. *Definitions.* As used in this SFAR:

Curriculum means a portion of an Advanced Qualification Program that covers one of three program areas: (1) indoctrination, (2) qualification, or (3) continuing qualification. A qualification or continuing qualification curriculum addresses the required training and qualification activities for a specific make, model, and series aircraft (or variant) and for a specific duty position.

Evaluator means a person who has satisfactorily completed training and evaluation that qualifies that person to evaluate the performance of crewmembers, instructors, other evaluators, aircraft dispatchers, and other operations personnel.

Facility means the physical environment required for training and qualification (e.g., buildings, classrooms).

Training center means an independent organization that provides training under contract or other arrangement to certificate holders. A training center may be a certificate holder that provides training to another certificate holder, an aircraft manufacturer that provides training to certificate holders, or any non-certificate holder that provides training to a certificate holder.

Variant means a specifically configured aircraft for which the FAA has identified training and qualification requirements that are significantly different from those applicable to other aircraft of the same make, model, and series.

3. *Required Curriculums.* Each AQP must have separate curriculums for indoctrination, qualification, and continuing qualification as specified in sections 4, 5, and 6 of this SFAR.

4. *Indoctrination Curriculums.* Each indoctrination curriculum must include the following:

(a) For newly hired persons being trained under an AQP: Company policies and operating practices and general operational knowledge.

(b) For newly hired flight crewmembers and aircraft dispatchers: General aeronautical knowledge.

(c) For instructors: The fundamental principles of the teaching and learning process; methods and theories of instruction; and the knowledge necessary to use aircraft, flight training devices, flight simulators, and other training equipment in advanced qualification curriculums.

(d) For evaluators: Evaluation requirements specified in each approved curriculum; methods of evaluating crewmembers and aircraft dispatchers and other operations

personnel; and policies and practices used to conduct the kinds of evaluations particular to an advanced qualification curriculum (e.g., proficiency and online).

5. *Qualification Curriculums.* Each qualification curriculum must include the following:

(a) The certificate holder's planned hours of training, evaluation, and supervised operating experience.

(b) A list of and text describing the training, qualification, and certification activities, as applicable for specific positions subject to the AQP, as follows:

(1) *Crewmembers, aircraft dispatchers, and other operations personnel.* Training, evaluation, and certification activities which are aircraft- and equipment-specific to qualify a person for a particular duty position on, or duties related to the operation of a specific make, model, and series aircraft (or variant); a list of and text describing the knowledge requirements, subject materials, job skills, and each maneuver and procedure to be trained and evaluated; the practical test requirements in addition to or in place of the requirements of parts 61, 63, and 65; and a list of and text describing supervised operating experience.

(2) *Instructors.* Training and evaluation to qualify a person to impart instruction on how to operate, or on how to ensure the safe operation of a particular make, model, and series aircraft (or variant).

(3) *Evaluators.* Training, evaluation, and certification activities that are aircraft and equipment specific to qualify a person to evaluate the performance of persons who operate or who ensure the safe operation of, a particular make, model, and series aircraft (or variant).

6. *Continuing Qualification Curriculums.* Continuing qualification curriculums must comply with the following requirements:

(a) *General.* A continuing qualification curriculum must be based on—

(1) A continuing qualification cycle that ensures that during each cycle each person qualified under an AQP, including instructors and evaluators, will receive a balanced mix of training and evaluation on all events and subjects necessary to ensure that each person maintains the minimum proficiency level of knowledge, skills, and attitudes required for original qualification; and

(2) If applicable, flight crewmember or aircraft dispatcher recency of experience requirements.

(b) *Continuing Qualification Cycle Content.* Each continuing qualification cycle must include at least the following:

(1) *Evaluation period.* An evaluation period during which each person qualified under an AQP must receive at least one training session and a proficiency evaluation at a training facility. The number and frequency of training sessions must be approved by the Administrator. A training session, including any proficiency evaluation completed at that session, that occurs any time during the two calendar months before the last date for completion of an evaluation period can be considered by the certificate holder to be completed in the last calendar month.

(2) *Training.* Continuing qualification must include training in all events and major subjects required for original qualification, as follows:

(i) For pilots in command, seconds in command, flight engineers, and instructors and evaluators: Ground training including a general review of knowledge and skills covered in qualification training, updated information on newly developed procedures, and safety information.

(ii) For crewmembers, aircraft dispatchers, instructors, evaluators, and other operation personnel who conduct their duties in flight: Proficiency training in an aircraft, flight training device, or flight simulator on normal, abnormal, and emergency flight procedures and maneuvers.

(iii) For instructors and evaluators who are limited to conducting their duties in flight simulators and flight training devices: Proficiency training in a flight training device and/or flight simulator regarding operation of this training equipment and in operational flight procedures and maneuvers (normal, abnormal, and emergency).

(3) *Evaluations.* Continuing qualification must include evaluation in all events and major subjects required for original qualification, and online evaluations for pilots in command and other eligible flight crewmembers. Each person qualified under an AQP must successfully complete a proficiency evaluation and, if applicable, an online evaluation during each evaluation period. An individual's proficiency evaluation may be accomplished over several training sessions if a certificate holder provides more than one training session in an evaluation period. The following evaluation requirements apply:

(i) Proficiency evaluations as follows:

(A) For pilots in command, seconds in command, and flight engineers: A proficiency evaluation, portions of which may be conducted in an aircraft, flight simulator, or flight training device as approved in the certificate holder's curriculum which must be completed during each evaluation period.

(B) For any other persons covered by an AQP a means to evaluate their proficiency in the performance of their duties in their assigned tasks in an operational setting.

(ii) Online evaluations as follows:

(A) For pilots in command: An online evaluation conducted in an aircraft during actual flight operations under part 121 or part 135 or during operationally (line) oriented flights, such as ferry flights or proving flights. An online evaluation in an aircraft must be completed in the calendar month that includes the midpoint of the evaluation period. An online evaluation that is satisfactorily completed in the calendar month before or the calendar month after the calendar month in which it becomes due is considered to have been completed during the calendar month it became due. However, in no case is an online evaluation under this paragraph required more often than once during an evaluation period.

(B) During the online evaluations required under paragraph (b)(3)(ii)(A) of this section, each person performing duties as a pilot in command, second in command, or flight engineer for that flight, must be individually evaluated to determine whether he or she—

(*1*) Remains adequately trained and currently proficient with respect to the particular aircraft, crew position, and type of operation in which he or she serves; and (*2*) Has sufficient knowledge and skills to operate effectively as part of a crew.

(4) *Recency of experience.* For pilots in command and seconds in command, and, if the certificate holder elects, flight engineers and aircraft dispatchers, approved recency of experience requirements.

(c) *Duration periods.* Initially the continuing qualification cycle approved for an AQP may not exceed 26 calendar months and the evaluation period may not exceed 13 calendar months. Thereafter, upon demonstration by a certificate holder that an extension is warranted, the Administrator may approve extensions of the continuing qualification cycle and the evaluation period in increments not exceeding 3 calendar months. However, a continuing qualification cycle may not exceed 39 calendar months and an evaluation period may not exceed 26 calendar months.

(d) *Requalification.* Each continuing qualification curriculum must include a curriculum segment that covers the requirements for requalifying a crewmember, aircraft dispatcher, or other operations personnel who has not maintained continuing qualification.

7. *Other Requirements.* In addition to the requirements of sections 4, 5, and 6, each AQP qualification and continuing qualification curriculum must include the following requirements:

(a) Approved Cockpit Resource Management (CRM) Training applicable to each position for which training is provided under an AQP.

(b) Approved training on and evaluation of skills and proficiency of each person being trained under an AQP to use their cockpit resource management skills and their technical (piloting or other) skills in an actual or simulated operations scenario. For flight crewmembers this training and evaluation must be conducted in an approved flight training device or flight simulator.

(c) Data collection procedures that will ensure that the certificate holder provides information from its crewmembers, instructors, and evaluators that will enable the FAA to determine whether the training and evaluations are working to accomplish the overall objectives of the curriculum.

8. *Certification.* A person enrolled in an AQP is eligible to receive a commercial or airline transport pilot, flight engineer, or aircraft dispatcher certificate or appropriate rating based on the successful completion of training and evaluation events accomplished under that program if the following requirements are met:

(a) Training and evaluation of required knowledge and skills under the AQP must meet minimum certification and rating criteria established by the Administrator in parts 61, 63, or 65. The Administrator may accept substitutes for the practical test requirements of parts 61, 63, or 65, as applicable.

(b) The applicant satisfactorily completes the appropriate qualification curriculum.

(c) The applicant shows competence in required technical knowledge and skills (e.g., piloting) and cockpit resource management knowledge and skills in scenarios that test both types of knowledge and skills together.

(d) The applicant is otherwise eligible under the applicable requirements of part 61, 63, or 65.

9. *Training Devices and Simulators.*

(a) *Qualification and approval of flight training devices and flight simulators.* (1) Any training device or simulator that will be used in an AQP for one of the following purposes must be evaluated by the Administrator for assignment of a flight training device or flight simulator qualification level:

(i) Required evaluation of individual or crew proficiency.

(ii) Training activities that determine if an individual or crew is ready for a proficiency evaluation.

(iii) Activities used to meet recency of experience requirements.

(iv) Line Operational Simulations (LOS).

(2) To be eligible to request evaluation for a qualification level of a flight training device or flight simulator an applicant must—

(i) Hold an operating certificate; or

(ii) Be a training center that has applied for authorization to the Administrator or has been authorized by the Administrator to conduct training or qualification under an AQP.

(3) Each flight training device or flight simulator to be used by a certificate holder or training center for any of the purposes set forth in paragraph (a)(1) of this section must—

(i) Be, or have been, evaluated against a set of criteria established by the Administrator for a particular qualification level of simulation;

(ii) Be approved for its intended use in a specified AQP; and

(iii) Be part of a flight simulator or flight training device continuing qualification program approved by the Administrator.

(b) *Approval of other Training Equipment.* (1) Any training device that is intended to be used in an AQP for purposes other than those set forth in paragraph (a)(1) of this section must be approved by the Administrator for its intended use.

(2) An applicant for approval of a training device under this paragraph must identify the device by its nomenclature and describe its intended use.

(3) Each training device approved for use in an AQP must be part of a continuing program to provide for its serviceability and fitness to perform its intended function as approved by the Administrator.

10. *Approval of Advanced Qualification Program.*

(a) *Approval Process.* Each applicant for approval of an AQP curriculum under this SFAR shall apply for approval of that curriculum. Application for approval is made to the certificate holder's FAA Flight Standards District Office.

(b) *Approval Criteria.* An application for approval of an AQP curriculum will be approved if the program meets the following requirements:

(1) It must be submitted in a form and manner acceptable to the Administrator.

(2) It must meet all of the requirements of this SFAR.

(3) It must indicate specifically the requirements of parts 61, 63, 65, 121 or 135, as applicable, that would be replaced by an AQP curriculum. If a requirement of parts 61, 63, 65, 121, or 135 is replaced by an AQP curriculum, the certificate holder must show how the AQP curriculum provides an equivalent level of safety for each requirement that is replaced. Each applicable requirement of parts 61, 63, 65, 121 or 135 that is not specifically addressed in an AQP curriculum continues to apply to the certificate holder.

(c) *Application and Transition.* Each certificate holder that applies for one or more advanced qualification curriculums or for a revision to a previously approved curriculum must comply with § 121.405 or § 135.325, as applicable, and must include as part of its application a proposed transition plan (containing a calendar of events) for moving from its present approved training to the advanced qualification training.

(d) *Advanced Qualification Program Revisions or Rescissions of Approval.* If after a certificate holder begins operations under an AQP, the Administrator finds that the certificate holder is not meeting the provisions of its approved AQP, the Administrator may require the certificate holder to make revisions in accordance with § 121.405 or § 135.325, as applicable, or to submit and obtain approval for a plan (containing a schedule of events) that the certificate holder must comply with and use to transition to an approved Part 121 or Part 135 training program, as appropriate.

11. *Approval of Training, Qualification, or Evaluation by a Person who Provides Training by Arrangement.*

(a) A certificate holder under part 121 or part 135 may arrange to have AQP required training, qualification, or evaluation functions performed by another person (a "training center") if the following requirements are met:

(1) The training center's training and qualification curriculums, curriculum segments, or portions of curriculum segments must be provisionally approved by the Administrator. A training center may apply for provisional approval independently or in conjunction with a certificate holder's application for AQP approval. Application for provisional approval must be made to the FAA's Flight Standards District Office that has responsibility for the training center.

(2) The specific use of provisionally approved curriculums, curriculum segments, or portions of curriculum segments in a certificate holder's AQP must be approved by the Administrator as set forth in section 10 of this SFAR.

(b) An applicant for provisional approval of a curriculum, curriculum segment, or portion of a curriculum segment under this paragraph must show that the following requirements are met:

(1) The applicant must have a curriculum for the qualification and continuing qualification of each instructor or evaluator employed by the applicant.

(2) The applicant's facilities must be found by the Administrator to be adequate for any planned training, qualification, or evaluation for a part 121 or part 135 certificate holder.

(3) Except for indoctrination curriculums, the curriculum, curriculum segment, or portion of a curriculum segment must identify the specific make, model, and series aircraft (or variant) and crewmember or other positions for which it is designed.

(c) A certificate holder who wants approval to use a training center's provisionally approved curriculum, curriculum segment, or portion of a curriculum segment in its AQP, must show that the following requirements are met:

(1) Each instructor or evaluator used by the training center must meet all of the qualification and continuing qualification requirements that apply to employees of the certificate holder that has arranged for the training, including knowledge of the certificate holder's operations.

(2) Each provisionally approved curriculum, curriculum segment, or portion of a curriculum segment must be approved by the Administrator for use in the certificate holder's AQP. The Administrator will either provide approval or require modifications to ensure that each curriculum, curriculum segment, or portion of a curriculum segment is applicable to the certificate holder's AQP.

12. *Recordkeeping Requirements.* Each certificate holder and each training center holding AQP provisional approval shall show that it will establish and maintain records in sufficient detail to establish the training, qualification, and certification of each person qualified under an AQP in accordance with the training, qualification, and certification requirements of this SFAR.

13. *Expiration.* This Special Federal Aviation Regulation terminates on October 2, 1995 unless sooner terminated.

16. In part 121, § 121.1 is amended by redesignating paragraph (c)(2) as (c)(3) and by adding a new paragraph (c)(2) to read as follows:

§ 121.1 Applicability.

* * * * *

(c) * * *

(2) Each person who applies for provisional approval of an Advanced Qualification Program curriculum, curriculum segment, or portion of a curriculum segment under SFAR No. 58 and each person employed or used by an air carrier or commercial operator under this part to perform training, qualification, or evaluation functions under an Advanced Qualification Program under SFAR No. 58; and

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PART 135—AIR TAXI OPERATORS AND COMMERCIAL OPERATORS

17. The authority citation for part 135 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g) [Revised Pub. L. 97-449, January 12, 1983].

18. In part 135 the table of contents of Special Federal Aviation Regulations is amended by adding SFAR No. 58 to read as follows:

Special Federal Aviation Regulations

* * * * *

SFAR No. 58 [Note]

19. The section of Special Federal Aviation Regulations is amended, by adding SFAR No. 58 [Note] to read as follows:

Special Federal Aviation Regulations

* * * * *

SFAR No. 58

Editorial Note: For the text of SFAR No. 58, see part 121 of this chapter.

20. In part 135, § 135.1 is amended by redesignating paragraph (a)(4) as (a)(5) and adding a new paragraph (a)(4) to read as follows:

§ 135.1 Applicability.

* * * * *

(a) * * *

(4) Each person who applies for provisional approval of an Advanced Qualification Program curriculum, curriculum segment, or portion of a curriculum segment under SFAR No. 58 and each person employed or used by an air carrier or commercial operator under this part to perform training, qualification, or evaluation functions under an Advanced Qualification Program under SFAR No. 58; and

* * * * *

Issued in Washington, DC.

James B. Busey,

Administrator.

Appendix—Advanced Qualification Program Advisory Circular

[Note: This appendix will not appear in the Code of Federal Regulations.]

Table of Contents

Chapter 1. Introduction and Definitions: Advanced Qualification Program (AQP)

Section 1. Introduction

1. Purpose

This Advisory Circular (AC) provides Federal Aviation Administration (FAA) guidance for approval of an Advanced Qualification Program (AQP) under Special Federal Aviation Regulation 58 (SFAR 58). An AQP is an alternate method of qualifying, training, certifying, and otherwise ensuring the competency of flight crewmembers, flight attendants, aircraft dispatchers, instructors, evaluators, and other operations personnel subject to the training and evaluation requirements of Federal Aviation Regulation (FAR) parts 121 and 135. The AQP encourages innovation in the methods and technology that are used during instruction and evaluation, and efficient management of training systems. The intent of this SFAR is to achieve the highest possible standards of individual and crew performance without undue increases in the cost to maintain training resources. An objective of all AQPs is to provide effective training that will enhance professional qualifications to a level above the present standards that are provided in FAR parts 121 and 135.

2. Background

The requirements for training programs and crewmember qualification of subparts N and O of FAR part 121 have not changed significantly since 1970. However, the capabilities and use of simulators and other computer-based training devices in training and qualification activities have changed dramatically since 1970. SFAR 58 and this AC allow certificate holders that are subject to the training and evaluation requirements of part 121 and part 135 and training centers that intend to provide training for eligible certificate holders to develop innovative training and qualification programs that incorporate the most recent advances in training methods and techniques.

3. Acceptable Method of Compliance

The methods and procedures in this AC describe one acceptable means of compliance with SFAR 58. Alternate means that are proposed by an applicant will be considered.

4. Training Facilities and Equipment

Each organization authorized to participate in an AQP will have the facilities, equipment, and courseware necessary to support the activities which are provided for in the AQP. Examples of facilities include classrooms, self-paced learning stations, breakrooms, recordkeeping facilities, etc. Examples of equipment include computer-based instructional equipment and home study equipment. Examples of courseware include lesson plans, flight maneuver packages, audiovisual programs, workbooks, computer courseware, etc.

5. FAA Qualification and Approval of Equipment Used in an AQP

FAA qualification is neither required nor granted for each facility or piece of equipment used in AQPs. However, equipment such as simulators or training devices that are used in an AQP to establish or maintain qualification or currency of personnel will be evaluated against a set of criteria established by the Administrator for a particular level of simulation (qualification level), and specifically approved for use in an AQP. Guidance on qualification and approval is provided in chapter 10 and in appendix C of this AC.)

6.–9. Reserved

Section 2. Definitions

10. Definitions

The following terms are used throughout this AC and are defined as follows:

Advanced Qualification Program.

An alternate qualification program for personnel operating under FAR parts 121 and 135 and for evaluators and instructors of recognized training centers that will provide such training. An AQP integrates a number of training features and factors aimed at improving airman performance when compared to traditional programs. The principal factor is true proficiency-based qualification and training. This proficiency base (expressed as performance objectives) is systematically developed, maintained and validated.

Anonymous Data. Data that cannot be identified with a named individual.

Applicant. A certificate holder that is required to have a training program under FAR 121.401 or 135.341 or that elects to have a training program under 135.341 and that applies for an AQP; or a training center that applies to conduct training and evaluation for an eligible certificate holder under an AQP.

Attitude. Mental state relating to: willingness to discharge responsibilities; ability to handle stress; ability to make decisions (judgment); and situational awareness.

Certificate Holder. Holder of an operating certificate and operations specifications which authorize part 121 or part 135 operations.

Cockpit Resource Management. The effective use of all resources available to a crew, including hardware, software, and all persons involved in aircraft operations to achieve safe and efficient flight. For additional information, see AC 120–51, as amended, "Cockpit Resource Management Training."

Cognitive. A mental process by which knowledge is created through sensory perception and/or reason.

Conditions. Existing circumstances which affect performance; e.g., external environment (weather, runway condition, airport area, etc.; internal environment (system emergencies, etc.).

Continuing Qualification Cycle. A measure of time that includes at least one evaluation period and additionally contains training in, and evaluation of all non-critical proficiency objectives.

Courseware. Instructional material developed for each curriculum. This is the information in lesson plans, flight event descriptions, computer software programs, audiovisual programs, workbooks, and handouts.

Criterion. A standard or rule where a judgment is made; e.g., pass/fail criterion.

Criticality. A determination of the relative impact of substandard performance on safety. The relative need for awareness, care, exactness, accuracy, correctness for the success of an outcome or operation.

Currency Item. A terminal proficiency objective for which individuals and/or crews can maintain proficiency by repeated performance of the item in normal line operations.

Curriculum. A portion of an AQP that covers one of three program areas: (1) indoctrination, (2) qualification, and (3) continuing qualification. A qualification or continuing qualification curriculum addresses the required training and qualification activities for a specific make, model, and series aircraft (or variant) and for a specific duty position.

Curriculum Segment. An integral part of a curriculum which can be separately evaluated and individually approved but by itself does not qualify a person for a duty position. First level of curriculum detail (*Segment,* Module, Lesson, Lesson Element).

Difficulty. The quality of being hard to perform, comprehend, or solve. As used in this AC, the definition concerns a task or subtask and is expressed in relative terms of least to most.

Duty. All the actions (tasks, subtasks, etc.) required by one's position or occupation.

Duty Position. The operating position of a crewmember, or other person. For part 121 and part 135 operations, duty positions include pilot in command (PIC), second in command (SIC), flight engineer (FE), flight navigator (NAV), instructor (IN), and evaluator (EV), aircraft dispatcher, flight attendant, or other ground operations personnel such as those dealing in security or hazardous materials.

Enabling Proficiency Objective. A separate knowledge, skill, or attitude which helps students achieve a higher order instructional objective. For example, knowledge of an "operating limitation" supports the "start engine" subtask.

Evaluation. Careful appraisal of an individual by an evaluator to ascertain whether the standards required for a specified level of proficiency exist.

Evaluator. A person who has satisfactorily completed training and evaluation that qualifies that person to evaluate the performance of crewmembers, instructors, other evaluators, aircraft dispatchers, and other operations personnel.

Event. An integral part of training or evaluation which is task-oriented and requires the use of specific procedures.

Facility. The physical environment required for training and qualification; e.g., buildings, classrooms.

Flight Training Equipment. Aircraft and those flight training devices or flight simulators that are used for any of the following purposes: (1) Required evaluation of individual or crew proficiency; (2) training activities that determine if an individual is ready for an evaluation; (3) activities used to meet recency of experience requirements; and (4) Line Operational Simulations (LOS).

Formative Evaluation. Process of reviewing courseware for technical accuracy, instructional soundness, and suitability for use by instructor, evaluator and student in media and facility; e.g., small group tryout, audit, and analysis.

Frequency. Number of occurrences of a task/subtask in a specific period of duty (1 flight, 1 trip, 1 month, 1 year, etc.) How often a task/subtask is performed.

Instructional Delivery Methods. See method.

Job. Duties, tasks, subtasks to be performed by an individual.

Knowledge. Specific information required to enable a student to develop the skills and attitudes to effectively recall facts, identify concepts, apply rules or principles, solve problems, and think creatively. It is demonstrated through actual performance.

Lesson. A meaningful division of learning consistent with the method of study, learning, or testing of performance (proficiency) objectives. The third level of curriculum definition (Segment, Module, *Lesson,* Lesson, Element).

Lesson Element. A subgroup of activities within a lesson. It is the fourth level of curriculum detail (Segment, Module, Lesson, *Lesson Element*).

Line Operational Simulations (LOS). A Line Operational Simulation is a training and evaluation scenario that simulates an operational flight and that accurately replicates interaction among a flight crew and between a flight crewmember and dispatch personnel, other crewmembers, air traffic controllers, and ground operations. These simulations are conducted for training and evaluation purposes and include abnormal and emergency occurrences. For additional information, see AC 120–35, as amended, "Line Operational Simulations.")

Media. Physical means for providing the instructional content. Includes entire set of instructional presentation materials; e.g., workbooks to simulators.

Method. (1) An ordered or systematic process for achieving an end; (2) A mode of procedure for instruction or evaluation; e.g: lecture, seminar; individual or group interactive procedural training; computer-based; event or scenario simulation; written, aural, or automated quiz or test; manual or automated performance measurement.

Module. A group of subject matter under a specific curriculum segment. Second of four curriculum levels of detail (Segment, *Module,* Lesson, Element).

Motor Skill. The eye to hand (and/or foot) coordination involved in interface of the man with the machine. Synonymous with "hands-on skill."

Objective. Statement of behavior including performance statement, conditions under which the performance occurs, and the standards to which the performance will occur to be correct or

adequate. See also "proficiency objective."

Performance Statement. A statement of physical and/or cognitive activities which, when executed or carried out, will complete the work required for a specific portion of a job. Specific portions are defined as task, subtask and elements.

Planned Hours. The estimated amount of time (as specified in a curriculum segment outline) that it takes an average student to complete instruction, demonstration, practice, and evaluation, as appropriate, to reach proficiency.

Proficiency Objective. An objective containing the criteria for a required level of performance.

Proficiency Objective Criticality. Relative importance of a proficiency objective as it relates to the safe outcome of an operation. Used to determine the need for attention in training and evaluation. The determination is based on rating/ranking of consequence of error and relative difficulty. Relative difficulty should consider frequency of occurrence in normal operations as well as basic complexity and time compression.

Provisional Approval. FAA approval of the fitness, willingness and ability of a training center operation to conduct a generic course of instruction by make, model and series aircraft (or variant). FYI: Provisional approval of a generic curriculum does not constitute approval to conduct training for a specific part 121 or 135 applicant.

Qualification Standards. The terminal and supporting proficiency objectives coupled with test and evaluation strategies (where, how and by whom measured). Qualification Standards and previous experience provides a baseline of mastery for a job. Demonstration that an individual has met certain or all of these standards may lead to certification.

Segment (Instructional). See curriculum segment.

Skill. An ability to perform an activity or action. Divided into motor/hands-on and cognitive categories.

Standard of Performance. Observable, measurable parameters of performance with tolerances; e.g., course deviation degrees, + or −

Subtask. Specific separate step or activity required in the accomplishment of a task.

Summative Evaluation. Training program evaluation accomplished in a full operational setting. Usually accomplished during the first full increment of classes with a full student complement.

Supporting Proficiency Objective. A proficiency objective created at the subtask level. A document describing a supporting proficiency objective and containing all knowledge, skills, attitudes and ability behaviors in that subtask.

Syllabus. An outline arrangement of curriculum segments, modules, lessons, and lesson elements in learning order sequence. Includes the schedule for planned hours, media, methods, and scenario where applicable.

Task. Unit of work within a duty, having identifiable beginning and ending points, and resulting in a measurable product.

Task Analysis. A specific method or procedure used to: (1) Provide a detailed, sequential listing of tasks, subtasks, and elements (if required) with skill, knowledge, attitude and ability characteristics that clearly define and completely describe the job; (2) provide consideration for conditions surrounding the job both in the environment and in the equipment used; (3) provide standards (parameters and tolerances) which provide safe and effective job accomplishment; and (4) identify characteristics of: (a) consequence of error, (b) relative difficulty, (c) frequency of occurrence in specific operations, and (d) time to accomplish the task.

Terminal Proficiency Objective. The highest level of definition for an objective. A derivative of a task. Accomplishment of a terminal objective (task) includes all subtasks.

Throughput. The need for replacement personnel to fill periodic attrition at specific duty positions. Throughput may be expressed as the number of persons requiring qualification during a twelve month period.

Training Center. An independent organization that provides training under contract or other arrangement to certificate holders. A training center may be a certificate holder that provides training to another certificate holder, an aircraft manufacturer that provides training to certificate holders, or any non-certificate holder that provides training to a certificate holder.

Training or Evaluation Module. See module.

Validation. Determination that required/desired results were produced. In training systems, the methods and procedures for development, implementation and maintenance as well as performance objectives and results will be validated.

Variant. A specifically configured aircraft for which the FAA has identified training and qualification requirements that are significantly different from those applicable to other aircraft of the same make, model, and series.

11.–19. Reserved.

Chapter 2. Overview of the Advanced Qualification Program

Section 1. Introduction

20. Purpose of the Advanced Qualification Program

The AQP is a qualification program for personnel operating under FAR parts 135 and 121. It integrates a number of training and evaluation features and factors that are aimed at improving performance as compared to traditional programs. The principle factor of the AQP is true proficiency-based qualification and training. This proficiency-basis (expressed as performance objectives) is systematically developed, maintained and empirically validated.

21. Overall Objectives of the Advanced Qualification Program

The following is a list of general objectives of the AQP:

(1) To improve safety through improved training and evaluation.

(2) To be responsive to changes in industry in new aircraft technology, operations, and training methods.

(3) To enable the use of training centers.

22. General Characteristics of Advanced Qualification Programs

The following is a list of the general characteristics of AQPs:

(1) Participation is voluntary.

(2) An AQP will employ innovative training and qualification concepts.

(3) It may build upon an existing training program or be completely new.

(4) Qualification of the AQP program will be based on individual and team performance expressed as proficiency objectives and on the structure and maintenance of all elements (curriculum, facilities, training equipment, instructors, evaluators, courseware and quality assurance) of the program.

(5) Individual and team proficiency, and the AQP itself, will be empirically validated by data collection and analysis.

(6) Training will be systematically developed with an audit trail for all training and data requirements.

(7) The methods used for development, implementation and maintenance of program operations will be continued throughout the life of the program.

23. Requirements of Advanced Qualification Programs

AQPs will:

(1) Accommodate make, model, and series aircraft (or variant).

(2) Provide three types of curriculums: indoctrination (for new hires, new instructors and new evaluators); qualification; and continuing qualification curriculums for every duty position.

(3) Provide data that validates, proficiency-based qualification of personnel which meets or exceeds existing part 121 and/or part 135 standards.

(4) Conduct training and evaluation in a crew or team environment.

(5) Train and evaluate Cockpit Resource Management (CRM). AC 120-51, "Cockpit Resource Management Training," as amended, provides additional guidance on CRM training. Specific CRM factors are described in the AC. Objectives and objective measures will be developed and applied for each factor for every task and subtask as applicable.

Note: CRM issues and measures are not completely developed at this writing. AQP is expected to support the further development of CRM. Collection and analysis of anonymous data (not identified with a named individual) will validate the CRM factors as well as overall crew performance. Until CRM performance factors can be validated, data should be collected without pass/fail consideration. However, correction of below standard performance to standard is expected. For measuring CRM factors a 5-point rating scale is suggested with 3 equating to satisfactory performance.

(6) Use Line Operational Simulations for both training and evaluation. Guidance for conducting Line Operational Simulations is provided in AC 120-35, as amended, "Line Operational Simulations."

(7) Train and evaluate instructors and evaluators.

(8) Provide data to the FAA to validate training methods and the training program.

(9) Integrate appropriate advanced flight training equipment. A level 6 or 7 flight training device or a flight simulator will be required to support line operational scenarios.

(10) Support FAA analysis of automated performance data. Performance data gathered during proficiency evaluations will be provided to the FAA in digital form for use in an automated database.

(11) Provide an AQP management plan that includes a transition plan. All applicants will provide a plan to transition from a traditional program to an AQP and from an AQP to a traditional program.

Section 2. The Five-Phase Approach

24. The Five-Phase Approach for Developing an Advanced Qualification Program

The FAA and the applicant will participate in a phased approval process. The approval activities fall into 5 phases, each consisting of one or more specific approval/validation actions. These phases are:

I—Initial Application
II—Curriculum Development
  Step 1—Develop Proficiency Objectives
  Step 2—Develop Syllabus
  Step 3—Develop Training Requirements and Plans
III—Training System Implementation
IV—Initial Operations
V—Continuing Operations

AQP curriculum development will use a systematic process proposed by the applicant and approved by the FAA. Figure 2-1 illustrates how the phased approval actions interface with development, implementation, and operation of an AQP. Detailed administrative procedures for the phased approval process are provided in chapters 7 and 8.

25. Advanced Qualification Program Validation

An AQP will be evaluated for overall conformance with major objectives. These objectives include: improving safety by training and qualifying students to proficiency, employing Line Operational Simulation for training and evaluations, incorporating CRM principles, improving instructor and evaluator qualification programs, using a crew or team complement for training and qualification, and using appropriate advanced training equipment. Two classes of data will be generated to support evaluation:

a. *Program Audit Database.* The Program Audit Database will be created and maintained throughout the five phases of the FAA approval process. The data will be used to validate program development, implementation and maintenance. Documentation of specific activities required in chapter 7 will be provided to the FAA. (A list of documents appears in appendix D.)

b. *Performance/Proficiency Database.* The Performance/Proficiency Database will be generated during Phases III, IV and V of the approval process. It will provide student, instructor, and evaluator performance/proficiency data to validate the effectiveness of the AQP. The data will be one means used to identify any changes required to improve the AQP. It will also be used to develop proficiency projections, to establish group performance norms, and to verify and validate qualification requirements. Performance/proficiency data will be used to support research and development of CRM principles, methods, and measures.

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ADVANCED QUALIFICATION PROGRAM

5 PHASES OF APPROVAL - - DEVELOPMENT, IMPLEMENTATION AND OPERATION ACTIVITIES

PHASES	DEVELOPMENT	IMPLEMENTATION	OPERATION
INITIAL APPLICATION	Cover Letter/Transition Plan Supporting Data Phase 1 Approval		
CURRICULUM DEVELOPMENT			
STEP 1- Develop Proficiency Objectives	Supporting Task Analysis Prepare Proficiency Objectives Student Entry Level Analysis Qualification Standards		
STEP 2- Syllabus Development	Objectives into Curriculum Lesson Development Lessons into Modules, Segments		
STEP 3- Training Requirements Development with Implementation/Operations Plan	Establish Training Resource Requirements Implementation and Operations Plan		
TRAINING SYSTEM IMPLEMENTATION		Courseware Development and Implementation Qualification of Instructors and Evaluators Formative Evaluation	
INITIAL OPERATIONS			Summative Evaluation Crew Training all Curriculums
CONTINUING OPERATIONS			All Training and Evaluation Quality Assurance Program Maintenance

Fig. 2-1

c. *Integration of the Two Databases.* Together the two databases provide the information needed to evaluate and control an AQP process. Each database is independent but interacts with the other. Changes to certain parts of the Program Audit Database will result in changes to training and/or results of proficiency evaluations. Conversely, undesirable proficiency evaluation results may indicate the need for changes to the training program which require changes in the Program Audit Database.

d. *Data Control Procedures.* This AC lists the documents required to provide the data necessary to apply for and operate under an AQP. All documents and document sections will be titled as indicated throughout chapter 7. A complete listing of titles in development sequence is provided in appendix D. Each document will have:

(1) A title page which has the applicant's identification, the revision status by number and date, and signature blocks for the applicant's assigned individuals responsible for AQP PROGRAM CONTROL and for the FAA official responsible for approval.

(2) A table of contents for the document.

26.–35. Reserved

Chapter 3. Basic Curriculum Requirements

36. Advanced Qualification Program Curriculum Requirements

For each make, model, and series aircraft (or variant) and for each duty position, three curriculums will be developed. These curriculums are indoctrination, qualification, and continuing qualification.

Examples of the subject materials and training events appropriate to indoctrination, qualification, or continuing qualification curriculums appear in appendices A, B, and C of this AC. These examples are based on requirements in FAR parts 121 and 135. An applicant with an approved program may follow the standard requirements expressed in those regulations or may generate new curriculum content and format through the process described in chapter 7 of this AC. In all cases, terminal and enabling proficiency objectives will be created (as explained in chapter 7) that include CRM principles and use Line Operational Simulation for training and evaluation. Differences between standard regulatory requirements and those specified in an operator's AQP authorized under SFAR–58 will be identified by the applicant. The program proposed by the applicant must provide individual and crew proficiency equivalent to or better than that provided by traditional programs.

37. Indoctrination Curriculum

An indoctrination curriculum consists of all training elements which will be learned and evaluated before an individual may begin a qualification curriculum. Indoctrination curriculum segments are ground training, special purpose training, and evaluation. Two distinct areas of ground training indoctrination are: (1) Certificate holder-specific training and, (2) duty position-specific training. Certificate holder-specific training acquaints crewmembers, dispatchers, instructors, evaluators, and other operations personnel with company policies and practices and general operational knowledge. Duty position-specific training provides the basic aeronautical knowledge needed to begin aircraft-specific training. Emergency situation training, which is part of indoctrination, is partially certificate holder-specific and partially duty position-specific.

For an example indoctrination curriculum, see Figure 3–1. For detailed information on subject matter appropriate to a standard indoctrination curriculum, see appendix A.

38. Qualification Curriculums

a. *General.* An AQP must include a qualification curriculum for each duty position in each make, model, and series aircraft (or variant). Figure 3–2 provides an example of a qualification curriculum. Each qualification curriculum will include ground training activities, flight training activities, evaluation, special purpose training, and supervised operating experience. Each AQP may also include a curriculum segment or evaluation modules which describe in detail the practical tests which will be used for persons who will acquire airman certificates, or additional category, class, instrument or type ratings through an AQP. CRM and Line Operational Simulations must be integral to any qualified curriculum.

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SAMPLE OF AN INDOCTRINATION CURRICULUM

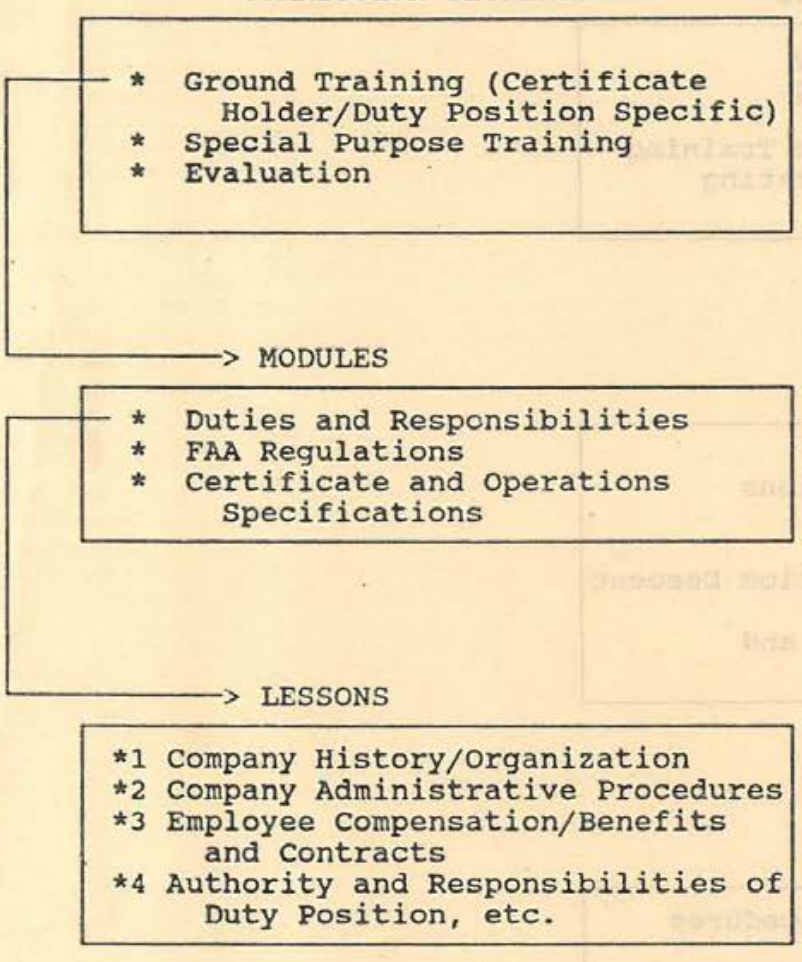

Fig. 3-1

SAMPLE OF A QUALIFICATION CURRICULUM
(FOR PIC B727)

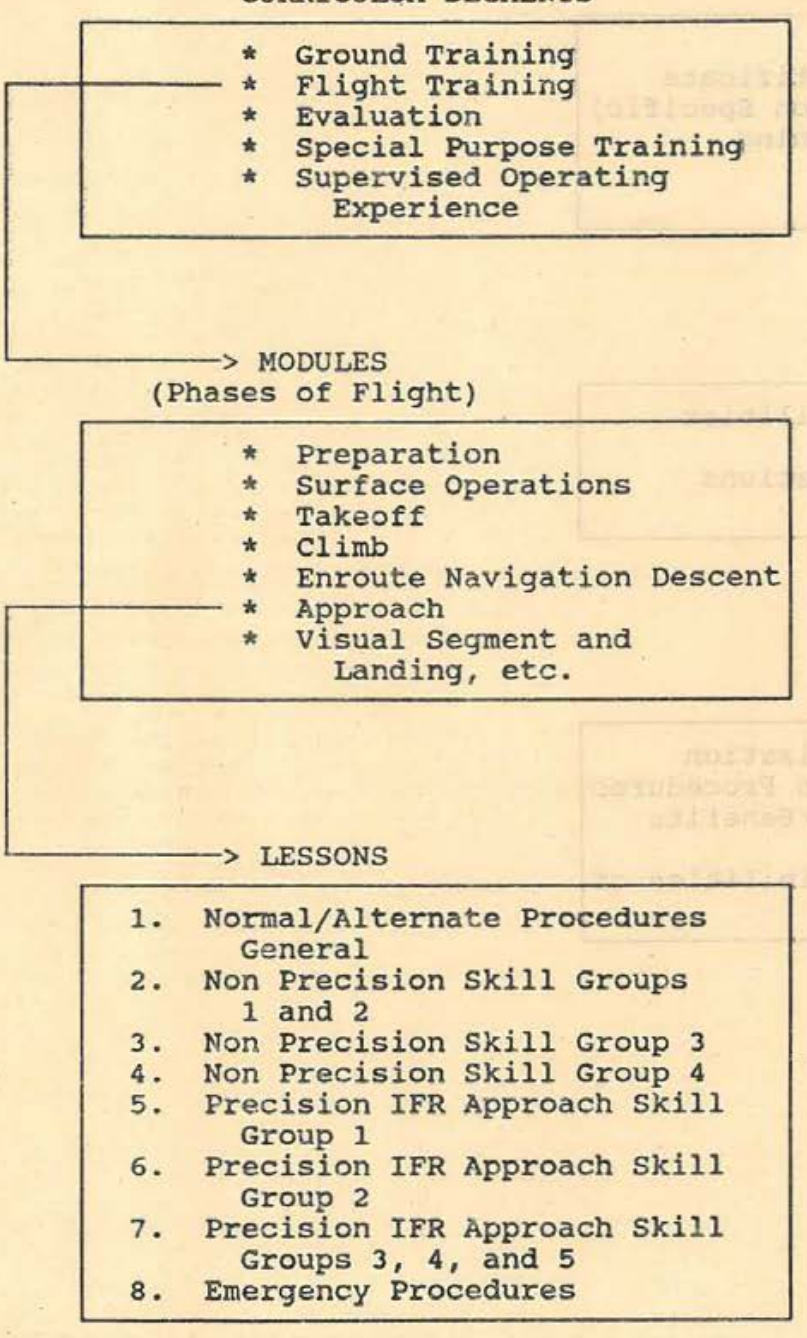

Fig. 3-2

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b. *Pilot and Flight Engineer Ground Qualification Activities.* To be qualified for a particular duty position in a specific make, model, and series aircraft (or variant), a person will receive aircraft-specific ground training. This training includes general operational subjects, aircraft systems, aircraft system integration, and emergency drill training. For further details on ground training subjects, see appendix B.

c. *Pilot and Flight Engineer Flight Qualification.* Each AQP includes curriculum segments for flight training, flight evaluation, and supervised operating experience for appropriate personnel. Standard flight qualification events for pilots and flight engineers are presented in appendix C.

d. *Evaluation.* Each AQP includes curriculum segments for evaluation of individuals and crew proficiency.

e. *Special Purpose Training.* Curriculum segments may include special purpose training. These are portions of ground and flight training that have specific application; e.g., to crewmembers who are in international operations, or for initial introduction of new flight operations, such as CAT III approaches. Special purpose training may initially be a separate curriculum segment that is later integrated into ground and flight training segments.

f. *Supervised Operating Experience.* Supervised operating experience curriculum segments are integral to qualification curriculums. An applicant may develop supervised operating experience curriculum segments which include required iterations of specific events and activities. Supervised operating experience will be directly supervised by an appropriately and currently qualified evaluator. The person gaining the experience will perform the duties of his newly assigned position at the control station that is appropriate for pilot, engineer, instructor, or evaluator. For pilots and flight engineers, supervised operating experience may be obtained only during actual flight operations.

g. *Airman Certification.* Curriculum segments may include evaluation modules developed to provide alternative practical tests for airman certification. In these modules the applicant must show, to the FAA's satisfaction, that the proposed test will ensure individual competency that equals or exceeds the standards in part 61, 63, or 65 and ensures each person certificated through an AQP has demonstrated satisfactory interactive CRM skills. (See chapter 4 of this AC.)

h. *Planned Hours.* Qualification curriculums will include planned hours for ground training, flight training, evaluation, and supervised operating experience.

39. Use of Flight Training Equipment in Qualification Curriculums

Flight training equipment consists of seven levels of flight training devices, four levels of flight simulators, and aircraft. The approved use of each item of flight training equipment for airman qualification is listed in the maneuvers and procedures tables in appendix C. The devices and simulators listed in the tables are the types of flight training equipment (other than aircraft) which may be approved for use in an AQP. Before any flight training device or flight simulator can be used for LOFT, Line Operational Simulations, recency of experience activities, evaluation or instruction conducted to assess whether a person has attained a terminal proficiency objective, it must be evaluated and qualified by the National Simulator Program Manager (NSPM) and approved by the FAA for its specific use in the applicant's AQP. ACs 120–40, as amended, "Airplane Simulator Qualification," and 120–45, as amended, "Airplane Flight Training Devices Qualification," provide the qualification policy, criteria, and detailed technical descriptions of flight simulators and flight training devices. Those ACs are the only authorized source documents and will be used for evaluation and qualification of flight training devices and flight simulators. Since those ACs are presently undergoing revision, appendix F of this AC describes the flight training devices and flight simulators applicable to AQI. These descriptions are to be used in connection with the approval tables in appendix C.

40. Continuing Qualification Curriculum

a. *General.* AQPs must include continuing qualification curriculums based on continuing qualification cycles. Continuing qualification cycles should efficiently utilize available training resources and accommodate appropriate combinations of environmental and operational situations.

b. *Applicability.* Continuing qualification applies to all persons subject to an AQP, including instructors and evaluators. In an AQP, fully qualified persons are automatically scheduled for continuing qualification activities specifically designed to maintain their proficiency in their duty positions and aircraft assignments. A person who is qualified on more than one make, model, and series aircraft (or variant) or in more than one duty position should be simultaneously enrolled in a separate continuing qualification curriculum for each assigned aircraft and duty position. However, a person who is simultaneously assigned as a flight crewmember, instructor, and/or evaluator on the same aircraft may be enrolled in a continuing qualification curriculum which combines the activities necessary to maintain skill and proficiency in all duty positions.

c. *Types of Activities.* Continuing qualification curriculums should outline a uniform timetable for the following: (i) Continuing qualification ground training; (ii) continuing qualification flight proficiency training; (iii) evaluation which includes flight proficiency evaluations and online evaluations; (iv) currency activities (including recency of experience activities); and (v) special purpose training. Continuing qualification should have a proper balance between training, evaluation, and currency. Generally, continuing qualification curriculum segments contain the same elements and events as qualification curriculum segments; however, continuing qualification segments are not as detailed for each module or element and therefore require fewer training hours. Continuing qualification curriculum segments exclude certification and supervised operating experience modules. Special purpose training segments in continuing qualification curriculums are used for the same purposes as in qualification curriculums. For an example of a continuing qualification curriculum see Figure 3–3.

(1) *Continuing Qualification Ground Training.* Continuing qualification will include ground instruction and evaluation for pilots, flight engineers, instructors, evaluators, and other operations personnel that includes a general review of knowledge and skills, attitudes and abilities covered in qualification training as well as updated information. Ground instruction reviews basic airmanship, including operational techniques, emergency situation training, the knowledge, skills, and attitudes required to operate a specific aircraft, and information concerning newly developed procedures. It includes newly developed safety information and newly modified airmanship techniques.

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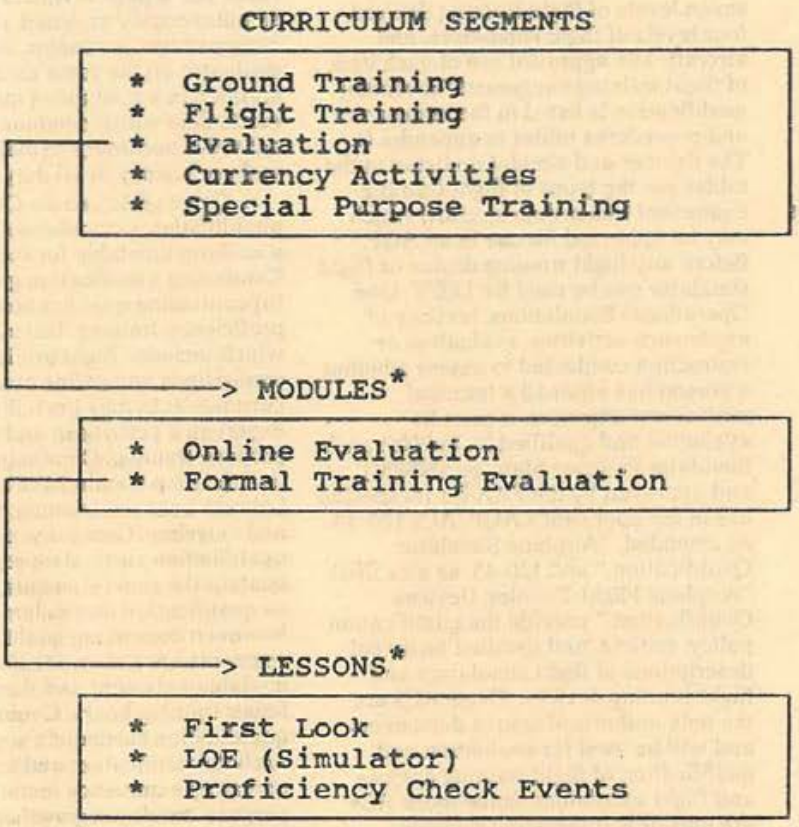
SAMPLE OF A CONTINUING QUALIFICATION CURRICULUM
(FOR PIC B727)



* Continuing Qualification Curriculums contain similar, less detailed modules/elements as compared to Qualification Curriculums.

Fig. 3-3

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(2) *Continuing Qualification Flight Proficiency Training.* Pilots, flight engineers, and those instructors and evaluators who conduct flight training or flight evaluations will complete proficiency training designed for their respective duty position in an aircraft, flight training device, or flight simulator on normal, alternate, abnormal and emergency flight events. Flight proficiency training permits pilots and engineers to experience and practice the procedures and maneuvers (events) which are not normally encountered in day-to-day flight operations. For instructors and evaluators who are limited to conducting their duties in flight simulators and flight training devices, flight proficiency training may be conducted in flight simulators and flight training devices.

(3) *Evaluations.* Continuing qualification must include evaluation in all events and major subjects required for original qualification. Flight proficiency evaluations and online evaluations are described below.

(i) *Flight Proficiency Evaluations.* Flight proficiency evaluations may be conducted in a flight training device, aircraft, flight simulator or a combination thereof. Their purpose is to permit evaluation of pilots, flight engineers, instructors, and evaluators as they perform the procedures and maneuvers specified for evaluation in the continued qualification curriculums.

(ii) *Online Evaluations.* Online evaluations are evaluations of an entire flight crew which are conducted by an evaluator during actual part 121 or part 135 flight operations or during operationally oriented flights such as ferry flights or proving flights. Online evaluations must be included in the continuing qualification curriculums for pilots in command only. However, during online evaluations each person performing duties as a pilot in command, second in command, or flight engineer must be individually evaluated as to: (1) Proficiency in the particular aircraft, crew position, and type of operation; and (2) skills and ability to operate effectively as part of a crew. To conduct such an evaluation, an evaluator will hold the airman certificates and ratings for all individual positions being evaluated.

(4) *Flight Crewmember Currency Activities.* The applicant's AQP should show compliance with either the currency requirements in FAR part 121.439 or specific, equivalent currency activities. The currency activities schedule, if not met during line operations, may be satisfied through a flight currency reestablishment activity specified in the continuing qualification curriculum. Currency activities for instructors and evaluators who are not "line crewmembers" will be specified in each AQP. These instructor and evaluator activities should enable each instructor or evaluator to maintain proficiency in teaching and evaluating the events the person is authorized to perform.

d. *Line Operational Simulations.* In an AQP, Line Operational Simulations include both training and evaluation during operational flight simulations designed to upgrade the skills and proficiency of flight crewmembers both as individuals and as team members. These activities require the team to make decisions concerning operations while simultaneously requiring high quality demonstrations of individual abilities. CRM skills should be seriously tested and challenged by the scenarios designed for Line Operational Simulations. Guidance for this training and evaluation are set forth in AC 120–35, as amended, "Line Operational Simulations," and AC 120–51, as amended, "Cockpit Resource Management."

41. Continuing Qualification Cycles

Activities in a continuing qualification curriculum must occur within a scheduled period called a "continuing qualification cycle." The continuing qualification cycle should provide sufficient detail to show compliance with the SFAR. Elements of ground training activities, flight training activities, proficiency and online evaluations and currency activities should be specifically identified. The schedule for the cycle should specify the period between each type of activity and the order in which activities will be performed. Developing a continuing qualification activity schedule involves selecting, revising, and ordering modules (with related proficiency objectives) from indoctrination and qualification curriculums. These modules should be regularly revisited to maintain both individual and crew proficiency. Each continuing qualification curriculum will identify the frequency of training sessions at a training facility for each person qualified under an AQP. During a continuing qualification cycle all terminal proficiency objectives must be trained and evaluated.

a. *Evaluation Period.* Each continuing qualification cycle must include at least one evaluation period. All critical proficiency objectives will be trained and evaluated during this period. (See chapter 7 discussion of critical proficiency objectives.) The initial evaluation period duration cannot be more than 13 months. For an illustration of the interrelationship between training sessions, evaluation, and currency activities within a continuing qualification cycle, see Figures 3–4. Events that occur within an evaluation period are:

(1) *Training Sessions.* Each evaluation period must include at least one training session, but may include two or more. Training sessions cannot be more than 13 months apart. However, a training session that occurs during the 2 months preceding the last month of an evaluation period will be considered to occur on schedule.

(2) *Online Evaluation.* For pilots in command, an online evaluation must be scheduled in the calendar month that includes the midpoint of the evaluation period. However, to allow flexibility, the online evaluation may be completed during the month after or the month before the midpoint month.

(3) *Proficiency Evaluations.* For pilots in command, seconds in command, flight engineers, and other persons covered by an AQP, a proficiency evaluation in an aircraft, flight training device, and/or flight simulator must be completed during each evaluation period. Typically, the proficiency evaluation will occur during a required training session; however, if more than one training session is completed during an evaluation period, proficiency evaluation may be divided among training sessions. Proficiency evaluation of non-critical proficiency objectives may be spread throughout the continuing qualification cycle.

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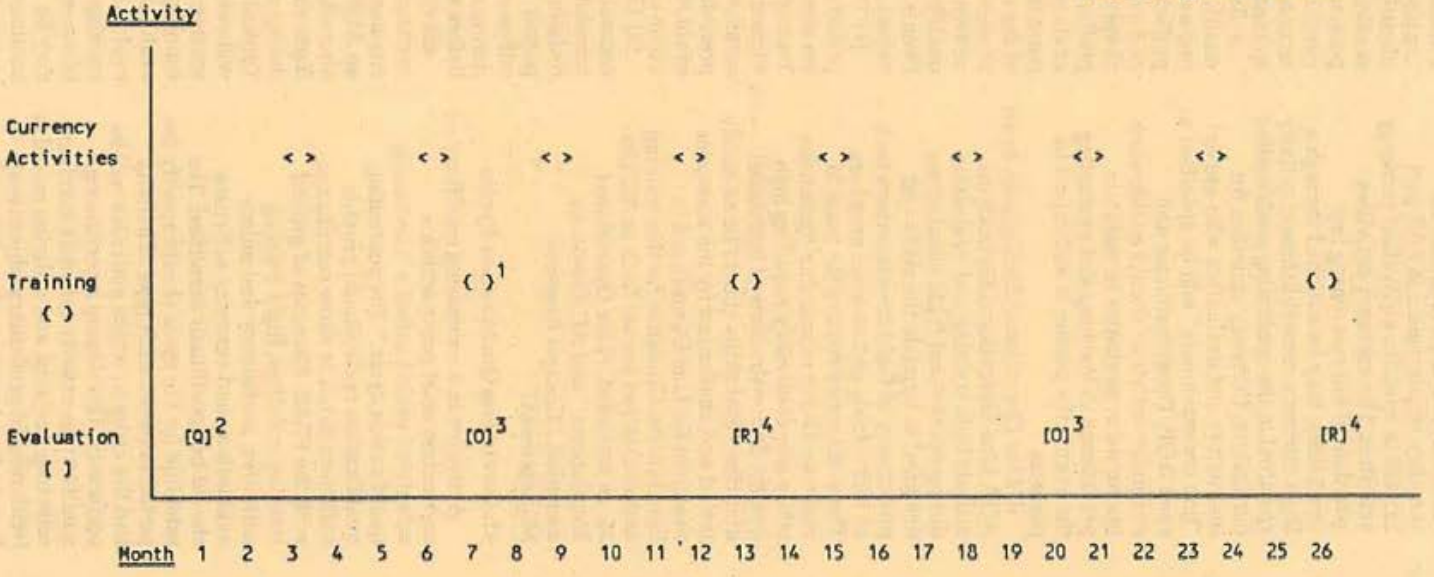
CONTINUING QUALIFICATION CYCLE EXAMPLE

SKYWAY'S AVIATION PILOT-IN-COMMAND LEAR 23/24 AIRCRAFT

CONTINUED QUALIFICATION CYCLE

< > = Currency - Repetitive Happenings to Maintain/Establish Currency
( ) = Training - Ground, Flight, Simulator
[ ] = Evaluation - Proficiency Check, LOE, First Look, Online Check



1 ( ) = First Training Activity for Newly Qualified PIC's Only
2 [Q] = Evaluation for Initial Qualification
3 [O] = Online Check (PIC)
4 [R] = Recurring Training Session and Proficiency Check (PIC/SIC/FE)
Note: The specific details of each activity are explained in SKYWAY's Continuing Qualification Curriculums.

Figure 3-4

b. *Extensions.* The FAA may approve extensions of the continuing qualification cycle, in increments not exceeding 3 calendar months, up to a maximum of 39 months upon demonstration by an applicant that the extension is warranted. The FAA may also approve an extension of an evaluation period in increments not exceeding 3 calendar months up to a maximum of 26 calendar months. To obtain approval for extension of a continuing qualification cycle or evaluation period, an applicant must show that individuals subject to the AQP are able to maintain their knowledge and skills under the already approved schedules and that a rational basis exists for believing that no loss of knowledge, skill, or abilities would result from the extension. An extension will be allowed to continue, or an additional extension will be granted, only if an operator's record and independent FAA evaluation show that the extension is appropriate as a means to maintain or increase the level of crewmember or dispatcher competency. The FAA will consider approving extensions to the duration of evaluation periods and continuing qualification cycles if evidence substantiates that the extension will maintain or increase the level of safety in air transportation.

c. *Validation.* The continuing qualification cycles and evaluation periods will be subject to continued demonstration of overall effectiveness. The demonstration will be dependent on the data submitted by the applicant for program validation. (See chapter 9 for validation requirements.) To ensure adequate individual and crew qualification, an applicant must show that its AQP has the capability to monitor each individual's demonstrated proficiency.

42. Flight Crewmember Requalification

A person who fails to comply with the requirements of a continuing qualification curriculum becomes unqualified for the duty position and must be requalified to resume serving in that duty position. An AQP should provide means for requalification. An AQP should also establish time limits beyond which an individual would be required to repeat the entire indoctrination curriculum and/or qualification curriculum to requalify.

43.–50. Reserved

Chapter 4. Airman Certification

51. *General*

SFAR 58 provides an alternative practical testing means to certificate pilots, flight engineers, and aircraft dispatchers. At this time, the process for certification of dispatchers through AQPs has not been formulated but will be addressed in a future version of this AC. At this time, the criteria developed for certification of pilots through AQPs is limited to pilots who hold at least a Commercial Pilot Certificate with an Instrument Rating. In the future the FAA may establish criteria for other types of pilots. Until these criteria are developed the FAA will review on a case by case basis any applicant's request for other types of pilot certification under an AQP.

52. Practical Test Criteria

An applicant for certification must be eligible under the applicable requirements of parts 61, 63, or 65, except that an operator may develop practical tests for certification which, when specifically approved by the Manager, Air Carrier Training Branch, may be used in place of the practical tests prescribed in parts 61, 63, or 65 of the FAR. Development of practical tests to be used in place of the practical tests prescribed in parts 61, 63, or 65 shou1d be based on the tables in appendix C of this AC and other relevant information such as aircraft flight manuals and Flight Standardization Board reports. These practical tests should consist of maneuvers and procedures for pilots; procedures and basic skills for flight engineers; and knowledge and procedures for aircraft dispatchers. Practical tests proposed by the operator should be shown to provide individual proficiency equivalent to or better than that provided by the practical tests prescribed in parts 61, 63, or 65 of the FAR.

53. Completion of Qualification Curriculum

An applicant for airman certification under an AQP will successfully complete the appropriate qualification curriculum.

54. Demonstration of Individual Skills

Applicants for certification will show competence in required technical skills and CRM skills in actual or simulated operational scenarios that test both types of skills together.

55. Authorized Evaluation Personnel

Certification tests will be conducted by a person who is designated in writing by the Manager, Air Carrier Training Branch, as qualified to conduct the particular evaluation. Only the following personnel may be designated by the Manager, Air Carrier Training Branch, to conduct airman certification evaluations in an AQP.

a. *FAA operations inspectors* who are currently qualified on the make, model, and series aircraft (or variant) and who are thoroughly familiar with the specific alternative evaluation process in the particular AQP.

b. *Aircrew program designees* (APDs currently qualified on the make, model, and series aircraft (or variant), who have completed evaluator qualification and maintain continuing qualification as evaluator under the particular AQP.

c. *Designated examiners* currently qualified on the make, model, and series aircraft (or variant), who have completed evaluator qualification and maintain continuing evaluator qualification under the particular AQP.

56. Disposition of Airman Certification Documents

Persons authorized to conduct airman certification evaluations under an AQP will issue either a temporary airman certificate or notice of disapproval for each certification evaluation conducted and will write "SFAR 58" in the top margin of the application form. The completed file will be mailed to the FAA Flight Standards District Office identified in the individual AQP for further disposition in accordance with FAA internal directives.

57.–60. Reserved

Chapter 5. Training and Evaluation of Instructors and Evaluators

61. General

Each AQP (including provisional AQP curriculums for training centers) should provide instructor and evaluator indoctrination, qualification, and continuing qualification.

62. Training and Evaluation

Each instructor and evaluator should receive training in and be evaluated on the methods of qualification and the use of flight simulators, flight training devices, aircraft, and other media used in the AQP. A means of maintaining currency in the use of these methods and media should be included in each instructor and evaluator continuing qualification curriculum.

63. Instructor Courses

a. *Instructor Indoctrination.* Indoctrination for instructors should include the following elements:

(1) The learning process.

(2) Elements of effective teaching.

(3) Student evaluation, quizzing, and testing.

(4) Overview of AQP program development, implementation, and operation policy.

(5) Lesson preparation and application.
(6) Classroom instructing techniques.
(7) Techniques for instructing in the cockpit environment.

b. *Instructor Qualification.* Instructor qualification should include development of knowledge and skills in the following:
(1) Effective use of specific flight training devices and flight simulators used in the AQP.
(2) Limitations on use of training equipment used in the AQP.
(3) How to conduct training modules for students with varying backgrounds and varying levels of experience and ability.
(4) Evaluation of performance against objective standards.
(5) Effective preflight and postflight instruction.
(6) Instructor responsibilities.
(7) Effective analysis and correction of common errors.
(8) Teaching/Facilitation of CRM skills.
(9) Performance and analysis of standard flight events and procedures.
(10) Qualification at the instructor duty position in the flight simulator, flight training device, and/or aircraft.
(11) Safety considerations in the training environment.
(12) Data gathering procedures.

c. *Instructor Continuing Qualification.* Each instructor continuing qualification curriculum segment should include a schedule for recency of instructor experience and for ground and flight training to enhance, upgrade, and maintain each instructor's knowledge, skills, and abilities. Each instructor's continuing qualification curriculum should include a schedule for critical examination of each instructor's abilities.

64. Evaluator Training and Evaluation

Persons selected to be evaluators should have experience as instructors and have shown their ability to observe and judge the effectiveness of individual training courses and of individual instructors, as well as the overall effectiveness of an AQP. All evaluators will complete curriculums which consist of indoctrination and qualification. After qualifying, evaluators will maintain their qualification through participation in a continuing qualification curriculum segment specifically designed to enhance evaluator skills, knowledge, and abilities. Whenever a person is maintaining qualification as both an instructor and an evaluator, a single continuing qualification curriculum segment may be developed to maintain both skills.

a. *Content of Evaluator Indoctrination Curriculum.* Evaluator indoctrination curriculum segments include the following elements:
(1) Evaluation policies and techniques.
(2) The role of the evaluator.
(3) Administrative procedures.
(4) General safety considerations.
(5) Evaluating CRM skills.

b. *Content of Evaluator Qualification Curriculum.* Evaluator qualification curriculum segments should include the following elements and events:
(1) For each crewmember position requiring a particular evaluation the methods of conducting:
(i) Online evaluations.
(ii) In flight proficiency evaluations.
(iii) Proficiency evaluations in flight simulators and/or flight training devices.
(iv) Special purpose evaluations (e.g., long range navigation).
(2) The standards for the evaluations in (1).
(3) When applicable, the methods and standards associated with airman certification evaluation.
(4) If applicable, how to conduct evaluations while simultaneously serving as PIC, SIC, or safety pilot.
(5) Safety considerations for the various types of evaluations.
(6) Safety considerations particular to the make, model, and series aircraft (or variant).
(7) How to evaluate instructors.
(8) How to evaluate other evaluators.
(9) Company policies with regard to the conduct of evaluations.
(10) FAA policies with regard to the conduct of evaluations.
(11) Administrative requirements particular to evaluations.
(12) Evaluating CRM skills.
(13) Briefing and debriefing techniques.
(14) Data gathering procedures.

c. *Content of Evaluator Continuing Qualification Curriculum.* Each evaluator continuing qualification curriculum segment should include a schedule for recency of evaluator experience and for ground and flight training to enhance, upgrade, and maintain each evaluator's knowledge, skills, and abilities. Each evaluator's continuing qualification curriculum should include a schedule for critical examination of each evaluator's standardization and abilities.

65. Instructor and Evaluator CRM Training and Evaluation

All instructors and evaluators should receive instruction and be evaluated in CRM objectives and training methods. For additional information on CRM. (See AC 120–51, as amended, "Cockpit Resource Management Training.")

66.–70. Reserved

Chapter 6. Training Centers

71. Purpose.

This chapter provides guidance to (1) any training center that intends to provide training, qualification, or evaluation for a certificate holder's AQP, and (2) any certificate holder that intends to arrange for a training center to accomplish training, qualification, or evaluation under an AQP.

72. General Guidelines

a. *Approval: When Required.* A certificate holder that provides qualification under an AQP to its own employees does not need to be approved as a training center. A certificate holder that provides training, qualification, or evaluation for other certificate holders and any other organization that provides training, qualification, or evaluation for certificate holders is considered a training center.

b. *Provisional Approval.* A training center should obtain provisional approval of each curriculum segment or portion of a curriculum segment that it proposes to offer for use by others. A training center would not have to have a contract or other arrangement with a particular certificate holder to obtain provisional approval. However, provisional approval does not convey automatic approval for use of a provisionally approved curriculum segment as part of a certificate holder's AQP. Permission to use a training center's provisionally approved curriculum segment as part of a particular certificate holder's AQP depends on the FAA's assessment of the adequacy of the training center's curriculum material to meet the certificate holder's specific needs. Modification of the training center's curriculum materials usually will be required to ensure that the material conforms with the certificate holder's training and qualification needs. Instructors and evaluators employed by training centers will demonstrate competency to teach and evaluate in conformity with the certificate holder's approved training and qualification standards, operational methods, techniques, and procedures.

c. *Certificate Holder Operations-Specific Training.* Generally, operations-specific (i.e., specific to a certificate holder) training will be provided directly by a certificate holder rather than by a training center. A certificate holder that wishes to contract with or otherwise

arrange for conduct of operations-specific curriculum segments by a training center will show that the training center, including the center's instructors and evaluators, is fully qualified and competent to accomplish operations-specific curriculum segments.

73. Application for Provisional Approval of Training Center Curriculum Material

a. *Application for Provisional Approval.* Application is made to the Air Carrier Training Branch through the training center's local Flight Standards District Office. The application may be submitted independently by a training center or in conjunction with a certificate holder that is applying for an AQP.

b. *Five-Phase Approval Process.* Each application will be submitted through the five-phase approval process explained in Chapter 7. Provisional curriculum approval will require successful completion of Phases I, II, and III. Approval of Phase IV training will only be granted when the provisional curriculum segments are incorporated in or adapted to a specific certificate holder's AQP.

74. Approval for Use in an AQP

Approval for use of a training center's provisionally approved curriculum segments in a certificate holder's AQP will be given only at the time the certificate holder applies for approval of its AQP and only if the FAA determines that the curriculum segments are appropriate for the certificate holder's required training.

75.–80. Reserved

Chapter 7. Five Phases of the Advanced Qualification Program

Section 1. Introduction

Each of the five phases for developing implementing, and maintaining an AQP are described in detail in this chapter. Each phase and step must be FAA approved before the applicant may proceed to the next step or phase. Each phase and step consists of specific activities including the documentation of those activities. The documentation is established and maintained as part of the Program Audit Database. A description of the administrative procedures for each phase or step of the approval process is provided in chapter 8.

Section 2. Phase I: Initial Application

81. General

In the initial application phase, the applicant must establish its intent and approach for developing an AQP. The applicant will develop the methods to meet specific regulatory requirements. The applicant will also develop a Supporting Data Package that includes the basic information used to develop, implement, and operate a proficiency-based qualification program. This data package becomes part of the Program Audit Database and is kept current throughout the life of the AQP.

82. Program Audit Database

The organization of the Program Audit Database will be established during Phase I of the approval process. The database will continue to be generated and maintained throughout all five phases.

83. Documentation for Phase I

To begin the application process the following documents are required:

a. *Program Audit Database Master List.* A master list of all documents in the database is required for each make, model, and series aircraft (or variant). A sample list of these documents is presented in Appendix D. All documents should be listed by title and have a corresponding summary description.

b. *Application Cover Letter.* The application cover letter will address at least the following issues:

(1) The applicant's intent to develop, implement, and operate an AQP.

(2) The specific concept, approach and methodology for developing the AQP (specific methods and procedures for all steps).

(3) The specific concept, approach and methodology for implementing the AQP.

(4) How and to what extent the AQP will differ from a traditional training program.

(5) How the AQP will be operated and maintained.

(6) How CRM will be integrated and measured.

(7) How security and hazardous material training will be addressed (as applicable).

(8) How Line Operational Simulation concepts will be integrated into both evaluation and training.

(9) How existing levels of performance and safety will be met or exceeded.

c. *Transition Plan.* An applicant will include a separate transition plan (containing a calendar of events) to accompany the cover letter. Transition from one program to another (traditional to AQP or AQP to traditional) may include a period of overlap as one program is phased in and the other phased out. The following guidelines for transition are offered:

(1) Currently qualified personnel may transition between traditional recurrent training curriculums and continuing qualification curriculums.

(2) Personnel who have completed initial, transition or upgrade curriculums may enter a continuing qualification curriculum.

(3) Personnel who have completed a traditional basic indoctrination curriculum, but have not completed an initial, transition or upgrade curriculum, should not enter AQP qualification curriculums until they complete the difference items for the AQP indoctrination curriculum.

(4) Partial transition plans are not acceptable.

(5) The transition plan may provide for incremental implementation of indoctrination, qualification, and AQP continuing qualification curriculums in Phase IV (Initial Operations), and incremental final approval in Phase V.

d. *Supporting Data Package.* The supporting data package will include the following information:

(1) Job Listing for each make, model, and series aircraft (or variant). This requirement may be met by using existing task analyses available to the applicant in currently approved programs. A job listing shall include the following:

- Duty position (e.g., pilot in command, instructor, and evaluator).
- Task (e.g., Accomplish VOR/LOC non-precision instrument approach; or Accomplish visual landing).
- Subtask (for VOR/LOC non-precision approach) (e.g., Accomplish Procedure Turn; or Perform Final Approach Phase).

(Note: If further breakdown of subtasks is desired, elements may be used.)

(2) Aircraft configuration and performance baseline. For each make, model, and series aircraft (or variant) the following information shall be provided:

- Cockpit design layout.
- Aircraft system design.
- Training and qualification recommendations included in Flight Standardization Board reports.
- Aircraft performance.
- Aircraft flight manuals.
- Operations manuals.
- Environmental characteristics of terminals and enroute operating areas.

(3) Trainee demographics. The following demographic data will be part of the supporting data:

- Summary data for trainee experience and entry level should be provided. Entry requirements for ground and flight instructors and evaluators should be provided; e.g., previous experience working for the applicant.

Students should be identified as a group in terms of previous experience with high, low and mean experience included.

(Note: It may be desirable to create curriculums for more than one student entry level population for a single duty qualification.)

• The current and anticipated need for replacement crewmembers by duty position (throughput) should be provided.

(4) Documents governing operations. A catalogue of documents governing operations including but not limited to: Operating Specifications; Federal Aviation Regulations; Instrument Procedures; Advisory Circulars; International Civil Aviation Organization Procedures (ICAO); flight manuals; Flight Standardization Board reports; etc.

(Note: To take exception to the provisions of these or any other existing documents in developing an AQP, the applicant will identify and support the exception.)

(5) Training equipment description. This document should describe the training equipment to be used and the organization responsible for its security and maintenance. Flight simulators and/or flight training devices should be identified by make, model, serial number, and manufacturer; or by the FAA identification number assigned by the National Simulator Program Manager. Specifically, the applicant will identify any new training equipment to be used. If qualification is required, the applicant should state when it intends to submit a test guide and a request for equipment qualification. Qualification requests will be processed in accordance with ACs 120-40 and/or 120-45, as amended. (For more information on flight simulators, flight training devices, and other training equipment, see chapter 10 of this AC.)

(6) Facilities description. Each AQP submission should describe the facilities the applicant intends to use. These facilities may belong to a certificate holder or may be operated by a training center. In either case, the applicant should describe the location, type of facility, classrooms, training aids, and other features that contribute to creating and maintaining a positive learning environment.

(7) Courseware description. The applicant should describe the kinds of courseware (instructional materials) to be used. Examples include: lesson plans, audiovisual programs, workbooks, mission folders, weather briefings, etc.

(8) Operating environment description. The applicant should describe its operating environment including the complete range of physical environmental factors expected to be encountered in operations. Environmental factors are critical to development of Line Operational Simulation scenarios and meaningful proficiency objectives. Environmental factors include:

• Weather norms and extremes (e.g., *minimum* extremes of expected weather conditions.)

• Normal, abnormal and emergency equipment operation.

84. Review of the Initial Application Package

When the applicant has submitted the cover letter and supporting data, the FAA will review the application package and meet with the applicant to discuss findings. This conference *does not constitute approval.* It provides a means for the FAA to acquire an understanding of the applicant's approach and to establish communication with the applicant. After the conference, the FAA will either grant approval to continue into Phase II, Step 1, or inform the applicant of AQP application requirements which have not been met.

85. Reserved

Section 3. Phase II: General Curriculum Development

86. General: Curriculum Development

Phase II has three steps which require FAA review and approval. Step 1 is development of proficiency objectives and Qualification Standards. Proficiency objectives are established and matched with appropriate test and evaluation strategies to create Qualification Standards. Step 2 is development of a complete training curriculum and syllabus. Step 3 is development of training resource requirements and an Implementation and Operations Plan. A clear linkage will be established and maintained between the Qualification Standards developed in Step 1, the curriculum and syllabus developed in Step 2, and the training resource requirements and Implementation and Operations Plan developed in Step 3. (See Figure 7-1.) This linkage will be provided by a systematic approach to development of a complete instructional system. This chapter recommends a systematic approach and a methodology which is acceptable to the FAA. Innovation and practical application may result in equally acceptable variations. However, in any methodology used, the following list of factors should be included (or considered where appropriate) for each task, subtask, knowledge, skill, attitude and ability:

CURRICULUM DEVELOPMENT STEPS

Requirement	Development activity
Step 1	
Proficiency Objectives. Qualifications Standards.	Conduct Task/Subtask Analysis. Prepare Proficiency Objectives. Analyze Student Entry Levels. Allocate Proficiency Objectives to Appropriate Curriculum. Formulate Test And Evaluation Strategies.
Step 2	
Syllabus for: Indoctrination Qualification. Continuing Qualification.	Organize Curriculum into Segment (by Objectives). Establish Learning Order. Develop Lessons. Organize Lessons into Modules.
Step 3	
Training Resource Requirements. Implementation and Operations.	Determine Training Resource Requirements. Develop Implementation and Operations Plan.

Fig. 7-1

a. *Factors That Should Always Be Included:*

• Statement of performance.

• Environmental conditions affecting difficulty/success.

• Performance standards (parameters with tolerances).

• Abnormal and emergency procedure contingencies.

• Repetition of events needed to reach proficiency (qualification).

• Student entry level performance evaluated against proficiency objectives.

• Document references (title, page, paragraph) governing or specifying the operation.

b. *Factors That Are Necessary if Non-critical Terminal Proficiency Objectives Are To Be Identified:*

• Consequence of error to safety.

• Relative difficulty.

• Frequency of occurrence (or period between occurrence) in normal operations.

c. *Factors Required if the Flight Training Equipment Charts (Appendix C) Are Not Used:*

• Exterior visual, perceptual motion and aural cues.

• Cockpit equipment control and display characteristics required for hands-on skills.

d. *Factors That Are Necessary if Currency Events Are To Be Established for Continuing Qualification Curriculums:*

• Minimum period between rehearsals to maintain proficiency (continuing qualification).

• Frequency of occurrence (or period between occurrences) in normal operations.

e. *Additional Factors:*

• Equipment and system operation dependencies (if used for establishing learning sequences for curriculum development).

• Criterion for success upon which performance standards are based. If new performance standards are to be created this criterion should be established for each task and subtask; e.g., the tracking standards for VOR approaches are based on navigation requirements. The navigation requirements are the criteria for success.

f. *Use of Factors.* The factors listed in a. through e. above should normally be organized in a task analysis as presented in Phase II, Step 1. The task analysis of Step 1 will yield data for other activities in Steps 2 and 3 as well as providing the data for establishing proficiency objectives in Step 1. The FAA suggests that all task analysis factors be considered together.

Section 4. Phase II, Step 1: Proficiency Objective Development

87. General Requirements for Proficiency Objective Development

a. *Purpose.* This is the most critical step in AQP development. In this step, a task analysis will be conducted to support development and analysis of proficiency objectives and development of the syllabus in Step 2. Proficiency objectives, together with evaluation and test strategies, will be used to develop Qualification Standards. The approved task analysis, proficiency objectives and Qualification Standards become the basis for all subsequent curriculum development, implementation, and operation. Qualification Standards form much of the baseline for subsequent program validation activities.

b. *Cockpit Resource Management.* During Step 1 the applicant must use CRM factors and principles in developing proficiency objectives. Applicants should provide innovative approaches to deal with both the training and measurement of CRM. CFR factors will be incorporated into the tasks and subtasks as skills, knowledge, and attitudes. CRM factors will be individually identified in an existing task analysis and "flagged" for evaluation. If the applicant is unable to identify the CRM factors in an existing task analysis, or no task analyisis exists, a separate CRM task analysis will be accomplished. CRM factors provide much of the information required to create team or crew objectives.

c. *Hazardous Materials and Security.* The applicant will include hazardous materials and security training requirements in the task analyses and in development of proficiency objectives.

d. *Documentation Required for Phase II, Step 1.* Two documents are required for the proficiency development step. These documents are:

(1) The Supporting Task Analysis
(2) The Qualification Standards

88. Supporting Task Analysis

Development of proficiency objectives is based on a supporting task analysis. Each subtask or element (as identified in the job listing in Phase I) is analyzed for a number of factors as described in the paragraphs below. The subtasks and elements are summarized into tasks and additional factors of analysis are then accomplished. The order of the analysis activities may differ from that presented in this AC, but the analysis activities must be acomplished in some specific order acceptable to the Administrator. A flow chart of suggested task analysis activities is presented in Figure 7–2. Worksheets for these activities are provided in appendix E.

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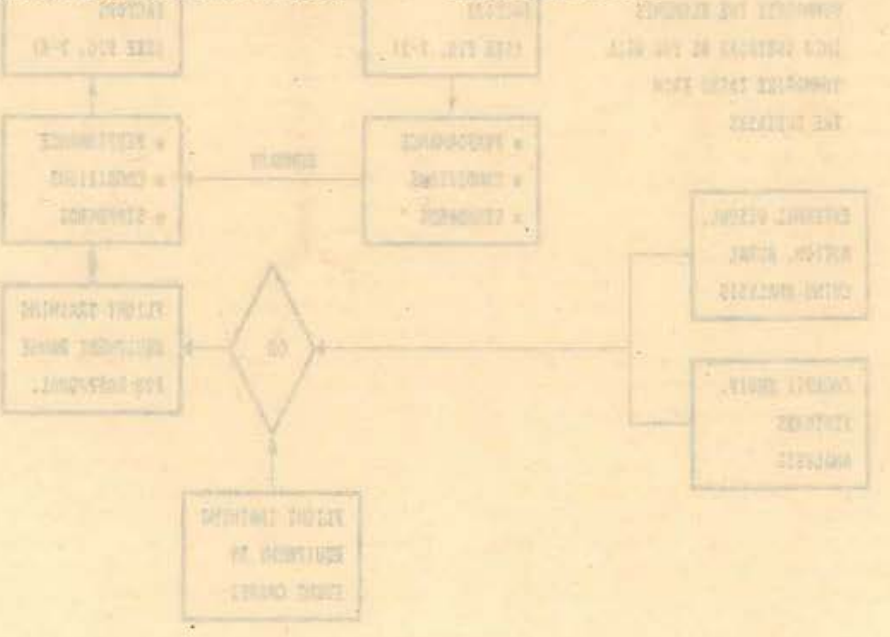

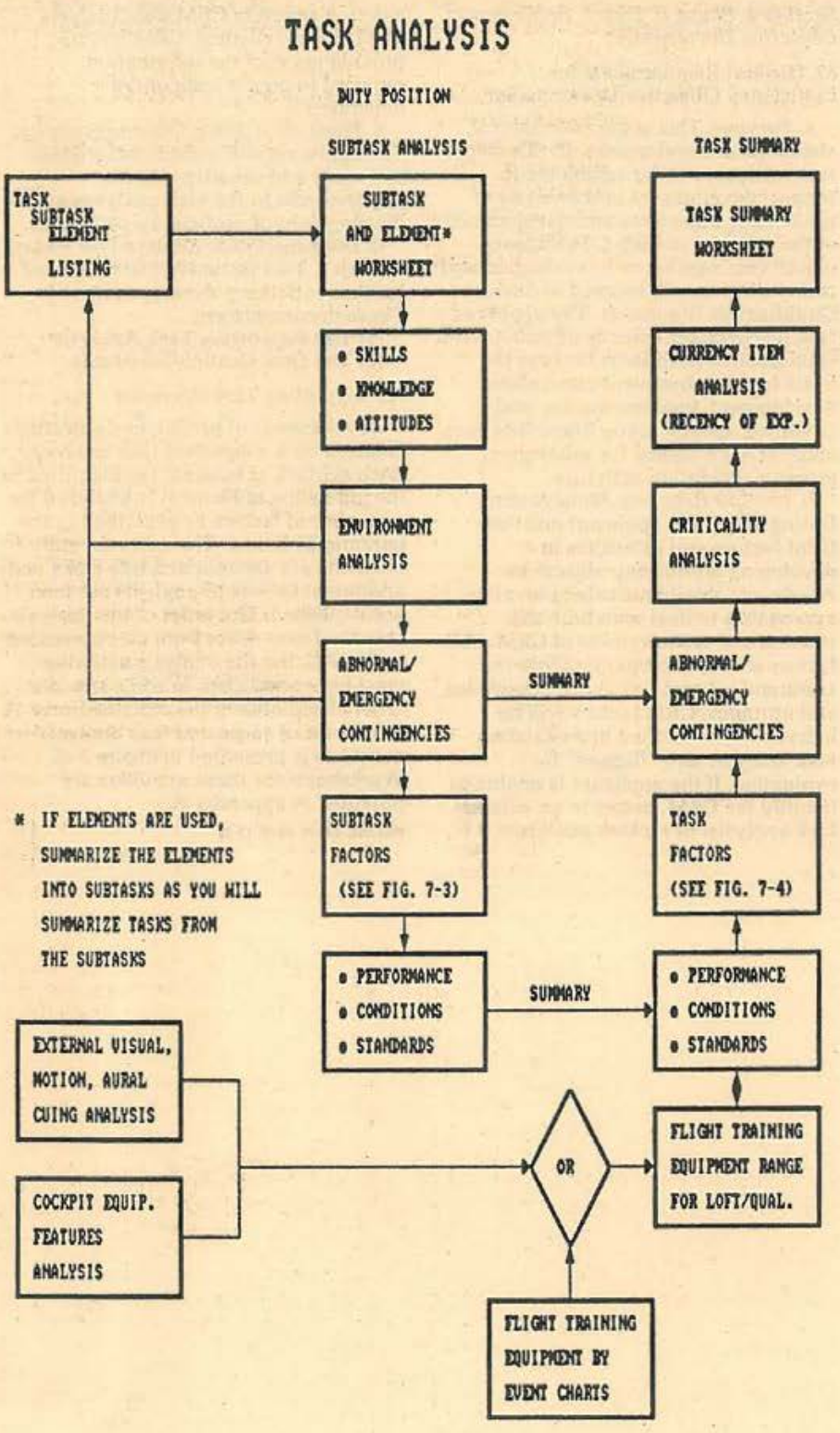

FIG. 7-2

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a. *Skill, Knowledge, and Attitude Listing.* The applicant analyzes each subtask or element for required knowledge, skills, and attitudes. This analysis includes the CRM factors. Skills are classified as either motor or cognitive. An example of a subtask or elements skills, knowledge, and attitudes listing, with representative CRM factors, follows.

(**Note:** This example is not intended to be complete. Rather, it shows three examples of each category: knowledge, motor skill, cognitive skill and attitude.)

EXAMPLE

Subtask: Perform Procedure Turn
Knowledge—Know when to execute a procedure turn.
Knowledge—Know what types of procedure turns apply.
Knowledge—Know procedures for the applicable procedure turn.
Cognitive Skill—Decide on the appropriate type of procedure turn.[1]
Cognitive Skill—Determine drift from course and heading comparisons.
Cognitive Skill—Determine inbound intercept angle/heading.
Motor Skill—Turn to and maintain outbound heading; maintain altitude.
Motor Skill—Turn inbound, maintain _____ deg. bank.
Motor Skill—Accomplish verbal communication as required.[1]
Motor Skill—Maintain holding airspeed.
Attitude—Be aware of primary systems operations.[1]
Attitude—Be aware of other aircraft.[1]
Attitude—Be aware of air traffic control radio communications.[1]

[1] CRM factors.

(**Note:** Subtask summaries are accomplished where elements are used.)

b. *Environment Analysis.* Each subtask is analyzed for environment considerations. The following environmental factors apply:

(1) The natural environment; e.g., ceiling, visibility, wind, turbulence, wet runway, etc.

(2) The operational environment and terminal areas including enroute where flight activities are conducted; e.g., navigation, out of service, etc.

(3) The operational configuration of the aircraft; e.g., center of gravity, weight, minimum equipment list, etc.

(**Note:** Where environmental conditions increase difficulty of an element or a subtask, or otherwise change the performance significantly, a separate element or subtask is to be generated.)

c. *Abnormal Emergency Contingencies.* For each element or subtask, the applicant should identify any equipment abnormality or emergency which increases difficulty or affects performance of the subtask; e.g., engine failure, partial flight controls, hydraulic system/s failure, high or low operating weights.

Note: 1: Equipment abnormalities or emergencies may be appended to each subtask and/or separate subtasks may be created. 2: Environmental conditions and abnormal and emergency contingencies are used to create Line Operational Simulation scenarios for qualification and continuing qualification curriculums.

d. *Subtask Factors Analysis.* For this activity, the applicant collects data for a variety of factors. Figure 7–3 shows these factors and their purposes. The "references" factor and the "success criterion" factor are used in lesson development. The references factor is necessary for maintaining current curriculums ("curriculum currency maintenance"). The success criterion factor may be needed if subtask performance standards are new or different from contemporary performance standards. Success criterion is that data which define the limits of safe operation. For example, procedure turn safe operating envelopes may be found in TERPS documentation. Contemporary performance standards for subtasks may be found in materials such as FAA pilot test standards, ACs, etc The other factors (relative consequence of error, relative difficulty, time to accomplish, and trails required to reach proficiency) are optional for use in lession development. For relative rating of factors such as consequence of error or difficulty, a five point scale is recommended with 5 (five) most, 1 (one) least. (for further discussion of these factors, see paragraph g. of this section.)

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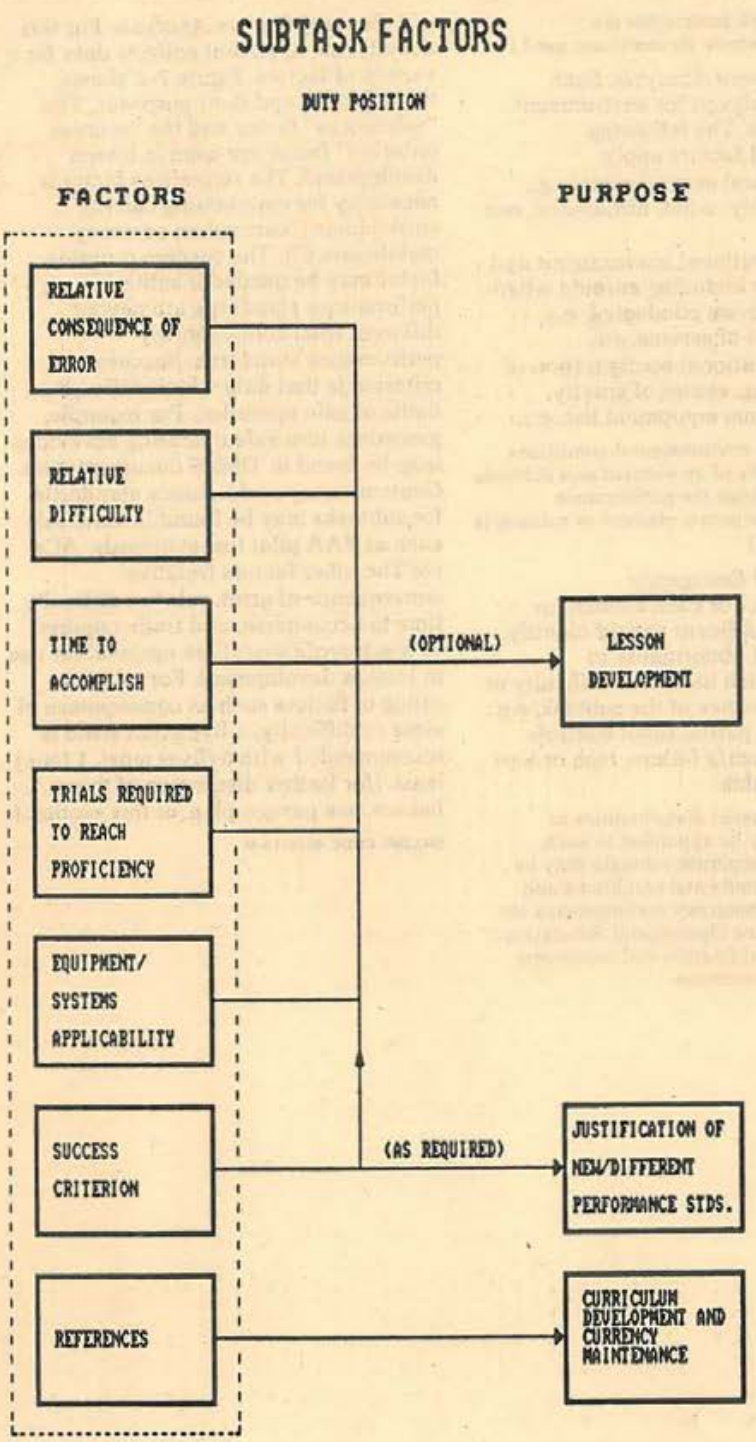

FIG. 7-3

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e. *Subtask Performance, Conditions, Standards.* After the preceding actions are accomplished, the applicant prepares a statement of performance, conditions, and standards for each subtask. (See the worksheet in appendix E as an example.) The performance statement includes consideration for summaries of all the skill, knowledge, and attitudes listed for the subtask. Conditions are taken from the environment analysis and abnormal emergency contingencies. The standards are taken from existing documents such as the FAA pilot test standards or will be established by the applicant. This subtask data (performance, conditions and standards) provides the basis for supporting proficiency objectives.

f. *Task Summary from Subtask Analysis Data.* When the subtask analysis is complete, a task summary is created from portions of the subtask data from all of the applicable subtasks for each task. (See appendix E and Figure 7–2.) The task summary consists of:

(1) A summary of the abnormal/emergency conditions.

(2) Summary statements of performance, conditions and standards from each subtask.

(3) The flight training equipment range selected from appendix C.

(Note: A cueing analysis and cockpit equipment features analysis is necessary to support flight training equipment selections that are outside the range in appendix C or for events (tasks) not covered in appendix C.)

g. *Task Factors Analysis.* For each task summary accomplished through paragraph f. above, an analysis of the factors as shown in Figure 7–4 is completed. Figure 7–4 also shows the purpose for each factor analysis. These purposes are:

(1) Curriculum Currency Maintenance. As with the subtask analysis, listing references (documents defining the operational procedures, conditions, standards, etc.) is necessary to maintain current curriculums.

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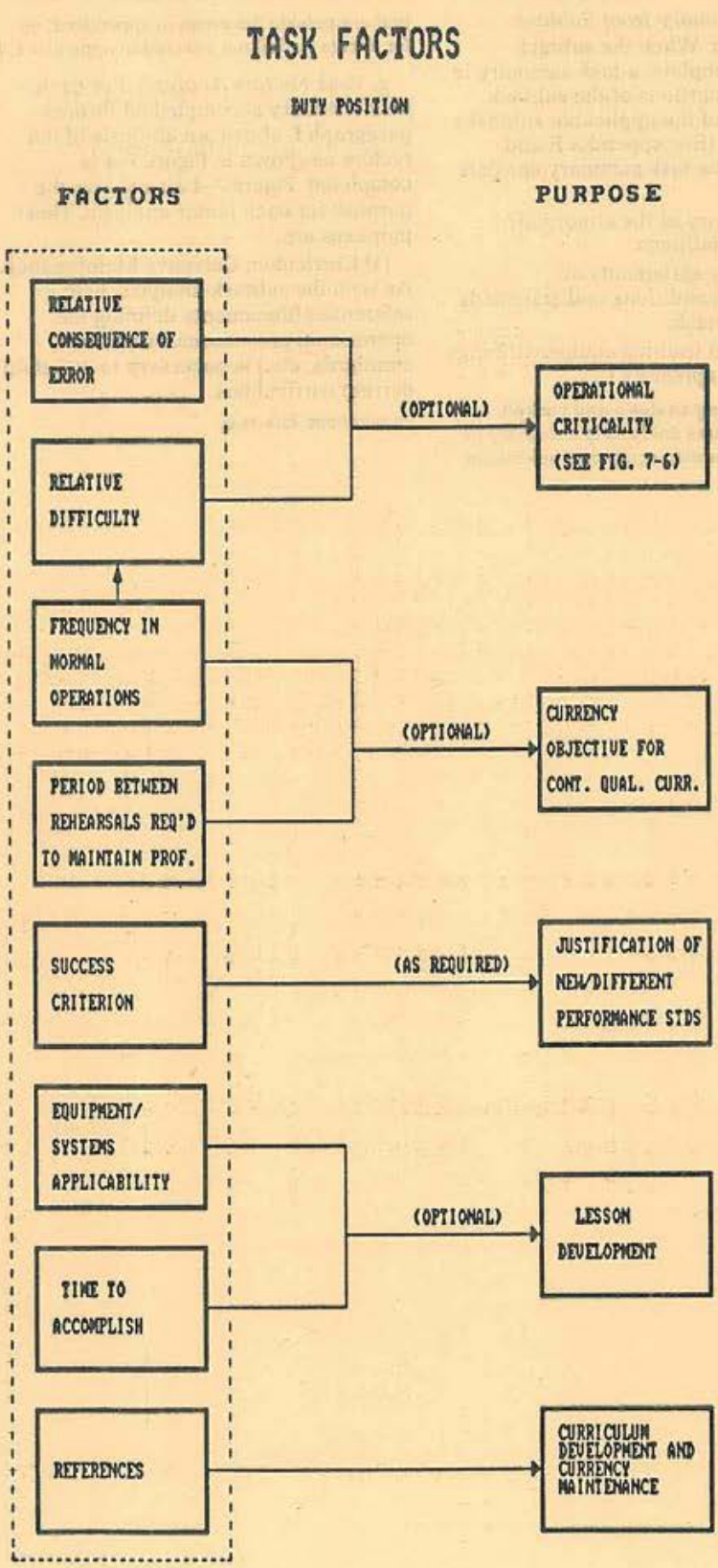

FIG. 7-4

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(2) Lesson Development. Factors of equipment/systems applicability (to the task accomplishment) and time to accomplish the task are suggested to aid the curriculum developers in creating lessons.

(3) Justification for New/Different Performance Standard. The success criterion factor will be included to support performance standards not contained in a contemporary document. Subtask data may be summarized at the task level for this requirement.

(4) Currency Event. Currency event candidates may be identified (for selection later in the process) by collecting data on:

(i) Frequency of task occurrence in normal operations.

(ii) The maximum interval of time that can be allowed between rehearsals of a task without a loss of proficiency.

If the frequency of occurrence in normal operations is more than the maximum interval allowed between rehearsals, a currency event candidate may be identified.

(5) Operational Criticality. Each task provides data to create a terminal proficiency objective. (See section 89a.) If non-critical tasks can be identified, their respective terminal objectives may be accomplished over the continuing qualification cycle. Otherwise, all terminal objectives will be considered critical and therefore will be accomplished during each evaluation period. The two factors used to make the criticality assessment are:

(i) Relative consequence of error (impact on safety if a major error is made).

(ii) Relative difficulty of task to all other tasks.

Figure 7–5 suggests an approach to task criticality assessment acceptable to the Administrator. A five point scale (five most, one least) is used for both factors. For consequence of error, most may be associated with loss of life. Relative difficulty should take into consideration the frequency of occurrence in normal flight operations as well as task complexity, time compression, etc. A relative rating of 4 or greater for either factor denotes a critical task. Also, if both ratings are 3 (totaling 6), the task is critical. All other ratings would be non-critical.

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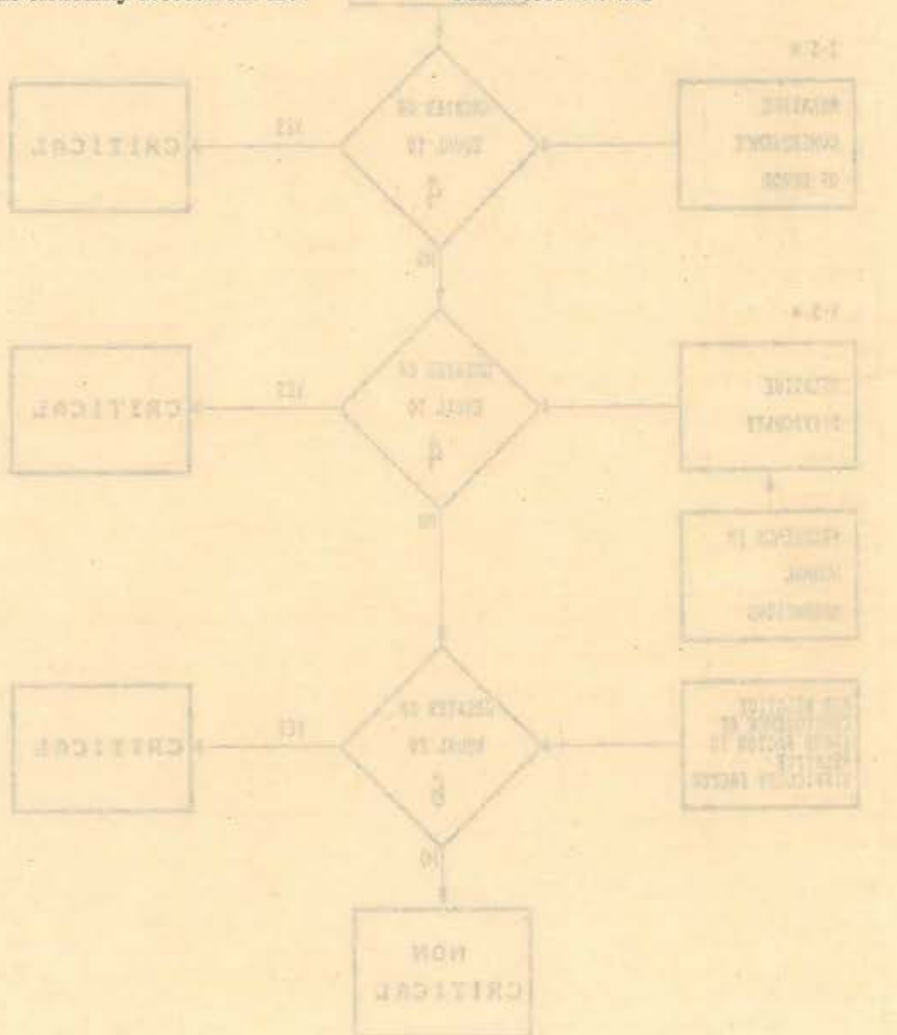

OPERATIONAL CRITICALITY ASSESSMENT

TASK

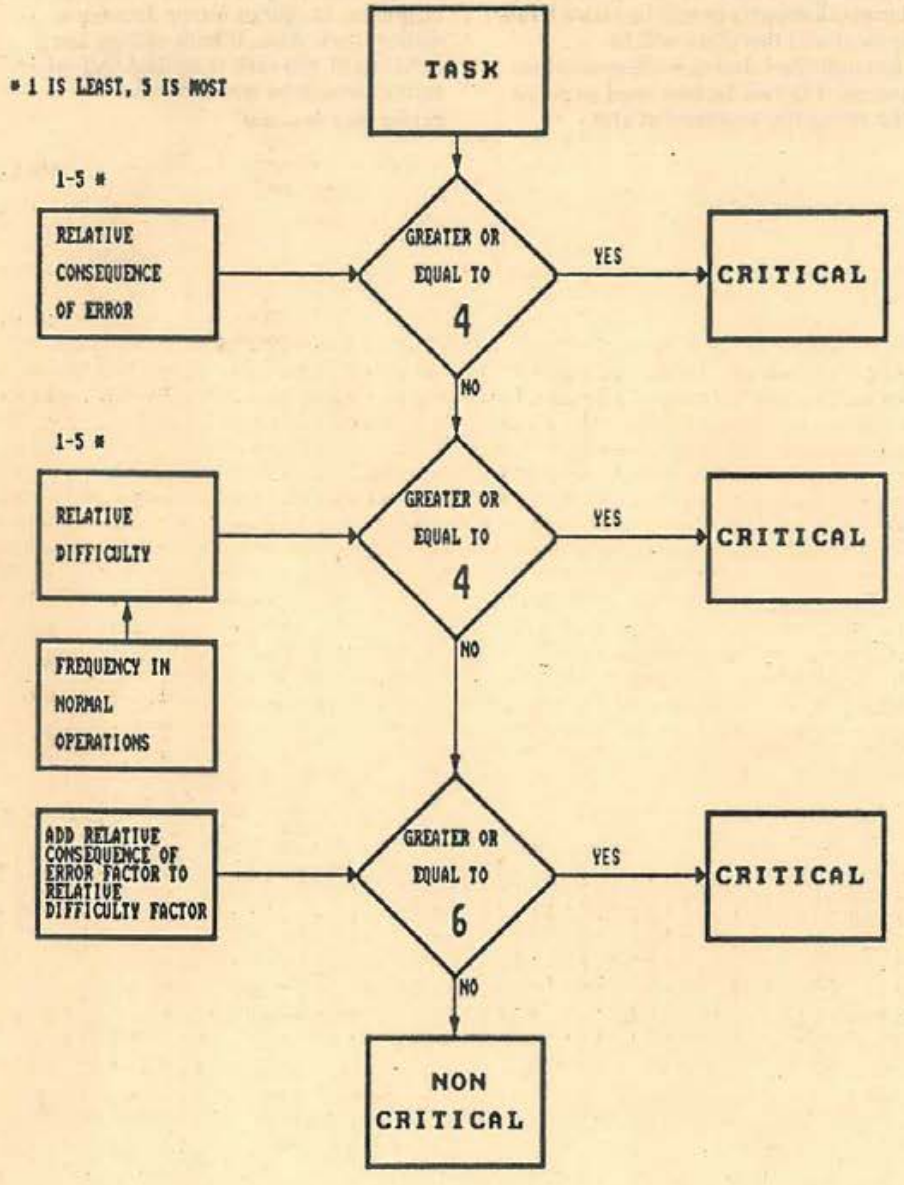

FIG.7-5

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h. *Completion of Task Summary.* Completion of the task summary analysis provides the body of data required to create terminal proficiency objectives, test and evaluation strategies and curriculums of indoctrination, qualification, and continuing qualification.

89. Proficiency Objectives

For each duty position, proficiency objectives are extracted from the subtask and task analysis. A proficiency objective has three elements: (1) A statement of performance; (2) a statement of pertinent equipment and environment conditions surrounding the performance; and (3) the parameters and tolerances which define standards of satisfactory performance. Terminal proficiency objectives are extracted from the summary task analysis. Supporting proficiency objectives are extracted from the subtask analysis. (See Figure 7–6.)

a. *Terminal Proficiency Objectives.* Terminal proficiency objectives are statements of performance, conditions, and standards established at the task summary level. A complete set of terminal proficiency objectives will fully describe a particular job in the applicant's flight operation. Terminal proficiency objectives may be classified as critical or noncritical on the basis of an operational criticality assessment. Terminal proficiency objectives which are currency event items may be identified from candidate items developed during the subtask analysis or task summary analysis and used in development of continuing qualification curriculums. Statements of terminal proficiency objectives should also include the range of flight training equipment to be used, the abnormal and emergency contingencies to be considered, and lesson development factors.

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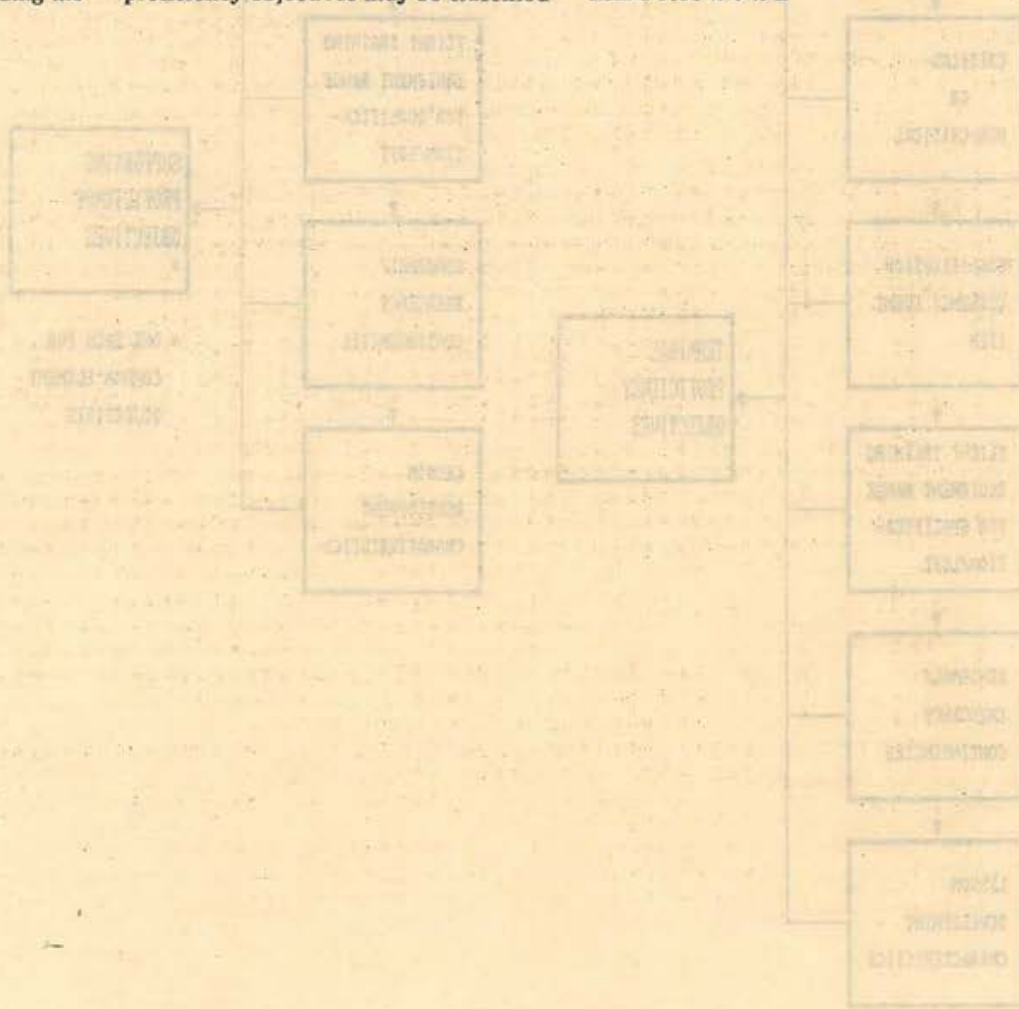

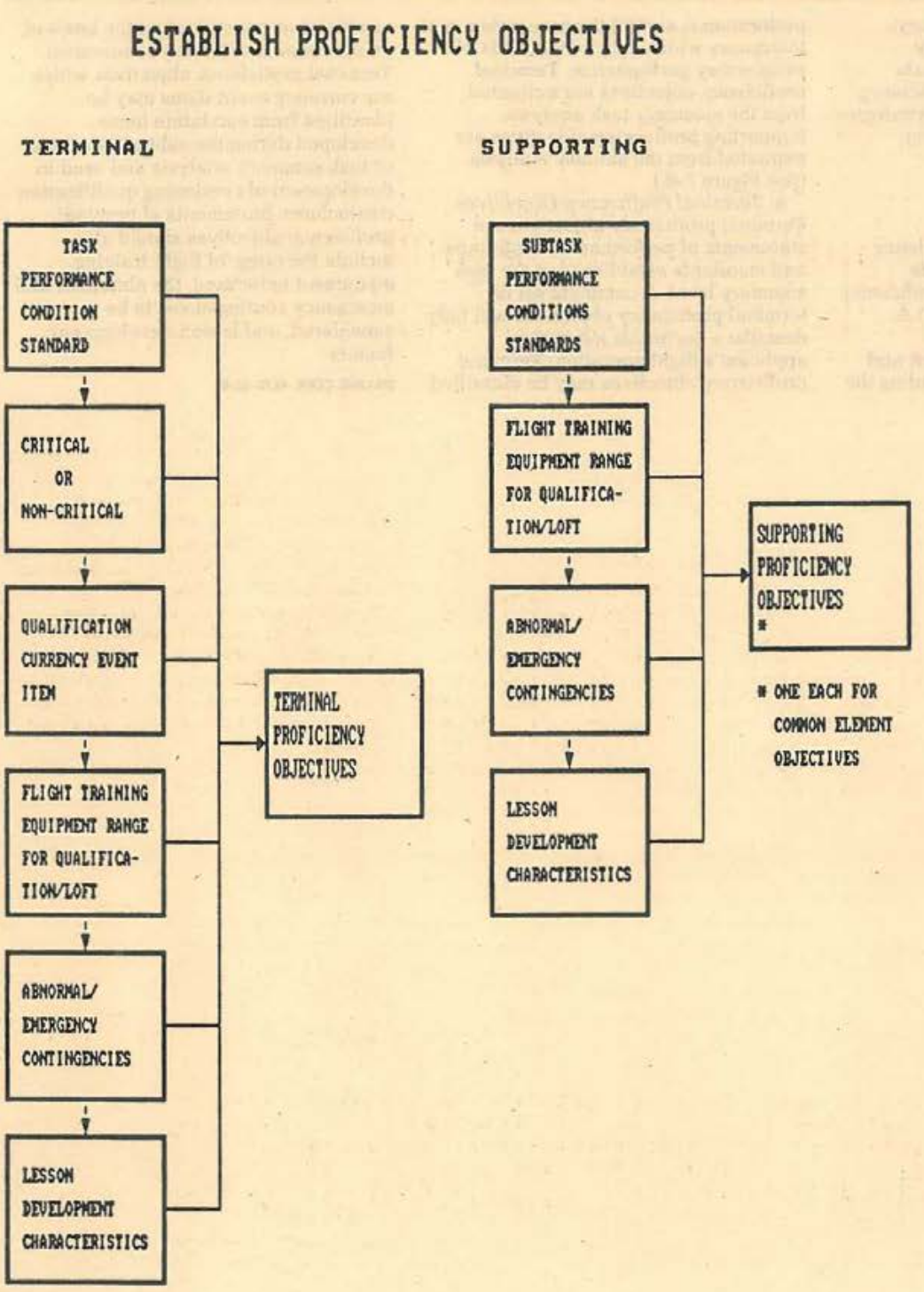

FIG.7-6

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(Note: A set of multiple conditions may suggest that multiple terminal proficiency objectives are required for each task. In any case, an applicant will create terminal proficiency objectives appropriate to the applicant's operation. Examples of multiple conditions include: high and low gross weight; cold weather and hot weather operation; and forward and aft CGs.)

b. *Supporting Proficiency Objectives.* Supporting proficiency objectives are used to develop training and evaluation curriculum lessons, modules, and segments. A supporting proficiency objective is prepared for each subtask. A supporting proficiency objective includes a statement of performance, conditions, and standards, extracted from the subtask analysis. Supporting proficiency objectives include the range of flight training equipment to be used, the abnormal and emergency contingencies considered, and the lesson development characteristics.

c. *Common Element Supporting Proficiency Objectives.* Identifying common element objectives is useful in creating ground and flight curriculum modules that do not have unnecessary repetition of supporting proficiency objectives. Identical supporting proficiency objectives may appear in several terminal proficiency objectives. These supporting objectives are identified as a common element supporting proficiency objectives.

d. *Enabling Proficiency Objectives.* Enabling proficiency objectives are used to prepare individuals and crews for subsequent training in an operational cockpit environment. An applicant may identify a certain knowledge factor, cognitive skill, motor skill, or attitude as an enabling proficiency objective. These are not normally carried forward in the supporting performance objective statement. However, performance of a supporting proficiency objective would depend on a student acquiring the particular knowledge, skill, or attitude.

e. *Document References.* All references used in defining the performance, conditions and standards for each proficiency objective must be listed by title and chapter in the documentation of the proficiency objectives.

90. Establishing Qualification Standards

The Qualification Standards document is the single most important part of any AQP. It provides the complete proficiency baseline for all duty positions. It lists both terminal and supporting proficiency objectives. This baseline provides the major elements which enable qualification curriculum and continuing qualification curriculum syllabus development in Phase II, Step 2. The document also provides the basis for validation of individual and crew performance. Figure 7–7 depicts the process for establishing Qualification Standards. The document is organized as follows:

a. *Student Entry Analysis.* The applicant will accomplish and document a student entry level performance analysis for terminal proficiency objectives and supporting proficiency objectives. A 4-point performance difference rating scale, Figure 7–8, is suggested. Highly skilled instructors who are familiar with the experience and background of the student population and knowledgeable of the terminal and supporting proficiency objectives should make the rating. This analysis provides guidance to determine efficient teaching strategies for the indoctrination and qualification curriculums. This analysis can also identify where training is not needed, where basic "enabling" skills must be taught, and what number of trials are expected for an applicant to reach terminal proficiency objective standards. More than one population group may be used in conducting the student entry analysis for a single duty position.

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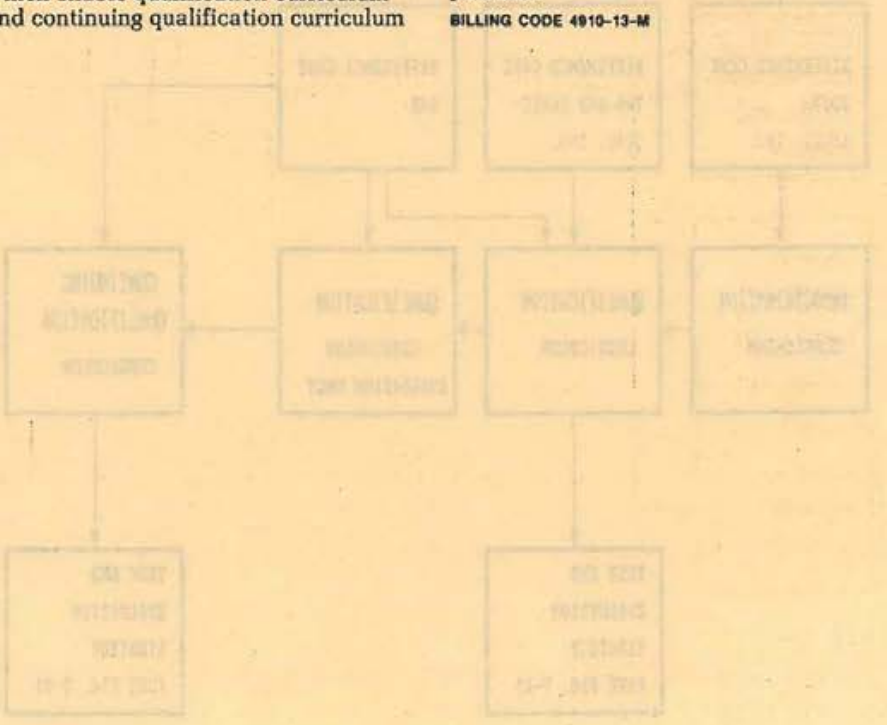

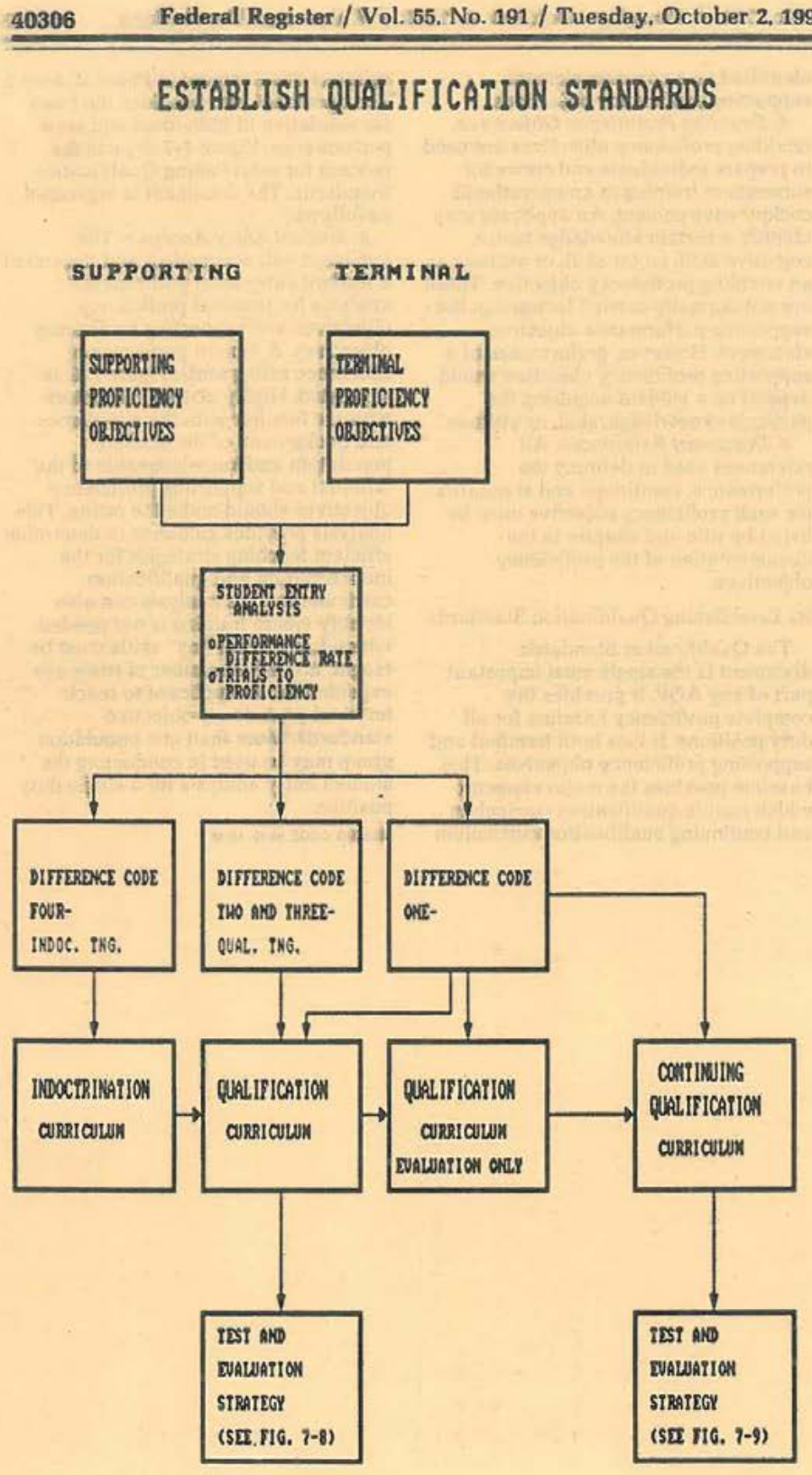

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FIG.7-7

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PERFORMANCE DIFFERENCE RATING SCALE

Performance difference code	Performance difference description
1	Meets or exceeds the required performance.
2	Can accomplish tasks with minor errors or omissions. May take longer than expected or allowed.
3	Cannot accomplish tasks. Does demonstrate basic background skills and knowledge.
4	Does not demonstrate basic background experience, skills or knowledge. Unfamiliar with simplest elements of a task.

Fig. 7–8

b. *Allocation of Proficiency Objectives.* The Qualification Standards document will identify the curriculum (indoctrination, qualification, or continuing qualification) in which specific proficiency objectives will be met. The applicant will consider student entry level in determining this allocation. All terminal proficiency objectives must be included in a qualification curriculum regardless of entry level analysis. For supporting proficiency objectives the entry level analysis determines what objectives will be taught under each curriculum. Supporting proficiency objectives with a performance difference code of 4 should be included in an indoctrination curriculum and again, along with objectives with a performance difference code of 3 and 2, in a qualification curriculum. A difference code of 1 would not require indoctrination or qualification training but would indicate that the candidate is ready for proficiency maintenance provided for in the continuing qualification curriculum. All objectives should also be covered in continuing qualification test and evaluation strategies.

c. *Developing a Test and Evaluation Strategy.* (1) *General.* [As used here, "test" means the process of gathering, formatting and reporting discrete individual and crew proficiency data. "Evaluation" means the process of analyzing that data by comparison with sets of specific criteria.] The applicant will develop a test and evaluation strategy for indoctrination, qualification (Figure 7–9), and continuing qualification (Figure 7–10) curriculum proficiency objectives. Each strategy must describe how, when, where, and by whom the data is gathered and the evaluation is conducted. The analysis may be used for, but is not limited to, the following purposes:

(i) Validating individual and crew proficiency.

(ii) Validating specific performance factors.

(iii) Projecting proficiency trends, etc.

(2) *The Process.* An applicant will develop a test and evaluation strategy as follows:

(i) For qualification curriculums divide terminal proficiency objectives into critical and non-critical sets.

(ii) For continuing qualification curriculums select from terminal proficiency objectives those that are currency events and divide objectives that are not currency events into critical and non-critical sets. Critical events will be evaluated in each evaluation period; non-critical events will be evaluated in each continuing qualification cycle.

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TEST AND EVALUATION STRATEGY

QUALIFICATION CURRICULUM

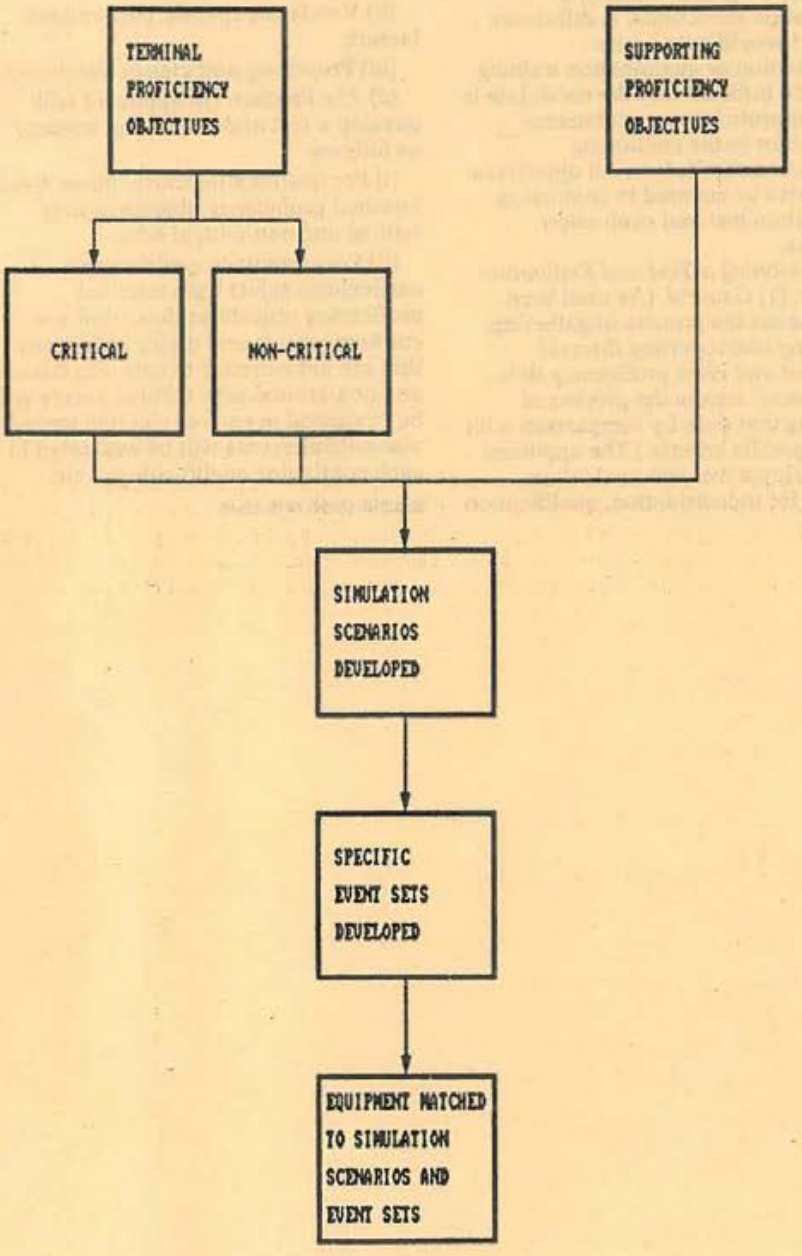

FIG.7-9

TEST AND EVALUATION STRATEGY

CONTINUING QUALIFICATION CURRICULUM

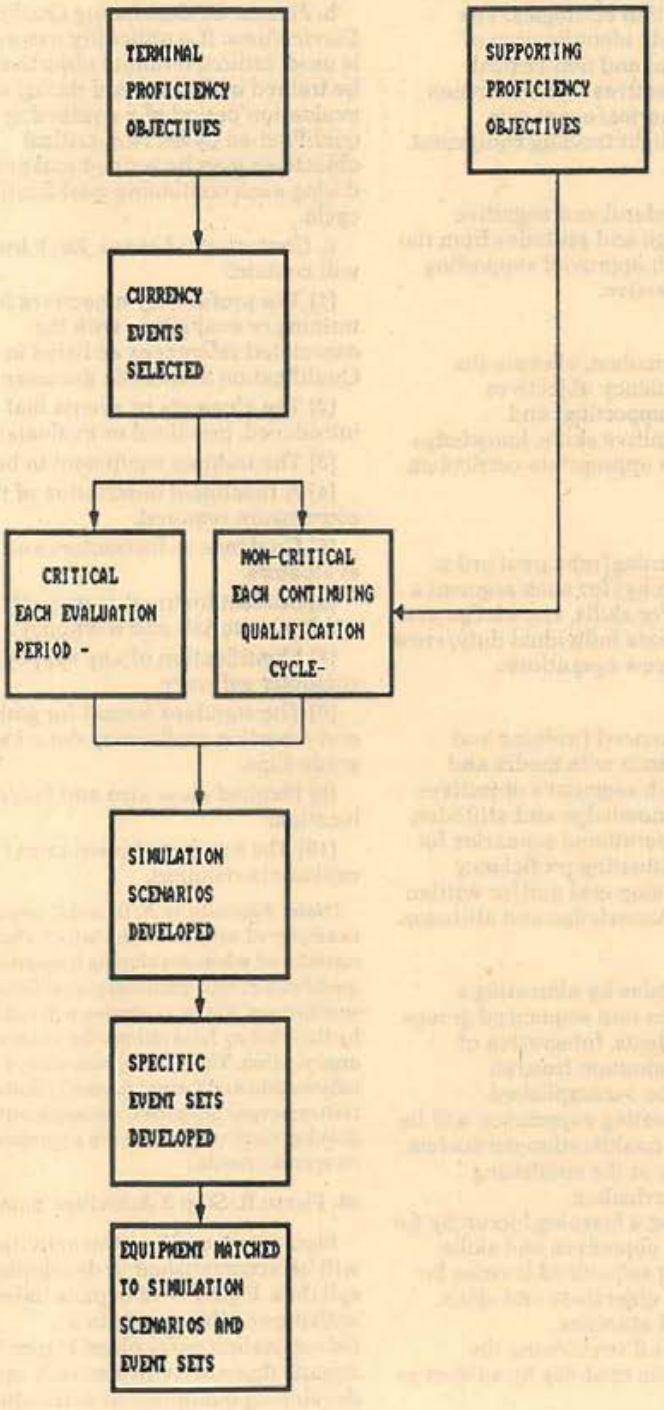

FIG.7-18

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(iii) For continuing qualification divide currency events into critical and non-critical. Critical will be validated by test and evaluation in the initial evaluation period; non-critical currency events are validated by test and evaluation in the initial continuing qualification cycle in each continuing qualification cycle.

(iv) For both qualification and continuing qualification curriculums develop Line Operational Simulation scenarios that integrate proficiency objectives (terminal and supporting) for all duty positions by task.

(v) For both qualification and continuing qualification curriculums develop specific event sets that integrate supporting proficiency objectives and terminal proficiency objectives not otherwise contained in simulation scenarios.

(vi) For both qualification and continuing qualification curriculums allocate scenarios and events to flight training equipment.

(Note: The applicant should provide a separate supporting rationale when deviation from the tables in appendix C is proposed.)

91. Approval of Phase II, Step 1 Documentation

Once the FAA has approved the supporting task analysis and Qualification Standards, the applicant may proceed with Phase II, Step 2.

Section 5. Phase II, Step 2: Syllabus Development

92. General: Syllabus Development

A syllabus is the learning order sequence of curriculum segments, modules, lessons, and lesson elements. It includes identification of the planned hours, media, methods, and scenarios to be used. A syllabus for each curriculum is developed by using the Qualification Standards approved in Phase II, Step 1.

The purpose of Step 2 is to provide a syllabus for each of the three curriculums by duty position and make, model, and series aircraft (or variant). The syllabus development process as shown in Fig. 7–11 includes:

a. Extracting procedural and cognitive skills, knowledge and attitudes from the subtask for each approved supporting proficiency objective.

b. Allocating proficiency objectives (terminal and supporting) and procedural/cognitive skills, knowledge, and attitudes to one or more of the curriculum segments.

Syllabus Development

General

Start With

Qualification standards each curriculum: Consists of terminal and supporting proficiency objectives with test and evaluation strategies. The strategies include identification of currency, critical and non-critical proficiency objectives and evaluation simulation scenarios/event sets matched with flight training equipment.

Activity 1

Extract procedural and cognitive skills, knowledge and attitudes from the subtask for each approved supporting proficiency objective.

Activity 2

For each curriculum, allocate the approved proficiency objectives (terminal and supporting) and procedural/cognitive skills, knowledge and attitudes to appropriate curriculum segments.

Activity 3

Establish learning/rehearsal order (learning hierarchy) for each segment's objectives and/or skills, knowledge and attitudes. Integrate individual duty/crew positions into crew operations.

Activity 4

Develop sequenced (training and evaluation) lessons with media and methods for each segment's objectives and/or skills, knowledge and attitudes, optimize line operational scenarios for training and evaluating proficiency objectives. Develop oral and/or written tests for skills, knowledge and attitudes.

Activity 5

Develop modules by allocating a lesson or lessons into sequenced groups of common subjects. Integration of training and evaluation from all segments may be accomplished. Supervised operating experience will be included in the qualification curriculum, currency events in the continuing qualification curriculum.

c. Establishing a learning hierarchy for each segment's objectives and skills.

d. Developing sequenced lessons for each segment's objectives and skills, knowledge, and attitudes.

e. Grouping and sequencing the lessons into basic modules by subject or purpose.

93. Basic Curriculum Requirements

a. *General Format of Curriculums.* Each curriculum is based on terminal, supporting, and enabling objectives. Each curriculum is organized into individual lessons presented in a meaningful sequence with evaluation milestones. The sequence is assembled into training and evaluation modules. Modules are grouped into segments of training, evaluation, and supervised operating experience.

b. *Format Of Continuing Qualification Curriculums.* If a criticality assessment is used, critical terminal objectives must be trained and evaluated during each evaluation period of a continuing qualification cycle. Non-critical objectives may be trained and evaluated during each continuing qualification cycle.

c. *Content of a Lesson.* Each lesson will contain:

(1) The proficiency objectives for training or evaluation with the associated references as listed in the Qualification Standards document.

(2) The elements or events that will be introduced, practiced or evaluated.

(3) The training equipment to be used.

(4) A functional description of the courseware required.

(5) Guidance to instructors and evaluators.

(6) Student instruction manual, reading material, and workbook.

(7) Identification of any supporting computer software.

(8) The standard format for gathering and reporting proficiency data; i.e., grade slips.

(9) Planned class size and facility location.

(10) The number of instructors/evaluators required.

(Note: Appendices A, B, and C provide examples of subject matter which should be considered when developing indoctrination, qualification and continuing qualification curriculums. These examples will not be used by the FAA as final criteria for content or organization. They are representative of information and format normally found in contemporary programs. An applicant should develop curriculums that are appropriate to its specific needs.)

94. Phase II, Step 2 Activities Summary

Figure 7–11 outlines the activities that will be accomplished in developing a syllabus. Figure 7–12 depicts those activities as they apply to an indoctrination curriculum; Figure 7–13 depicts those activities as they apply to developing qualification curriculums; Figure 7–14 depicts those activities as they apply to developing continuing qualification curriculums. On the basis of these activities, the applicant prepares the documents described below.

95. Documentation Required for Step 2

Two documents will be submitted to the FAA for approval. The first document is titled *Curriculum Development Methodology;* the second is titled *Advanced Qualification Curriculum.*

a. *Curriculum Development Methodology (for each Make, Model, Series, Variant).* This document includes the following sections:

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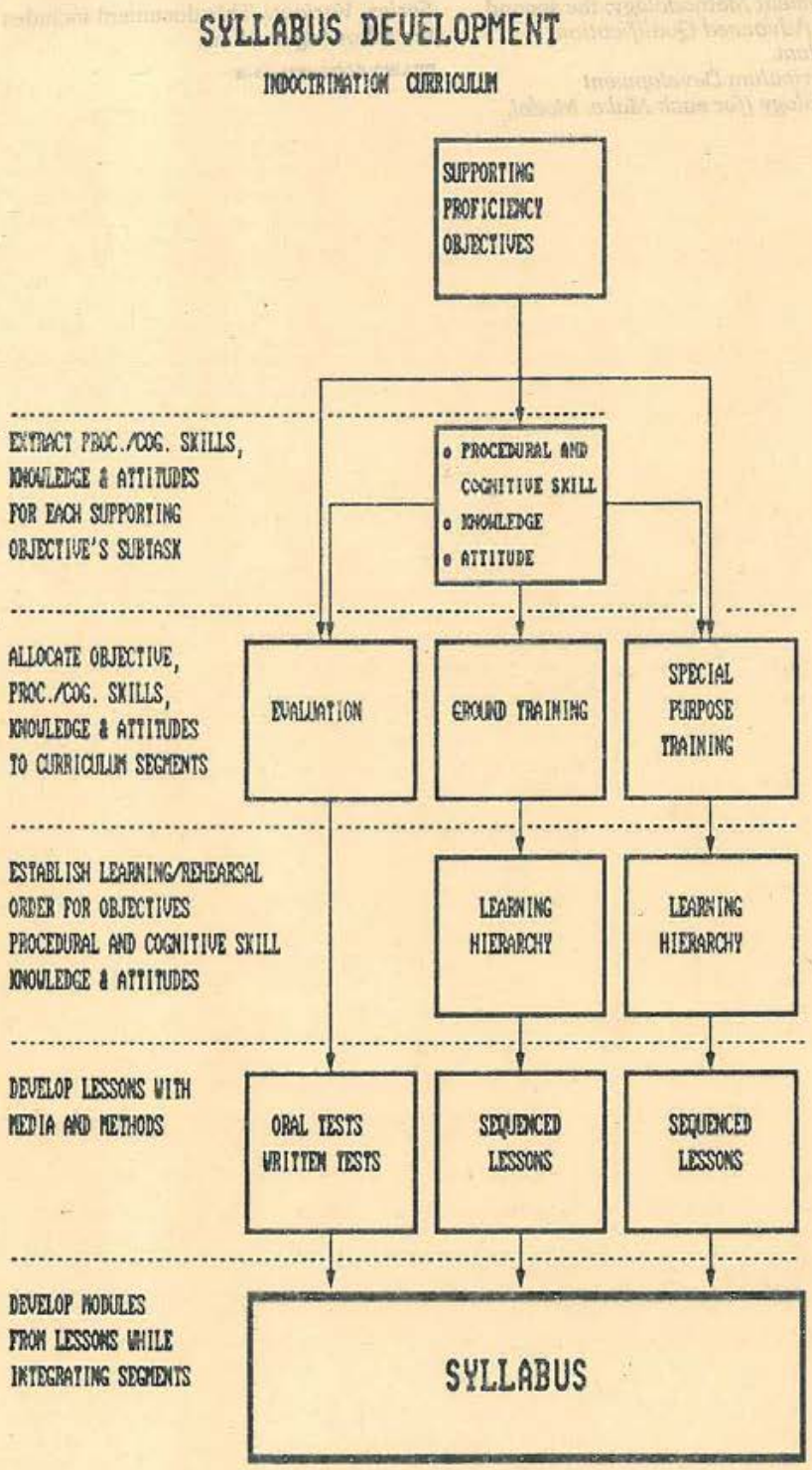

SYLLABUS DEVELOPMENT
INDOCTRINATION CURRICULUM
SUPPORTING PROFICIENCY OBJECTIVES
EXTRACT PROC./COG. SKILLS, KNOWLEDGE & ATTITUDES FOR EACH SUPPORTING OBJECTIVE'S SUBTASK
o PROCEDURAL AND COGNITIVE SKILL
o KNOWLEDGE
o ATTITUDE
ALLOCATE OBJECTIVE, PROC./COG. SKILLS, KNOWLEDGE & ATTITUDES TO CURRICULUM SEGMENTS
EVALUATION
GROUND TRAINING
SPECIAL PURPOSE TRAINING
ESTABLISH LEARNING/REHEARSAL ORDER FOR OBJECTIVES PROCEDURAL AND COGNITIVE SKILL KNOWLEDGE & ATTITUDES
LEARNING HIERARCHY
LEARNING HIERARCHY
DEVELOP LESSONS WITH MEDIA AND METHODS
ORAL TESTS WRITTEN TESTS
SEQUENCED LESSONS
SEQUENCED LESSONS
DEVELOP MODULES FROM LESSONS WHILE INTEGRATING SEGMENTS
SYLLABUS

FIG.7-12

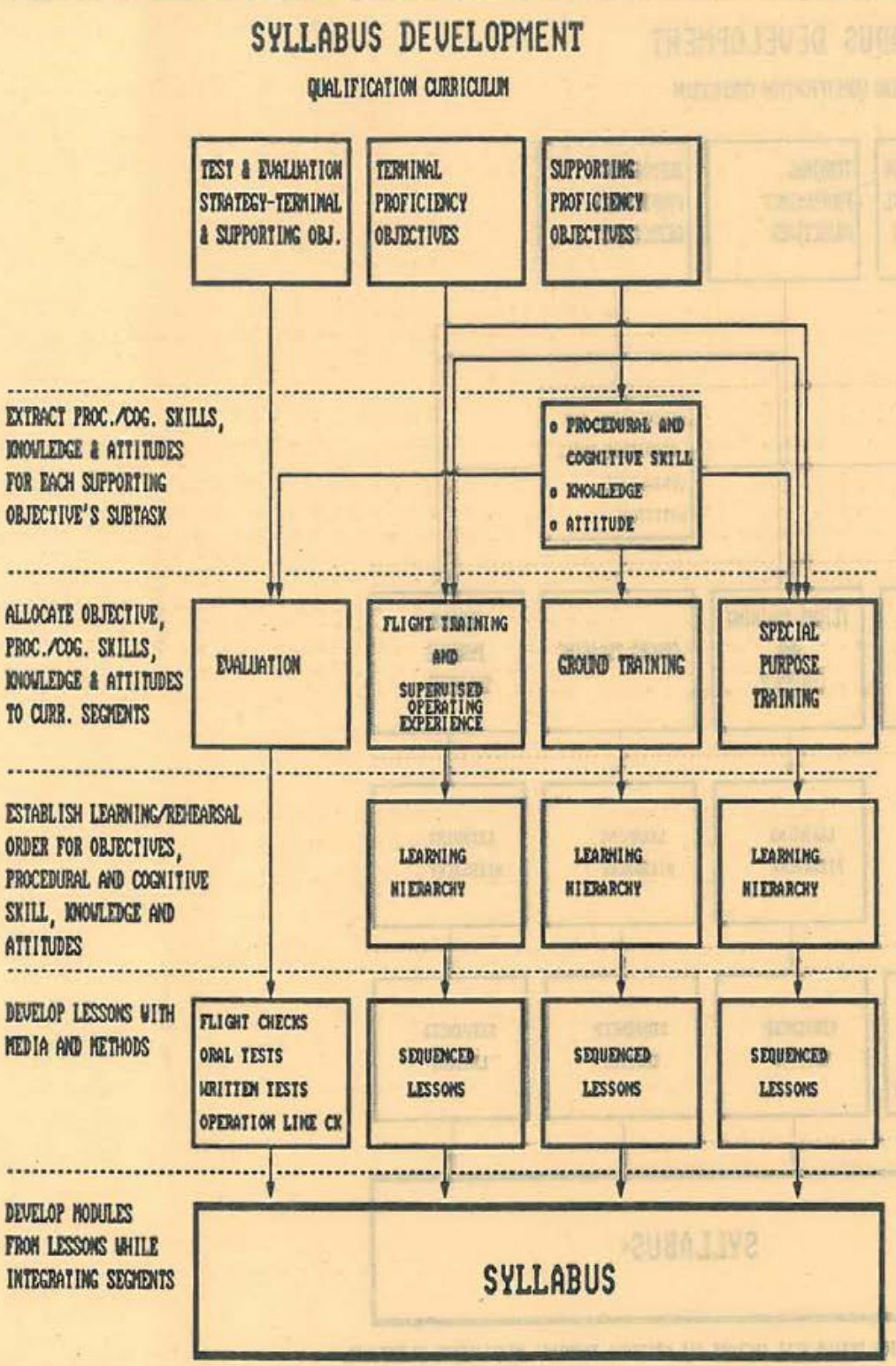
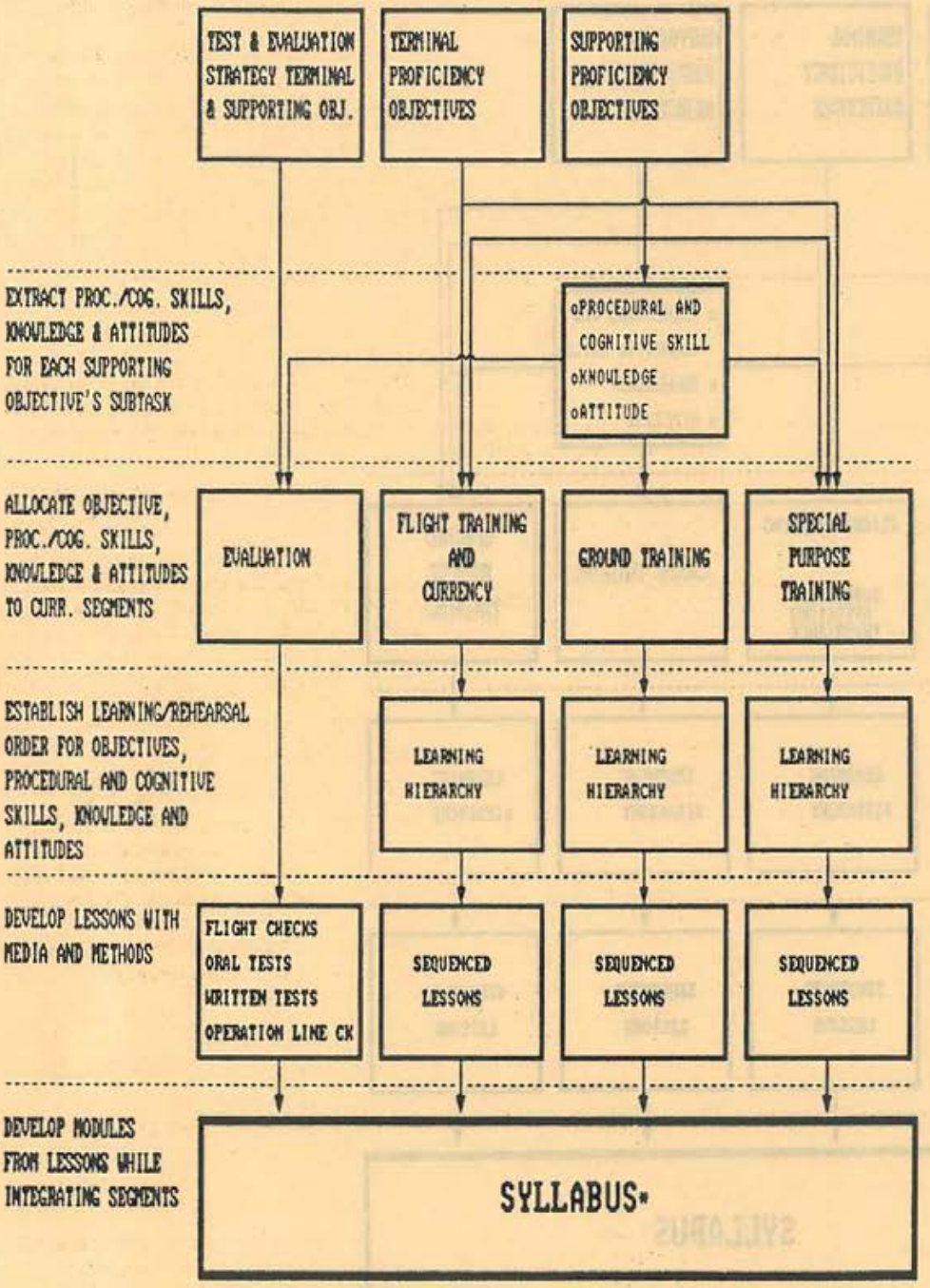

SYLLABUS DEVELOPMENT
QUALIFICATION CURRICULUM
TEST & EVALUATION STRATEGY-TERMINAL & SUPPORTING OBJ.
TERMINAL PROFICIENCY OBJECTIVES
SUPPORTING PROFICIENCY OBJECTIVES
EXTRACT PROC./COG. SKILLS, KNOWLEDGE & ATTITUDES FOR EACH SUPPORTING OBJECTIVE'S SUBTASK
o PROCEDURAL AND COGNITIVE SKILL
o KNOWLEDGE
o ATTITUDE
ALLOCATE OBJECTIVE, PROC./COG. SKILLS, KNOWLEDGE & ATTITUDES TO CURR. SEGMENTS
EVALUATION
FLIGHT TRAINING AND SUPERVISED OPERATING EXPERIENCE
GROUND TRAINING
SPECIAL PURPOSE TRAINING
ESTABLISH LEARNING/REHEARSAL ORDER FOR OBJECTIVES, PROCEDURAL AND COGNITIVE SKILL, KNOWLEDGE AND ATTITUDES
LEARNING HIERARCHY
LEARNING HIERARCHY
LEARNING HIERARCHY
DEVELOP LESSONS WITH MEDIA AND METHODS
FLIGHT CHECKS
ORAL TESTS
WRITTEN TESTS
OPERATION LINE CK
SEQUENCED LESSONS
SEQUENCED LESSONS
SEQUENCED LESSONS
DEVELOP MODULES FROM LESSONS WHILE INTEGRATING SEGMENTS
SYLLABUS

FIG.7-13

SYLLABUS DEVELOPMENT

CONTINUING QUALIFICATION CURRICULUM



* EACH EVALUATION PERIOD WILL INCLUDE ALL CRITICAL TERMINAL PROFICIENCY OBJECTIVES AND AN ONLINE CHECK (INITIALLY NOT LONGER THAN 13 MOS.) EACH CONTINUING QUAL. CYCLE WILL INCLUDE ALL CURRENCY ITEMS, AND ALL NON-CRITICAL, SUPPORTING AND SPECIAL PROFICIENCY OBJECTIVE ITEMS (INITIALLY NOT LONGER THAN 26 MOS.)

FIG.7-14

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(1) The Curriculum Development Procedures. This section describes the procedure for allocating objectives into segments, organizing segments into a learning hierarchy, developing lessons with media and methods, and finally developing modules from lessons while integrating segments. It describes how the media and methods to be used in each lesson were selected. It explains on what basis lessons were grouped into modules and modules into segments and explains how segments were integrated into a syllabus.

(2) Proficiency Objectives and Training Media. This section lists the proficiency objectives and their associated training media/method.

(3) Learning Order Sequence. This section lists terminal and supporting proficiency objectives in learning order sequence.

(4) Curriculum Test Strategy. This section is a detailed plan for describing how evaluation is accomplished throughout the curriculum.

b. *AQP Curriculum.* There will be three curriculums (indoctrination, initial qualification, and continuing qualification) for every duty position in a specific make, model, and series aircraft (or variant). Each curriculum will be constructed in the following order: curriculum segment, module, lesson, and lesson element.

96. Review and Approval of Step 2.

The Curriculum Development Methodology document and the AQP curriculum will be submitted to FAA for review and approval.

Section 6. Phase II, Step 3: Development of Training Requirements and Plans

97. General: Training Resource Requirements and Plans

Phase II, Step 3, consists of determining the resource requirements for an AQP curriculum. The applicant will develop the documents described in the following paragraphs.

98. AQP Training Resource Requirements

In this document, the applicant presents the analysis of the training requirements for implementing the entire AQP. The following sections are included:

a. *Facilities.* This section describes the required facilities.

b. *Curriculum Courseware.* This section describes all the courseware required to implement the AQP curriculum; e.g., for instructors and students—manuals, handbooks, workbooks, tests, grade sheets, software required to support simulation scenarios.

c. *Instructor Requirements.* This section describes the instructor requirements for conducting the AQP curriculum; e.g., the number, type, and qualification of instructors.

d. *Evaluator Requirements.* This section describes evaluator requirements for conducting the AQP curriculum; e.g., number, etc.

e. *Equipment.* This section describes equipment requirements; e.g., projectors, blackboards, mockups, computers, simulators, training devices.

f. *Quality Control.* This section describes quality control requirements; e.g., plans for assuring and maintaining the quality of the program data and performance measurement data.

99. AQP Implementation and Operations Plan

This document describes the plan for implementing and operating the AQP. It includes the following sections:

a. *Curriculum Schedule.* This section includes proposed schedules for the AQP curriculums.

b. *Transition Plan.* The transition plan, provided with the application in Phase I, will be updated and made part of the Implementation and Operations Plan.

c. *Equipment Test Plan.* This section describes the plan for developing the baseline performance data for and testing of the required hardware, software, and other equipment. It includes the ATG (Approval Test Guide) for any flight training devices and flight simulators.

d. *Formative Evaluation Plan.* This section describes the plan for evaluation of facilities, courseware, equipment, students, instructors, evaluators, and performance measurement techniques. The plan normally includes provisions for small group tryouts of all new courseware, software, and equipment.

e. *Summative Evaluation Plan.* This section describes the plan for evaluation of the AQP during Phase IV, Implementation. The plan specifies methods for evaluating training, terminal proficiency objectives and supporting proficiency objectives. The plan will be used in Phase IV to evaluate data in the Program Audit Database and in the Performance/ Proficiency Database.

f. *AQP Maintenance Plan.* This section describes the plan for maintaining control of the AQP approval documents, maintaining curriculum currency, upgrading equipment, monitoring and responding to demographic changes, and for using training/evaluation feedback to maintain and improve the AQP.

g. *Automated Data Processing Equipment Plan.* This section identifies automation equipment that will be used in an AQP and describes how that equipment will be used.

h. *Performance/Proficiency Data Collection Procedures.* This section describes the manual and automated data collection procedures to be used during implementation and operation. The data will be collected on individual and crew performance/ proficiency objectives. If automated performance measurement is to be used, this section will describe the associated data collection, storage, analysis, quality control and security procedures. The section also describes the applicant's procedures for presenting the data to the FAA. See Chapter 9 for further details on collecting performance/ proficiency data.

100. Approval Process for Phase II, Step 3

The training resources requirements document and the Implementation and Operations Plan are both presented to the FAA for approval.

Section 7. Phase III: Training System Implementation and Courseware Development and Implementation

101. General: Phase III

To this point, the applicant has curriculums and plans which have FAA approval. In Phase III, to implement the AQP, the applicant will acquire and test (called "formative evaluation") the resources required to support the curriculums. These activities include qualification of instructors and evaluators.

102. Phase III Activities

During this phase the applicant will accomplish the following:

a. Develop and implement courseware and testing materials.

b. Implement the FAA-approved Formative Evaluation Plan.

(Note: This evaluation will consist of small group tryouts of each lesson using actual students and instructors/evaluators.)

c. Train, evaluate, and qualify instructors and evaluators. (See chapter 5 of this AC.)

d. Review and, if necessary, modify both the Summative Evaluation Plan and the AQP Maintenance Plan using the information gained in implementation of the Formative Evaluation Plan.

103. No Jeopardy Evaluation

Formative evaluation will normally involve no jeopardy or credit for students, since its primary purpose is to determine lesson suitability and effectiveness. The applicant may choose, however, to give student credit for part or all training and qualification achieved in the formative evaluation. The decision to give credit must be approved by the FAA before conducting the formative evaluation and must be documented in the Implementation and Operations Plan.

104. Documentation for Phase III

Documentation includes the results of formative evaluation, summative evaluation (of instructors and evaluators), AQP maintenance, and equipment testing. These results will be included in the Implementation and Operations Plan Results document in the following sections.

a. *Courseware and Testing Document Catalogue.* This section is a list of all applicable training and testing documents.

b. *Formative Evaluation of Courseware/Curriculum.* This section describes results of the formative evaluation of facilities, courseware, equipment, instructors, evaluators, and performance measurement techniques. It also presents training operations results (e.g.; student test results, performance/proficiency data for instructors and evaluators) and includes recommendations for curriculum revisions.

c. *Summative Evaluation.* This section describes the results of the summative evaluation of the AQP curriculums for instructors and evaluators.

d. *Maintenance Evaluation.* Any findings from the formative evaluation of the courseware and curriculums that necessitate change will be implemented in accordance with the applicant's approved AQP Maintenance Plan. The results of evaluating the effectiveness of the AQP Maintenance Plan will be described in this section.

e. *Equipment Test.* This section reports results of the functional tests for required hardware, software, and equipment, and contains actual test data.

105. Initial Approval

The FAA will complete a review of the Implementation and Operations Plan Results, sample the formative evaluation of lessons, and conduct other evaluations of AQP components. If the applicant's formative evaluation is satisfactory, and the FAA determines the curriculum is effective, an initial approval of the AQP will be granted. A satisfactory completion of Phase III indicates to the FAA that the applicant is properly and adequately equipped to execute the AQP. If formative evaluation reveals a need for any change in the curriculum, the change will be made using the AQP curriculum configuration control procedures in the Implementation and Operations Plan. These changes will be complete and documented before the FAA will grant initial approval.

106. Provisional Approval for Training Centers

Approval for a training center AQP will be "provisional" unless the AQP is developed for a specific part 121 or 135 certificate holder's operation. (See definition of "provisional approval.") Provisionally approved AQPs must be tailored for a specific part 121 or 135 certificate holder's operation before the AQP may be used by the certificate holder. Tailoring will include making appropriate changes to Phase I, II, and III documents.

(Note: Training centers that elect to proceed with AQP development without a part 121 or 135 certificate holder partner will do so at their own risk.)

Section 8. Phase IV: Initial Operations

107. General

In this phase the applicant implements the first full training cycle of all AQP curriculums. This full cycle will include complete exercise of indoctrination, qualification, and continuing qualification curriculums.

108. Phase IV Activities

During Phase IV, the applicant and the FAA will accomplish the following:

a. The applicant will implement and operate the full AQP training and evaluation cycle and the AQP Maintenance Plan.

b. The applicant will implement and complete the summative evaluation including collecting Program Audit Data, and individual Performance/Proficiency Data, analyses and reports. Collected data will be used by:

(1) The applicant for its internal quality control program to maintain curriculum and courseware concurrency, suitability, and adequacy.

(2) The FAA to analyze and validate individual instructor, evaluator and student performance.

(3) The FAA to analyze and validate program development, implementation and maintenance procedures.

(4) The applicant and the FAA to support analysis for special subjects such as CRM performance factors.

c. The applicant will continue to conduct functional test for required hardware, software, equipment, and coded test data for updating the equipment test results from Phase III.

109. Required Documentation

Evaluation results of Phase IV will be submitted as an update to the summative evaluation, maintenance evaluation, and equipment test results of the Implementation and Operations Plan Results document that was submitted originally in Phase III.

a. *Summative Evaluation Results.* This update describes the results of the summative evaluation of the AQP and of student, instructor, and evaluator performance. It also describes the results of evaluating methods, media, scenarios and performance measurement used in the AQP. The results of a student feedback instrument (i.e.; surveys, questionnaires) will be reported in this document.

b. *AQP Maintenance Evaluation.* This update describes the results obtained by the methods used for maintaining curriculum currency, upgrading equipment, monitoring and responding to demographic changes, and for using training and evaluation feedback to maintain and improve the AQP.

c. *Equipment Tests Results.* This updates results of the functional tests for required hardware, software, and equipment, and contains actual test data.

110. Approval Process

After the applicant completes at least one indoctrination and qualification curriculum and one full continuing qualification cycle of the continuing qualification curriculum, the FAA will complete an initial operations evaluation of the AQP. This will include an FAA review of the results of summative evaluation, maintenance evaluation, and equipment tests, and analyses of all student performance data. Review of the applicant's AQP maintenance, summative evaluation, and data collection processes will be critical elements of the FAA's Phase IV, initial operations evaluation. The FAA will recommend changes to the curriculum as indicated by results of the initial operations evaluation. FAA approval at the conclusion of Phase IV constitutes final AQP approval.

Section 9. Phase V: Continuing Operations

111. General

In this phase, the applicant continues operation of the AQP until approval is withdrawn by the FAA or until the

applicant withdraws or modifies the AQP. This phase requires continuation of the AQP Maintenance Plan as well as continued documentation of the data requirements for all curriculums. Data will continue to be collected and analyzed by the applicant and the FAA for verification of student, instructor, and evaluator proficiency. (See chapter 9 for full discussion of performance/proficiency data.) Data will also be collected and analyzed by the applicant for:

a. Continued validation of the AQP.

b. Identification requirements for curriculum changes.

c. Program maintenance.

112. Quality Assurance

For AQP success, each applicant will pay particular attention to overall program quality assurance. Continued validation of individual and team proficiency, as achieved and maintained by all personnel, is particularly important. Continued validation of overall program completeness, accuracy, and currency, as provided by the Program Audit Database, is also very important. Elements of program control should assure that quality in proficiency is maintained. The applicant's continued commitment to identify and execute required changes is essential to a successful AQP. The FAA will expect any AQP quality assurance program to identify needed changes in curriculum, courseware and equipment, and to make these changes before unwanted trends in reduced proficiency are seen.

113. Required Documentation

After final approval has been granted the AQP Maintenance Plan will be continued and evaluation results will continue to be documented. A Continuing Program Evaluation Results document is needed on a quarterly basis. This document describes evaluation results for curriculum currency, equipment upgrade, as well as response to demographic changes, and to training and evaluation feedback. The training and evaluation feedback will be used to determine the effectiveness of any changes made to the AQP as a result of summative evaluation and AQP Maintenance Plan activities.

114.–123. Reserved

Chapter 8. Approval Process for an Advanced Qualification Program

Section 1. General

124. The Approval Process

The approval process applies to part 121 and part 135 operators and operators of training centers that participate in an AQP. The approval process applies to a request for a new AQP or to revisions to a currently approved AQP. This chapter establishes how the FAA will grant or withdraw approval of all or part of an AQP. Approval is handled by the Air Carrier Training Branch at FAA Headquarters, Washington, DC, except for approval of training for hazardous materials and security, which is handled by the Air Carrier Branch of the Office of Civil Aviation Security.

125. Initiating the Process

The AQP approval process can be initiated in two ways:

(1) An operator can inform the FAA by letter of plans to establish or change an AQP; or

(2) The FAA can inform an operator that revisions to its AQP are required, based on acquired information relative to training techniques, aviation technology, aircraft operational history, or operator performance.

126.–128. Reserved

129. Phased Review

Applicants will develop, implement, and operate their AQP in five sequential phases as explained in chapter 7 of this AC. These five phases are:

I. Initial application.
II. Curriculum development.
III. Training system implementation.
IV. Initial operations.
V. Continuing operations.

The following paragraphs describe how the FAA will work with an applicant to review or analyze material and to provide guidance for phased approvals. The activities and documentation for each phase are described in chapter 7.

Section 2. Phased Approval Procedures

130. Phase I, Initial Application

a. *Applicant.* The applicant submits a written application which consists of the following:

(1) A Program Audit Database Master List.

(2) An Application Cover Letter.

(3) A Transition Plan.

(4) A Supporting Data Package.

b. *FAA Review Team.* The FAA Air Carrier Training Branch will lead the review and analysis of the application. The review and analysis team will include an instructional system design specialist, air carrier operations specialists, and a data management specialist. The team will also include a civil aviation security inspector, an inspector from the national simulator program staff, and the designee of the applicant's principal operations inspector. Full involvement of all members of the review team is expected during the review and evaluation activities.

c. *Review of the Application.* The application will be evaluated:

- Against the data requirements in Chapters 7 and 9 of this AC.
- For the applicant's understanding of AQP concepts.
- For evidence of the applicant's ability to execute the processes of development, implementation, and operation.

d. *Evaluation Report.* An application evaluation report will be completed by the review team and provided to the Manager of the Air Carrier Training Branch. After the Manager, Air Carrier Training Branch, accepts the report, a conference will be held with the applicant. After determining that the applicant's data submittal is satisfactory, the Manager of the Air Carrier Training Branch will approve acceptance of the application. This approval permits the applicant to proceed to Phase II.

131. Phase II. Curriculum Development

This phase is most important and involves the highest level of program development activity. The applicant continues to add to and build upon the Program Audit Database in three steps. Each step ends in an FAA approval. Step 1 is proficiency objective development; Step 2 is syllabus development; and Step 3 is development of training requirements and plans. The FAA review and analysis team from Phase I will be augmented with a member from the Examinations Support Branch of the Aviation National Field Office and a member from an applicable Aircraft Evaluation Group. Maintaining team integrity will be emphasized.

a. *Required Documents.* The applicant will submit the following documents for each duty position and make, model, and series aircraft (or variant):

For Step 1:

(1) Supporting Task Analysis

(2) Qualification Standards

For Step 2:

(1) Curriculum Development Methodology

(2) AQP Curriculum

For Step 3:

(1) AQP Training Resource Requirements

(2) AQP Implementation and Operations Plan

b. *Review and Evaluation.*

(1) For Step 1. The FAA review and analysis team will evaluate the documents and prepare a report, with recommendations, for the Manager, Air

Carrier Training Branch. When the Manager, Air Carrier Training Branch, has completed final negotiations with the applicant and is satisfied that the proficiency objectives are complete and representative of proficiency equal to or better than that provided by traditional programs, he will submit his recommendation to the Director of Flight Standards for review. Upon satisfactory completion of this review, the Manager, Air Carrier Training Branch, will approve the Qualification Standards in writing. This permits the applicant to continue with Step 2, Syllabus Development.

(2) For Step 2. The FAA review and analysis team will evaluate the Step 2 documents and report its findings to the Manager, Air Carrier Training Branch. When the manager approves the report, it will be passed to the applicant's Principal Operations Inspector (POI). The POI will forward the report, with any necessary explanations, to the applicant. When the applicant has taken any required action identified in the report, the Manager, Air Carrier Training Branch, will approve the applicant's Curriculum Development Methodology and, at the recommendation of the POI, approve the applicant's AQP curriculum. This permits the applicant to proceed with Step 3, Training Requirements and Plans.

(Note: If elements of the Program Audit Database are changed, subsequent changes to the approved curriculum will include a Program Audit Database review by the Manager, Air Carrier Training Branch.)

(3) For Step 3. The FAA review and analysis team will review the Training Resources Requirements document and the Implementation and Operations Plan for completeness and to determine the capability of the applicant's resources to support the curriculum. A key item of review will be the data (Program Audit Database and Performance/Proficiency Database) gathering aspects of the applicant's Implementation and Operations Plan. A report (and briefing) will be provided to the Manager, Air Carrier Training Branch. The Manager, Air Carrier Training Branch, will transmit recommendations to the POI for action. The Manager, Air Carrier Training Branch, will ensure that the recommendations are understood and accepted by the applicant before providing written approval of the Training Resource Requirements document and Implementation and Operations Plan. This approval will allow the applicant to proceed to Phase III.

132. Phase III. Implementation

In this phase, the applicant will acquire and conduct formative testing of all training resource requirements in accordance with the Implementation and Operations Plan.

a. *Documentation.* Results of this step will be supplied to the FAA in the form of a single document entitled *Implementation and Operations Plan Results.* This document is an exhibit in the Program Audit Database. In addition, the Performance/Proficiency Database described in chapter 9 will be initiated in this phase using the instructor and evaluator performance exhibits. (Data collection procedures were established in Phase II, Step 3.) The qualification records for instructors and evaluators will be generated and maintained.

b. *FAA Review and Evaluation.* FAA data gathering and analysis during the implementation phase will include surveillance of specific activities and a final review and analysis of the Implementation and Operations Plan Results document.

(1) Surveillance of formative evaluation activities and evaluation of instructors and evaluators will be accomplished by assigned FAA field inspectors who will be taking evaluator training for their own qualification. The POI will ensure inspection of all instructor and evaluator qualification records for completeness and correctness. Surveillance will be augmented with visits from representatives of the Manager, Air Carrier Training Branch. Representatives of the National Simulator Program Manager will participate for flight training device or flight simulator evaluation and qualification.

(2) Proficiency data will be collected by the applicant and submitted to the FAA to be reviewed and analyzed by the Manager, Air Carrier Training Branch. The execution of the applicant's AQP Maintenance Plan (a component of the Implementation and Operations Plan) and the effectiveness of the applicant's supporting quality control system will be reviewed jointly by the Manager, Air Carrier Training Branch, and the POI.

(3) The Implementation and Operations Plan Results document will be reviewed by the FAA review and analysis team. The team will report its findings (with briefing) to the POI and the Manager, Air Carrier Training Branch. The POI and the Manager, Air Carrier Training Branch, will review the applicant's total program when requested to do so by the applicant and when the applicant's program is considered ready for review by the Manager, Air Carrier Training Branch, and by the National Simulator Program Manager. Readiness exists when all elements specified in the training resource requirements are available and fully operational. After a successful review of the total program, the POI and the Manager, Air Carrier Training Branch, will provide initial approval to a part 121 or 135 operator or provisional approval to a training center. Initial approval allows execution of the Implementation and Operations Plan for the AQP through one complete cycle of all curriculums.

(4) A provisional approval allows a training center to engage with a part 121 or 135 operator in tailoring a provisionally approved curriculum to specific operations. When a training center and a certificate holder enter an agreement to jointly conduct an AQP, all application activities through Phase III will be resubmitted. The FAA review team will re-evaluate the entire Phase I, II and III package for completeness, accuracy and appropriateness for the specific certificate holder for which the AQP is being implemented. A successful review will result in a written initial approval to both the training center and the certificate holder from the Manager, Air Carrier Training Branch.

133. Phase IV, Initial Operations

a. *Applicant.* The applicant operates and maintains all AQP equipment and submits updated summative evaluation results, AQP maintenance evaluation results, and equipment test results from data the applicant collects from the first full training cycles.

b. *Review and Evaluation.* The FAA will monitor Phase IV activities with traditional and specialized surveillance, with data collection and analysis of anonymous data and by making a formal review of all results.

(1) Surveillance of the applicant's Phase IV operations will be accomplished by field inspectors who are qualified as evaluators and by other FAA representatives.

(2) The National Simulator Program Staff will evaluate flight training devices and flight simulators.

(3) Representatives of the Manager, Air Carrier Training Branch, will witness training courses for all curriculums.

(4) Civil Aviation Security will witness curriculum elements which have security and hazardous materials objectives.

(5) A joint (FAA and applicant) program review will be held 30 days after the first exercise of an initial qualification curriculum and every 60 days during the first continuing qualification cycle. The purpose of the reviews is to identify, recommend and plan needed changes. Approval of these changes will be by appropriate FAA authority in accordance with the applicant's approved curriculum maintenance procedures.

(6) The Manager, Air Carrier Training Branch, will receive and analyze required anonymous proficiency data monthly. A proficiency validation and projection database will be generated by duty position.

(7) A complete summative evaluation review, jointly accomplished by the FAA review and analysis team and the applicant, should be conducted as soon as possible after the second evaluation period of a newly established continuing qualification curriculum. The applicant is responsible for preparing a summative evaluation results, updated AQP maintenance evaluation results, and updated equipment test results. The purpose of the review is to determine that:

- The proficiency measures (standards) for each duty position are valid and being achieved.
- The Program Audit Database and curriculums are being maintained in accordance with the approved Implementation and Operations Plan.
- Recordkeeping is complete and accurate.

(8) A complete summative evaluation and maintenance evaluation review report will be prepared by the review and analysis team and submitted to the Manager, Air Carrier Training Branch. The report will include any recommended changes to the AQP. The Manager, Air Carrier Training Branch, will forward the report to the POI for review and for presentation to the applicant for action. When the applicant implements the recommended changes, the POI and the Manager, Air Carrier Training Branch, will issue final approval. Final approval permits continued operation of the AQP.

(Note: Eventual transition of CRM evaluation to pass/fail criteria should be anticipated and integrated into initial qualification and continuing qualification curriculums during the first continuing qualification cycle of Phase IV or at the next earliest and appropriate opportunity. Final written approval of a program which does not include pass/fail CRM criteria will include a statement that final approval is contingent on eventual compliance with this condition.)

134. Phase V. Continuing Operations

Phase V is continuing operation of the applicant's AQP under FAA surveillance. The AQP Maintenance Plan will be continued and reviewed. A Continuing Program Evaluation Results document will be submitted and reviewed on a quarterly basis.

135. Database Management and Analysis

a. *Data Analysis.* The FAA has chosen to accomplish proficiency analysis, validation of performance measures and other statistical analysis and research at a central location for all AQPs. The analysis will be accomplished with equipment compatible with personal computers using an independent file for each applicant.

b. *Location of Data.* The Program Audit Database libraries may be located at any site agreed to by the Manager, Air Carrier Training Branch, and the applicant. Maintenance, storage and location of proficiency data (currency and performance) used for qualification will be the responsibility of the certificate holder (or training center, for its employees). Proficiency data, used by the applicant for validating qualification programs, will be kept at the principal training site designated by the operator.

Section 3. FAA Procedures for Approval Actions

136. Method of Granting Initial or Provisional Approval

a. *Approval by Letter.* The FAA will grant initial or provisional AQP approval by letter. The approval letter will include at least the following information:

(1) The specific identification of the curriculums and curriculum segments initially or provisionally approved including page numbers and revision control dates (date of revision for any page).

(2) A statement that initial or provisional approval is granted and what the effective and expiration dates (for initial approval) are.

(3) Any specific conditions affecting the approval.

(4) A request that the applicant provide the FAA with advanced notice of scheduled activities so evaluations may be planned.

b. *Copies.* A copy of the Audit Database Catalogue and the approval letter shall be maintained by the POI in the certificate holder's District Office during the period of initial approval. A copy of the same material shall be maintained by the Air Carrier Training Branch. Copies of a training center's provisionally approved curriculum material shall be maintained at the training center's local Flight Standards District Office, the Air Carrier Training Branch, and the assigned District Office of any certificate holder that is using the training center.

137. Method of Denying Initial or Provisional Approval

If the FAA determines that initial (or provisional approval for training centers) must be denied, the FAA will notify all the affected operators in writing. The letter will identify any deficiency which was the cause of denial. The principal applicant may redevelop or correct the deficiencies and resubmit the AQP for approval.

138. Withdrawal of Initial or Provisional Approval

The FAA may decide to withdraw initial or provisional approval at any time the AQP is not in regulatory compliance, does not provide for safe operations, or does not effectively prepare crewmembers or dispatchers to meet qualification objectives. The FAA will withdraw initial or provisional approval in writing to all affected operators stating the reasons for the withdrawal, and the effective date of withdrawal. An applicant who receives a letter of withdrawal may revise or refine the curriculum and resubmit it for initial or provisional approval.

139.–148. Reserved

149. Final Approval

Based on the results of evaluations accomplished during the period of initial approval, the FAA will grant or deny final approval of an AQP. Final approval is accomplished by stamped endorsement of AQP documents and by approval letter.

a. *Stamped Approval Endorsement.* For final approval, the original and a copy of each title page and table of contents pages of all AQP Program Audit Database documents are stamped approved, dated, and signed by a designated FAA operations official. The approval stamp will be a facsimile of the following:

FAA FINAL APPROVAL

OFFICE DESIGNATOR: _____.
EFFECTIVE DATE: _____.
NAME: _____.
SIGNATURE: _____.

As approved changes are made to AQP Program Audit Database documents, the "Final Approval" endorsement will be reaccomplished on each table of contents page.

b. *Approval Letter.* All letters of final approval will be signed by the Manager, Air Carrier Training Branch. When training centers are not involved, the Manager, Air Carrier Training Branch, may delegate this authority to the operator's assigned POI. The letter will specifically identify the subject curriculums, contain a statement that final approval is granted, and provide the effective date of approval.

c. *Copies.* A copy of the approval letter will be kept on file in the operator's assigned District Office, at the Air Carrier Training Branch, and at the location designated by the operator as its principal training site.

150.–157. Reserved

158. Revisions to an AQP

Circumstances that typically trigger revisions are changes in the kinds, size, or complexity of operations, changes in the configuration of aircraft, and changes in special authorizations permitted through operations specifications, maintenance programs, MELs; exemptions or deviations. Revisions will usually involve all or portions of each phase of the approval process. However, the process may be abbreviated according to the extent of the revision. The Manager, Air Carrier Training Branch, may delegate revision approval authority to POIs.

159. General Provisions for Withdrawal of Final Approval

The FAA may withdraw final approval of a curriculum any time if the FAA determines that sufficient safety reasons exist or that required data is not being maintained and provided. Before withdrawing approval, the FAA will make reasonable efforts to convince an applicant to correct its AQP. The FAA will withdraw approval by letter. The letter will identify the affected curriculums, state the reasons for the withdrawal, and state the effective date of the withdrawal (except in an emergency, not less than seven days after receipt of the letter). The letter will advise the certificate holder that withdrawal may be appealed and provide instructions on how to appeal.

160. Appeal of a Withdrawal

To appeal withdrawal of final approval, an operator should petition the Director, Flight Standards Service, for reconsideration within 30 days after receiving withdrawal notification. The petition should be in writing and explain in detail why the operator believes the withdrawal should not occur. The Director may immediately deny the petition after considering all relevant information presented to him if he believes that an emergency exists which directly affects aviation safety. In this case the Director will inform the operator, by letter, of his decision to deny the appeal due to the existence of an emergency. The letter will state that an emergency exists and describe the deficiencies and the actions necessary to correct them. If the Director does not believe that an emergency exists, he will carefully consider both the operator's petition for appeal and the FAA's reason for withdrawal of approval. In this case, the operator's petition, provided it goes out within 30 days, stays withdrawal and the operator may continue to use the AQP curriculum pending the decision of the Director, Flight Standards Service. The Director may find it necessary to conduct additional evaluations of the operator's AQP. In any case, the Director will make a final decision within 60 days of receiving the operator's petition. The Director may rescind or modify the letter of withdrawal or uphold the withdrawal. If the decision is to modify or uphold the withdrawal, the operator will be notified by letter. The letter will contain the reasons for denying all or part of the petition.

161. Expiration

Final approval does not expire.

162.–171. Reserved

Chapter 9. Advanced Qualification Program Validation

Section 1. Introduction

172. Purpose

This chapter provides guidelines for complying with AQP program validation requirements.

173. Validation Concept

Section 7(c) of SFAR 58 requires that each qualification and continuing qualification curriculum include procedures for collecting data from crewmembers, instructors, and evaluators. This data will be used to enable the FAA to determine if the overall objectives of an AQP curriculum are being achieved and to validate AQP curriculums. The concept of validation begins with the operator's process for developing an AQP and continues for the life of an AQP. There are four parts to the validation of an AQP: (1) The phased approval process; (2) the Program Audit Database; (3) the Performance/Proficiency Database; and (4) records kept on qualified personnel. Each of these parts is discussed in the following sections.

Section 2. Validation through the Phased Approval Process

174. Phased Approval Process

As explained in chapter 7 of this AC, development and approval of an AQP is accomplished in five phases. The phases are:

I. Initial Application;
II. Curriculum Development;
III. Training System Implementation;
IV. Initial Operations; and
V. Continuing Operations.

Each phase, and the three individual steps in Phase II, require FAA approval before proceeding to the next step or phase. The approval process is in itself a method for validating that the development procedures of an AQP have been appropriately used and that the management needed to maintain an AQP is occurring. The FAA provides guidance, review, and surveillance throughout the approval process.

Section 3. Program Audit Database

175. Documentation of an AQP

At the beginning of Phase I, an applicant will create a Program Audit Database. This is basically a file of documents that will be developed and kept current throughout all phases of development and approval. The applicant and the FAA use this data to validate program development, implementation, and maintenance. A list of the documents required for each phase is in appendix D. Procedures for creating the Program Audit Database are in chapter 2. Development activities and content requirements for each document are in chapter 7.

Section 4. Performance/Proficiency Database

176. Purpose of the Performance/Proficiency Database

An applicant will collect performance/proficiency data for instructors and evaluators during Phase III—Training System Implementation, and for all participants during Phase IV—Initial Operations, and Phase V—Continuing Operations. These data form the Performance/Proficiency Database. The data are used to validate student, instructor and evaluator proficiency; establish performance norms; validate Qualification Standards; and conduct research and development of CRM principles, methods, and measures. The applicant and the FAA will use data to evaluate the effectiveness of an AQP in meeting its objectives. The information may also be used to support a request for modification of an approved AQP. For example, if an applicant requests

FAA approval for extending evaluation periods in a continuing qualification curriculum, the applicant will support its request with collected data which show that present crewmember performance warrants the extension. Data will be used by the FAA to establish group performance norms and to judge AQPs according to how well they meet or exceed these norms. During the continuing qualification cycle data may be used to develop projections for how proficiency is maintained in terms of rising or falling performance. The FAA may also use this data in comparison with accident/incident statistics to ensure that AQP changes achieve the desired effect on accident/incident rates.

177. Specific Data Collection for Phases III, IV, and V

a. *Phase III: Training System Implementation.* Graded evaluator and instructor performance/proficiency data will be collected during training and evaluation.

b. *Phase IV: Initial Operations; Phase V: Continuing Operations.* In Phase IV during implementation of the first continuing qualification cycle and in Phase V during continuing operations the following data will be collected: (1) All terminal proficiency objective data for students, instructors, and evaluators will be gathered in training activities, online evaluations, and proficiency evaluations; (2) currency events will be recorded; and (3) CRM measures will be made.

178. Procedures for Performance/Proficiency Data Collection

a. *General Procedures.* Specific crewmember data will be maintained by the operator. All data to be provided to the FAA should be in summary form and deidentified prior to submission. Analysis of the data by the applicant and by the FAA should be at a level of group performance to identify performance trends. Where appropriate, crew complement performance should be measured and analyzed.

b. *Performance Evaluation.* All terminal proficiency objectives will be observed by evaluators. Those not observed in Line Operational Evaluation will be observed in proficiency evaluations or other methods appropriate to evaluation of the objectives.

c. *Pre-training Evaluation.* At the beginning of the formal training done at the end of an evaluation period, pre-training baseline performance evaluation data will be collected in a Line Operational Simulation with no jeopardy to the student. The type of data to be collected in pre-training evaluations is described below.

(1) *Routine Operations Items.* All events which have been selected as currency items will be validated by pre-training measurement. Pre-training data should be gathered on selected currency items to validate that proficiency is being maintained through routine operations. Proficiency objectives which the applicant intends to propose as currency items will also be tested. For example, if the applicant has decided (on the basis of the analysis described in chapter 7) to give currency item credit for critical fuel transfer operations during cruise in everyday operations, the applicant will collect data to validate the frequency with which a student operates the fuel panel in normal, everyday operations. The fuel transfer proficiency objective will then be evaluated through pre-training proficiency measurement. If fuel transfer performance data pre-training measurement is found satisfactory, the performance objective for that student may be designated as a currency item.

(2) *Non-routine Operations Items.* During pre-training evaluation, data will be collected on normal, abnormal and emergency procedure proficiency objectives which do not occur on a routine or frequent basis in everyday operations. Data should also be collected for environmental conditions that are not ordinarily encountered.

(3) *CRM Objectives.* CRM objectives will also be measured during pre-training evaluation.

(4) *Non-critical Terminal Proficiency Objectives.* The pre-training evaluation will include measurement of items classified as non-critical terminal proficiency objectives which are proposed to be spread throughout the full continuing training cycle (not addressed in each evaluation period).

d. *Cockpit Resource Management.* At the time of this writing, CRM issues and measures are not fully developed. Therefore, data should currently be collected without pass/fail consideration for those being evaluated. AC 120-51, as amended, "Cockpit Resource Management Training," provides additional guidance on CRM. In AQPs, specific CRM factors should be defined objectively. Examples of CRM factors include communication, situational awareness, problem solving, decision making, judgment, team management, stress management, team review, and interpersonal skills. Measurement methods might include evaluator rating scales, participant surveys and video tape critiques. All data should be anonymous except that the instructors or evaluators should be identified on crewmember surveys and evaluations. The FAA expects applicants to incorporate new CRM knowledge regularly.

e. *Automated Analysis Data.* An operator with an AQP is required to provide proficiency data in digital form to the FAA. The data will reflect all terminal proficiency objectives and include proficiency data gathered during pre-training, training, and evaluations. This anonymous, global data will be used to develop performance projections. When both evaluator ratings and automated performance measurement systems are used, the automated system will provide data for each proficiency objective that is also evaluator-rated. The automated performance measurement system should measure time out of tolerance (performance standards) for all terminal proficiency objectives.

f. *Data Requirements.* Individual or crew performance data should include a measure of proficiency objectives on a scale that discriminates levels of performance. At a minimum, a 5-point rating scale should be used. Data should be collected each time an evaluator observes performance of a proficiency objective during any type of evaluation.

(1) Evaluation data should include:

(i) Identification of the proficiency objective.

(ii) Date the objective was observed.

(iii) Ratings for each observation.

(2) Training data should also be collected for program evaluation and validation purposes. The crewmembers, instructors, and evaluators should be identified by code to protect anonymity. Training data should include:

(i) The total number of times each proficiency objective is performed by an individual and/or a crew.

(ii) The total number of times each proficiency objective is performed before it is successfully accomplished.

(iii) The ratings for each objective.

g. *Questionnaires.* At the end of a qualification curriculum or recurrent training session, an applicant may provide a questionnaire to students and instructors to solicit evaluation of the curriculum or training session. The questionnaire should provide a rating scale and the factors to be rated.

179. Analysis of Data

Data will be used for the following purposes.

a. *Validating Student, Instructor, Evaluator Proficiency.* Performance data is recorded in individual files to verify an individual's qualification to perform a duty. This data is not analyzed for

purposes of validating individual performance.

b. *Validating the Training Program.* Performance data should be used to validate the AQP. One example of the kind of analysis that may be done to validate the training program is to compare pre-training and post-training performance to determine the percentage of students who mastered each proficiency objective and their corresponding average scores. Another example is analysis of the number of repetitions of a performance objective before it is accomplished at the terminal proficiency level. This analysis will provide summaries that may show, for example, that 95 percent of all pilots in command have successfully accomplished a particular objective in 10 iterations with little improvement thereafter.

c. *Establish Performance Norms.* Summary distributions (e.g.; means, modes, standard deviations) of actual performance scores may be used to establish performance norms.

d. *Validate Terminal Proficiency Objectives.* Pre-training evaluation mean scores for currency item and other proficiency objectives will be examined. The frequency of training required to maintain proficiency will be examined.

e. *Conducting Research on Cockpit Resource Management.* Data may be used for research in CRM factors. One method of analysis is to compare pre-training evaluations and post-training proficiency scores by indicating the percent of students who successfully mastered CRM skills and the corresponding average score. Another method is to summarize variations in CRM performance scores which track variations in CRM training techniques or evaluation methods.

f. *Comparing Accident/Incident Data.* The FAA will compare specific proficiency objective scores (to include CRM factors) to performance suspected in accident/incidents.

180. Database Retention

The Performance/Proficiency Database will be maintained by the certificate holder or the training center. Anonymous data used for projections (including automated performance data measures), data for CRM research and development, and student/instructor/evaluator critiques of the AQP will be provided to the FAA. Only proficiency data is to be kept on a continuing basis. Data will be maintained on any proficiency objectives that are candidates for changes in requirements until the changes have been validated and granted final FAA approval.

Section 5. Records on Qualified Individuals

181. Recordkeeping Requirements

A certificate holder or training center will establish and maintain appropriate records to validate individuals' qualification. This section provides guidance for establishing and maintaining records. The recordkeeping requirements are a part of the approved Performance/Proficiency Database under an AQP and may be followed in lieu of the standard part 121 or 135 recordkeeping requirements.

182. Contents of Individual Records

The record for each individual who is being qualified or has qualified under an AQP should contain the following:

a. Full name (First, Middle Initial, Last) of the individual.

b. Duty Position(s).

c. Airman certificate type, number, and ratings (if applicable).

d. Date, class, and any limitations of the person's most recent medical certificate.

e. Aeronautical experience by hours, by aircraft, and by type of operation (i.e., FAR 121, foreign air carrier, military, etc.).

f. Make, model, and series aircraft (or variant) qualified to operate (by duty position).

g. Special Route/Area/Airport qualification as required.

h. Special operation qualifications; e.g., CAT II, CAT III.

i. The date of and reason for any action taken concerning an individual's release from employment, date, and reason.

183. Responsibility for Training and Qualification Records

Individual crewmember and dispatcher qualification records are the responsibility of the certificate holder. However, an operator may arrange for a training center to maintain the records of training and qualification for each individual qualified under an AQP. Existing records that comply with the AQP requirements and are otherwise acceptable to the FAA as meeting part 121 and 135 requirements do not need to be duplicated.

184. Individual Qualification Activity Records

Individual qualification activity records should include the following:

a. *Record Identification.* Each record should identify the make, model, and series aircraft (or variant), and duty position.

b. *Record Detail.* The operator will maintain records of indoctrination, qualification, continuing qualification, and accomplishments required by the approved AQP for the person's *current assignment(s).* These records will be maintained in sufficient detail to show how the individual satisfied the requirements of each curriculum. A line item entry that a curriculum was completed as of a particular date is not adequate.

The records should include:

(1) The completion date for each indoctrination curriculum modules or lessons.

(2) The completion dates for all qualification curriculum modules or lessons.

(3) The completion dates for continuing qualification curriculum activities. These records should contain:

(i) Currency events by date accomplished.

(ii) Online evaluations by date with grade.

(iii) Proficiency evaluations by date with grade.

(iv) Ground and flight training by date with grade.

c. *Other Training.* Records should show the result and completion date of other training and qualification that permitted an individual to advance to his current assignment.

185. Retention of Records

Records should be retained in accordance with the following guidelines.

a. *Minimum Retention.* The minimum retention period should ensure that a person's training and qualification status can be determined. To provide a baseline for program changes, detailed records, as described in paragraph 184 above, will be kept, showing each person's participation in the AQP during the first three evaluation periods for a new AQP curriculum. Thereafter records will be kept for at least the previous continuing qualification cycle. Actions more than one continuing qualification cycle old may be documented by a dated, line item record. However, if actions more than one continuing qualification cycle old are to be used as the basis for later qualifications (e.g., changing to another certificate holder, qualifying on a different make, model, and series aircraft (or variant)), detailed records will be kept available. In the absence of these detailed records, the individual may be required to qualify by completing all curriculum requirements. Certificate holders, individuals, and training centers should understand the risks associated with discarding detailed records.

b. *Retention after Release.* All records should be kept for at least 6 months after a person's release from a duty assignment.

186. Guidelines for Computerized Recordkeeping

The FAA may approve the use of computer record systems. The following guidelines are provided for approval of computerized recordkeeping systems.

a. *Guidelines.* When designing a computerized recordkeeping system, use the following considerations:

(1) Records should contain all the information required for a manual system.

(2) Each record should be certified by an instructor, supervisor, or evaluator.

(3) The certificate holder or training center should designate a representative to be responsible for checking and validating the accuracy and completeness of the record.

b. *Approval.* The following outlines the approval procedure for a computerized recordkeeping system.

(1) *Initial Approval.* Initial approval may be granted at the end of Phase III to use a computerized recordkeeping system. A request for initial approval should identify:

(i) The type and location of computer equipment.

(ii) The methods used for providing duplicate records during the period of initial approval.

(iii) The methods and schedules for updating records.

(iv) The means used for identifying individuals.

(v) The type and amount of training provided to qualify personnel who operate and maintain the recordkeeping system.

(vi) The means used to identify instructors, supervisors or evaluators who certify results of training, evaluation, and/or qualification.

(vii) The validation checks proposed to verify the accuracy of information before it is entered into the computerized system.

(viii) The identity of the person(s) responsible for conducting the validation checks.

(ix) A procedure which ensures that persons responsible for making data entries are clearly identified and that entries are made only under the direct control of those persons.

(2) *Final Approval.* Final approval (at the end of Phase IV), is appropriate only after an operational demonstration shows that the computerized recordkeeping system is accurate, secure, and adequate to support the AQP.

187.-190. Reserved

Chapter 10. Qualification of Training Equipment for Use in an AQP

Section 1. Approval Procedures for all Training Equipment

191. General

Any simulator or training device that is intended to be used in an AQP for any of the following purposes must be qualified as a flight simulator or a flight training device: (1) required evaluation of individual or crew proficiency; (2) training activities that determine if an individual is ready for an evaluation; (3) activities used to meet recency of experience requirements; and (4) Line Operational Simulations (LOS). To be qualified, a simulator or training device will be evaluated against a set of criteria established by the Administrator for a particular level of simulation (a qualification level). A qualified flight simulator or flight training device will be specifically approved by the FAA for its intended use in an AQP. A flight simulator or flight training device will be part of a flight simulator or flight training device continuing qualification program. All other training equipment (not used for any purpose listed above) will be identified by the applicant and its use approved by the Manager, Air Carrier Training Branch. This chapter outlines acceptable procedures for the qualification, approval, and continuing qualification of flight simulators and flight training devices for use in an AQP and for approval of other training equipment used in AQP. Appendix F of this AC provides functional descriptions of flight training equipment.

(Note: When used in this chapter the terms "evaluation," "qualification" and "continuing qualification" apply to training equipment and should not be confused with the use of these terms in other chapters of this AC.)

Section 2. Specific Procedures for Qualification and Approval of Flight Simulators and Flight Training Devices

192. Criteria for Flight Simulator and Flight Training Device Qualification

The National Simulator Program Manager shall approve the qualification level of a flight simulator or flight training device in accordance with the following criteria:

a. The criteria for airplane simulators is in AC 120-40, as amended, "Airplane Simulator Qualification."

b. The criteria for flight training devices is in AC 120-45, as amended, "Airplane Flight Training Devices Qualification."

c. Criteria for helicopter simulators and training devices qualification are being developed and will be released at a later date in an AC.

193. Initial Approval of Flight Simulators and Flight Training Devices for Use in an AQP

As part of the approval of an AQP, the Manager, Air Carrier Training Branch, will approve use of a flight simulator or flight training device for use in the AQP. Appendix C of this AC presents tables that specify the use of flight simulators and flight training devices in an AQP. Each AQP curriculum segment which includes use of a flight simulator or flight training device should specify the make, model, serial number and manufacturer of the flight simulator or flight training device or the FAA identification number of the flight simulator or flight training device assigned by the National Simulator Program Manager.

194. Currently Qualified Devices

Training devices and simulators currently qualified as flight training devices and flight simulators by the FAA may be used in approved AQPs at the current qualification level without completing an additional qualification evaluation.

195. Devices Not Currently Qualified

Candidate devices (not currently qualified by the Administrator) may not be used as flight training devices or flight simulators equipment in an approved AQP until they are qualified.

196. Continuing Qualification of Flight Simulators and Flight Training Devices

Each flight simulator and flight training device used in an AQP should:

a. *Maintain the performance,* functions, and other characteristics that are required for that qualification level as demonstrated during the initial or upgrade evaluation;

b. *Be modified to conform with any modification* to the aircraft being replicated or any modification or change to the mathematical model used that results in a change in the performance, functions, or other characteristics that may affect the operation of the device at that qualification level;

c. *Be given a daily functional preflight test* administered by maintenance before use;

d. *Have a daily discrepancy log* that is maintained for the instructor or evaluator to enter each discrepancy at the end of each training or evaluation session, and for the maintenance personnel to enter each discrepancy after a daily functional preflight test but

before the simulator is used for training and/or evaluation;

e. *Have a documented software configuration control system* which contains a record of all software changes or modifications and which assures that systems software changes which might offset flight performance in handling qualities, ground handling, or systems functions approved by the Administrator be implemented only after notification to and concurrence by the Administrator; and

f. *Have an approved Component Inoperative Guide* to reflect the authorized use if a performance feature, or other characteristic, does not continue to meet initial qualification criteria.

197. Failure To Maintain Initial Qualification Level

Except as noted in the paragraph below, training devices or flight simulators failing to maintain the performance, functions, and other characteristics that are required for initial qualification may not be used in training, evaluation, or certification of airmen to ensure attainment of terminal proficiency objectives.

198. Component Inoperative Guide

If the Administrator has authorized the use of a Component Inoperative Guide (CIG) for the flight training device or flight simulator, and any performance, functions, or other characteristic does not meet the criteria for initial qualification because of an inoperative component listed in the CIG, the FAA will limit but not prohibit the use of the device in the AQP.

199. Responsibility of Sponsor

As used in this AC with respect to flight training devices and flight simulators, a "sponsor" is a person who requests that the Administrator conduct an evaluation of a flight training device or flight simulator for assignment of a qualification level; and agrees to accept the responsibilities outlined in paragraphs a., b., and c. below.

a. *Maintaining Performance Level.* Each sponsor of a flight training device or flight simulator used in an AQP shall be responsible for ensuring that the device maintains the performance, functions, and other characteristics required for the qualification level assigned as a result of the initial or upgrade evaluation.

b. *Maintenance.* The sponsor may arrange with another person for the maintenance, preventive maintenance, or required testing of the device; however, this does not relieve the sponsor of the responsibility in paragraph a. above.

c. *Component Inoperative Guide (CIG).* The sponsor shall remove the flight training device or flight simulator from use, or limit its use according to the CIG, when the sponsor is first made aware that any problem exists with the device that affects its performance, functions, or other characteristics. In such situations, as soon as possible, the sponsor will inform any person using, or scheduled to use, the device that its use has been suspended or limited, and, if limited, how it has been limited.

d. *Withdrawing Sponsorship.* At least 30 days before withdrawing as a sponsor, the sponsor should notify the Administrator and any person using, or scheduled to use, the device that he is withdrawing as sponsor of the flight training device or flight simulator.

200. Scheduled Recurrent Evaluations

Flight training devices and flight simulators previously qualified by the Administrator and used in an AQP will follow the previously arranged and approved schedule for recurrent evaluation and the currently approved Approval Test Guide (ATG). However, the evaluation will be conducted as outlined in this AC and recorded as a scheduled recurrent evaluation. Subsequent scheduled recurrent evaluation will follow an established due date. Flight training devices and flight simulators not previously qualified by the Administrator or those being upgraded for use in an AQP shall be included in a continuing qualification program and evaluation schedule.

201. Time Periods for Scheduled Recurrent Evaluations

The scheduled recurrent evaluations shall be accomplished according to the following schedule:

a. *The first scheduled recurrent evaluation* will be conducted not later than the sixth month after the initial or upgrade evaluation. After this first recurrent evaluation, a due month will be scheduled for subsequent recurrent evaluations.

b. *Subsequent scheduled recurrent evaluations* should be conducted at 12-month intervals except as noted below. Failure to accomplish an evaluation in accordance with the evaluation schedule will result in loss of qualification status for the device.

c. *Flexibility.* Scheduled recurrent evaluations conducted in the month before or the month after the due month will be considered to have been accomplished during the due month. Scheduled recurrent evaluations may also be conducted more than one month before the due month if properly coordinated. However, this would establish a new due month for subsequent scheduled recurrent evaluations.

d. *Time Required for a Recurrent Evaluation.* Scheduled recurrent evaluations will normally be scheduled for 8 hours and will consist of functional tests and approximately 50 percent of the tests in the ATG. Additionally, in accordance with a schedule approved by the Administrator and at 2 equally spaced intervals between the scheduled recurrent evaluations, the sponsor will conduct 50 percent of the balance of the validation tests (25 percent of the ATG tests), certify that the test results are within prescribed tolerances, and maintain the results in a file for review by the National Simulator Program Manager. Such a schedule means that all validation tests in the ATG will be completed annually.

202. No-Notice Evaluations

During the interval between the scheduled recurrent evaluations, the Administrator will conduct at least 1 no-notice recurrent evaluation.

a. *Content.* A no-notice recurrent evaluation will consist of the following:

(1) A review of ATG validation tests accomplished since the last recurrent evaluation (either scheduled or no-notice);

(2) A review of the device's discrepancy log (including daily maintenance preflight, discrepancies, and action taken to clear discrepancies); and

(3) Observation of the device during normally scheduled training or evaluation functions.

b. *Additional Content.* If the device is available, the following items may also be accomplished:

(1) Assessing the state of the visual, motion, and other systems; and

(2) Flying the device.

c. *Reason for Limiting the Content.* A no-notice recurrent evaluation does not have the same level of detail and does not take as long as a scheduled recurrent evaluation because it is based on the premise that the sponsor is maintaining the performance, functions, and other characteristics of the device at the level required for initial qualification.

203. Change of Qualification Level

The upgrading of a flight training device or flight simulator may occur only after initial or upgrade evaluation. The downgrading of a flight training device or flight simulator may occur

only after a special evaluation or a scheduled recurrent evaluation.

204. Discrepancies

If the flight training device or flight simulator evaluator observes a discrepancy during the scheduled recurrent evaluation or the no-notice evaluation which, in his opinion, may affect the qualification status, he may, after notifying the sponsor of his discovery, and at his discretion, withdraw the qualification status of the device. This original qualification status may be regained through correction of the discrepancy and on the authority of the National Simulator Program Manager.

Section 3. Approval of Training Equipment Other Than Flight Training Devices or Flight Simulators

205. Initial Approval

Each device (other than flight training devices or flight simulators) to be used in an AQP shall be identified in the Supporting Data Package (see paragraph 83.d.(5)) by its nomenclature along with a description of its intended use. In the AQP Supporting Data Package, the applicant will explain the relationship of the equipment performance to the training it will support. The FAA will review proposed training equipment requirements during the application phase and when evaluating the syllabus lessons. Phase II approval of a syllabus will include initial approval of all associated training equipment.

206. Maintaining Approval and Performance

a. *Responsibility.* The applicant is responsible for continuous maintenance of any training equipment.

b. *Maintenance of Equipment Functions.* To ensure that all training equipment continuously functions as intended, each applicant should:

(1) Provide all proposed equipment modifications to the FAA for approval.

(2) Conduct a daily functional check before use of the equipment.

(3) Provide a discrepancy log.

(4) Provide a maintenance and configuration control system that documents maintenance and FAA approved modifications.

c. *FAA Evaluation of Applicant's Maintenance.* The maintenance and configuration control system will be capable of detecting deficiencies in training equipment performance and requirements for adjusting training equipment utilization in an AQP. Deficiencies will be corrected through modification of the equipment and/or the curriculum. The FAA will evaluate the applicants ability to maintain training equipment during:

(1) The formative evaluation conducted in Phase III.

(2) The summative evaluation conducted during Phase IV.

(3) Continuing operation conducted during Phase V.

207.–300. Reserved

Appendix A

Considerations for Indoctrination Curriculum Subjects

A. Certificate Holder-Specific Indoctrination

The subject area of an indoctrination curriculum referred to as "certificate holder-specific" includes elements that pertain to the certificate holder's methods of compliance with regulations and safe operating practices. The following are examples of possible elements of certificate holder-specific subject areas for flight crewmembers:

(1) Duties and responsibilities:

- Company history, organization, and management structure.
- Operational concepts, policies, and kinds of operation.
- Company forms, records, and administrative procedures.
- Employee professional and rules of conduct.
- Authority and responsibilities of duty position.
- Personal equipment.
- Company Manual organization, revisions, and employee responsibilities concerning manuals and after their use during line operations.

(2) Appropriate provisions of the Federal Aviation Regulations and other applicable regulations:

- Flight crewmember certification, training, and qualification requirements.
- Medical certificates, physical examinations, and fitness for duty requirements.
- Flight control requirements (dispatch, flight release or flight locating).
- Flight time limitations, duty periods and rest requirements.
- Recordkeeping requirements.
- Company manuals.
- Flightcrew emergency authority, what to do in the event of interference with crewmembers, how to report these occurrences.

(3) Content of Operating Specifications:

- Regulatory basis in part 121 or part 135 (as applicable) and the FA Act of 1958 (as amended).
- Definitions, description, and organization of operations specifications.
- Limitations and authorizations of operations specifications.
- Description of operations authorized under the certificate.
- Description of FAA certificate holding district office and responsibilities of FAA principal inspectors.

(4) Emergency situations:

(a) Flight crewmember duties and responsibilities.

- Emergency assignments.
- Pilot in Command's emergency authority.
- Reporting incidents and accidents.

(b) Crew coordination and company communication:

- Cabin crew notification procedures.
- Ground agencies (FAA, Airport Authority) notification procedures.
- Company communication procedures.

(c) Ground Evacuation:

- Aircraft configuration.
- Directing passenger flow.
- Blocked or jammed exit procedures.
- Fuel spills and other ground hazards.
- Handicapped persons.

(d) Ditching:

- Cockpit and cabin preparation.
- Passenger briefing.
- Crew coordination.
- Primary swells, secondary swells, and sea conditions.
- Ditching heading considering wind and water conditions.
- Ditching at night.

(e) Previous aircraft accidents/incidents:

- NTSB accident report reviews.
- Human factors/considerations.
- NASA reporting system.

B. Duty Position-Specific Indoctrination

The duty position-specific modules of an indoctrination curriculum segment provide a basis for students to enter subsequent qualification curriculums. These modules address appropriate portions of a certificate holder's manual and the standard practices of airmanship and flight procedures referenced in other documents such as the Airman's Information Manual. Emphasis in duty position-specific training is not *aircraft* specific. Instead, it should relate to the kinds of operation and general characteristics of the certificate holder's fleet of aircraft. The objective of duty position-specific training is to ensure each student has acquired the basic knowledge and abilities necessary for part 121 and/or part 135 operations. The scope of duty position-specific training varies according to the anticipated duty position evaluators (EV), instructors (IN), pilots-in-command (PIC), seconds-in-command (SIC), flight engineers (FE), aircraft dispatchers (AD), and flight attendants (FA). The following are examples of possible elements for the "duty position-specific" subject areas for flight crewmembers:

(1) Company Flight Control:

- Dispatch, flight release, or flight locating systems and procedures (as applicable).
- Organization, duties, and responsibilities.
- Weather and Notice to Airman information.
- Company communications.

(2) Principles of Weight and Balance:

- Definitions (such as zero fuel weight, moment, etc.).
- General loading procedures and center of gravity computations.
- Effects of fuel burn and load shifts in flight.
- Weight and balance forms, load manifests, fuel slips and other applicable documents.

(3) Principles of Aircraft Performance and Airport Analysis:

• Definitions (such as balanced field, VMC, obstruction planes, maximum endurance, etc.).
• Effects of temperature and pressure altitude.
• Ground Proximity Warning Systems (GPWS).
• TERPS criteria (obstacle clearance standards).
• Airport analysis system (as appropriate to the kinds of operation and aircraft used).
• Effects of contaminated runways.
(4) Principles of Meteorology:
• Basic weather definitions (such as forecasts, reports, and symbols).
• Temperature, pressure, and winds.
• Atmosphere moisture and clouds.
• Air masses and fronts.
• Thunderstorms, icing and windshear.
(5) Principles of Navigation:
• Definitions (such as class I, class II navigation).
• Basic navigational instruments and equipment.
• Concepts and procedures pertaining to dead reckoning and pilotage.
• Navigational aids.
• VHF, VLF, LORAN and self-contained systems (as applicable).
(6) Airspace and ATC Procedures:
• Definitions (such as precision approaches, airways, and ATIS).
• Description of airspace.
• Navigation performance and separation standards.
• Controller and pilot responsibilities.
• ATC communications.
• Air traffic flow control.
(7) Enroute and Terminal Area Charting and Flight Planning:
• Terminology of charting services such as Jeppesen or NOAA.
• Takeoff minimums, landing minimums, and alternate requirements.
• Company flight planning procedures.
• Flight service and international procedures (as applicable).
• Airport diagrams.
(8) Concepts of Instrument Procedures:
• Definitions (such as MDA, HAA, HAT, DH, CAT II, ILS, and NOPT).
• Non-precision approaches.
• Circling, visual, and contact approaches (as applicable).
(9) Emergency Situations:
(a) Aircraft Fires
• Principles of combustion and classes of fire.
• Toxic fumes and chemical irritants.
• Use of appropriate hand held extinguisher.
• Lavatory fires.
• Smoke masks, goggles, and Protective Breathing Equipment (PBE).
(b) First Aid and Medical Equipment:
• Contents of first aid kit.
• Contents of the medical kit.
• Kit integrity requirements.
• Use of individual items.
(c) Illness, injury, and basic first aid:
• Principles of CPR.
• Ear and sinus blocks.
• Seeking medical assistance.
• Treatment of shock.
• Heart attack.
• Emergencies during pregnancy.
(d) Rapid Decompression:
• Respiration.
• Hypoxia, hypothermia, hyperventilation.
• Time of useful consciousness.
• Gas expansion/bubble formation.
• Physical phenomena and actual incidents.
(e) Crewmember incapacitation:
• Company procedures.
• Reporting requirements (NTSB).
• Interference with crewmembers resulting in incapacitation.
(f) Uninhabited Environment Situations:
• Basic survival.
• Decision to remain within aircraft.
• Position reporting and communications.
• Emergency ground to air signals.
• Shelter, food, and water.

Appendix B—Considerations for Pilot and Flight Engineer Ground Training Subjects

To be qualified for a particular duty position in a specific make, model, and series aircraft (or variant), a person needs aircraft specific ground training. This training for both qualification and continuing qualification curriculums includes general operational subjects, aircraft systems, aircraft system integration, and emergency drill training.

A. General Operational Subjects

The subject area referred to as "general operational subjects" includes instruction on operational requirements that are specific to the aircraft in which qualification is being conducted. General operational subjects might include the following:
(1) Dispatch, flight release, or flight locating procedures.
(2) Weight and balance procedures including use of company weight and balance forms.
(3) Adverse weather practices including procedures which will be followed when operating in the following conditions:
• Icing.
• Turbulence.
• Heavy precipitation.
• Thunderstorms with associated windshear and microburst phenomena.
• Low visibility.
• Contaminated runways.
(4) Procedures for operating communications and navigation equipment in accordance with the following:
• Specific company communications requirements.
• ATC clearance requirements.
• Area departure and arrival requirements.
• Enroute requirements.
• Approach and landing requirements.
(5) Specific performance characteristics of the aircraft during all flight regimes including:
• The use of charts, tables, tabulated data and other related manual information.
• Normal, abnormal and emergency performance problems.
• Meteorological and weight limited performance factors (temperature, pressure, contaminated runways, precipitation, climb/runway limits).
• Inoperative equipment performance limiting factors (for example, inoperative anti-skid, if allowed by MEL).
• Special operational conditions such as unpaved runways, high altitude airports and drift down requirements.

B. Aircraft Systems

The second subject area of a qualification curriculum is "aircraft systems." Instruction and evaluation on each aircraft system should be given in sufficient detail to ensure the student clearly understands system components, limitations, relevant controls, actuators, annunciators and procedures for the various system configurations he will use. It is not possible to list every conceivable aircraft system that should be included in a curriculum segment; however, the following illustrates the depth and scope that should be provided:
(1) Aircraft General. Typical elements include an overview of the basic aircraft such as dimensions turning radius, panel layouts, cockpit and cabin configurations, and other major systems and components or appliances.
(2) Powerplants. Typical elements include a basic description of the engine, its thrust rating, engine components such as accessory drives, ignition, oil, fuel control, hydraulic, and bleed air features.
(3) Electrical. Typical elements should include the sources of aircraft power including engine driven generators, APU generator, and external power. Other elements include electrical buses and related components such as circuit breakers, fuses, aircraft batteries and other applicable standby power systems.
(4) Hydraulic. Typical elements are the hydraulic reservoirs, pumps, accumulators; the means of routing hydraulic fluid through filters, check valves, interconnects to associated actuators and other hydraulically operated components.
(5) Fuel. Elements include the fuel tank system (location and quantities), engine driven pumps, boost pumps, systems valves, crossfeeds, quantity indicators and provisions (if applicable) for fuel jettisoning.
(6) Pneumatic. Typical elements include bleed air sources such as engine, APU, or external ground air; the means of routing, venting and controlling bleed air via associated valves, ducts, chambers, and the purpose and operation of temperature and pressure limiting devices.
(7) Air Conditioning and Pressurization. Typical elements include heaters, air conditioning packs, fans, and other environmental control devices. Pressurization system components include elements such as outflow and relief valves with associated automatic, standby, and manual pressurization controls and annunciators.
(8) Flight Controls. Elements include primary controls (yaw, pitch, and roll devices) and secondary controls (leading/trailing edge devices, flaps, trim, and damping mechanisms). Automatic stability and control systems should be included. Redundant systems capabilities should also be included.
(9) Landing Gear. Typical elements are the landing gear extension and retraction mechanism (including the operating sequence of struts, doors, and locking devices), brake

and, if applicable, antiskid systems. Other typical elements include steering (nose or body steering gear), bogie arrangements, air/ground sensor relays, and visual downlock indicators.

(10) Ice and Rain Protection. Typical elements include each anti-icing and deicing system which prevents or removes airfoil, flight control, engine, pitot-static probe, fluid outlet, cockpit window, and aircraft structure ice. Other typical elements include system components such as pneumatic/electrical valves, sensors, ducts, electrical elements, or pneumatic devices, and pumps.

(11) Equipment and Furnishings. Typical elements are aircraft exits, galleys, water and waste systems, lavatories, cargo areas, crewmember and passenger seats, bulkheads, seating or cargo configuration, and non-emergency equipment and furnishings.

(12) Navigation Equipment. Typical elements are flight navigation system components including flight directors, horizontal situation indicators, radio magnetic indicators, navigation receivers (ADF, VOR, OMEGA, LORAN-C, RNAV, Marker Beacon, DME, etc.). Other typical elements include inertial system (INS, IRS), functional displays, fault indicators, comparator systems, transponders, radio altimeters, weather radars, and cathode ray tube (or other computer generated) displays of aircraft position and navigation information.

(13) Auto Flight System. Typical elements include such items of equipment as the autopilots, autothrottles and their interface with aircraft flight director and navigation systems including automatic approach tracking, autoland, and automatic fuel or performance management systems.

(14) Flight Instruments. Typical elements should include an overview of the panel arrangement and the electrical, pneumatic, and primary and alternate pitot-static sources for flight instruments. Other elements include attitude, heading (directional gyro and magnetic), airspeed and vertical speed indicators, altimeters, standby flight instruments, and other relevant instruments.

(15) Communication Equipment. Typical elements include VHF/HF radios, audio panels, service and inflight interphone system, passenger address systems, voice recorders, and air/ground data communications systems (ACARS).

(16) Warning Systems. Typical elements are aircraft aural, visual, and tactile warning systems including recognition of the character and degree of urgency related to each signal. Other typical elements include warning and caution annunciator systems including windshear, and ground proximity and takeoff warning systems.

(17) Fire Protection. Typical elements include fire and overheat sensors, loops, modules, or other means of providing visual and/or aural indications of fire or overheat detection. Other typical elements include procedures for use of fire wall shutoff controls, manual and automatic extinguishing systems, and power sources necessary to provide protection for fire and overheat conditions in engines, APUs, cargo bays, wheel wells, the cockpit, the cabin, and lavatories.

(18) Oxygen. Typical elements are the aircraft oxygen system including the fixed passenger, crew systems, and installed portable systems. Other typical elements include sources of oxygen (gaseous or solid), flow and distribution networks, automatic deployment systems, regulators, pressure levels, gauges, and servicing requirements.

(19) Lighting. Typical elements are the cockpit, cabin, and external lighting systems including power sources, switch positions, and spare lightbulb locations.

(20) Emergency Equipment. Typical elements describe the type, location, use, and purpose of each installed item of emergency equipment such as fire and oxygen bottles, protective breathing equipment (PBE), first aid kits, life rafts, life preservers, crash axes, emergency exits and lights. Other typical elements include each item of egress equipment such as slides, slide rafts, escape straps or handles, hatches, ropes, ladders or moveable stairs.

(21) Auxiliary Power Unit (APU). Typical elements should include installation of the APU, its capacity and operation, including its electrical and bleed air capabilities and how it interfaces with the aircraft systems. These elements include APU components such as inlet doors, exhaust ducts, and fuel supply.

C. Aircraft System Integration

The third subject area of a qualification curriculum is referred to as "System Integration." This area provides instruction and evaluation on how aircraft systems interrelate with respect to normal, abnormal, and emergency procedures. This training ranges from procedures as basic as how to apply power to the aircraft electrical and pneumatic systems with the APU, to complex tasks such as how to program computerized navigation and autoflight systems. System integration should include developing flightcrew interaction in the use of checklists and other operational procedures. It is normally conducted using training equipment which portrays a specific cockpit layout and includes switch and indicator logic. The flight training devices and flight simulators described in Advisory Circular 120-45, as amended, "Airplane Flight Training Devices Qualification," and Advisory Circular 120-40, as amended, "Airplane Simulator Qualification," may be used for system integration. Additionally, computer based instruction or other interactive media may be used. System integration may be conducted in concert with aircraft systems training or as an independently conducted part of a qualification curriculum. System integration serves as a logical connection between ground instructional delivery methods and flight training. It allows students to become familiar with a particular cockpit layout, checklists, operator procedures, and other areas which are best learned before conducting actual flight events. The following are examples of typical system integration elements:

(1) Use of Checklist. Typical elements include safety checks, cockpit preparation (switch position and checklist flows), checklist callouts and responses, and checklist sequence.

(2) Flight Planning. Elements typically include performance limitations (meteorological, weight, and MEL/CDL items), required fuel loads, weather planning (lower than standard takeoff minimums or alternate airport requirements).

(3) Display Systems. Typical elements include use of weather radar and other CRT displays (checklist, vertical navigation or positional navigation displays).

(4) Navigation Systems. Elements typically include preflight and inflight operation of receivers, on-board navigation systems, and flight plan information input and retrieval.

(5) Autoflight. Typical elements include the autopilots, autothrust, and flight director systems including appropriate procedures, normal and abnormal indications, and annunciators.

(6) Cockpit Familiarization. Typical elements involve activation of aircraft system controls and switches to include normal, abnormal, and emergency switch and control positions and relevant annunciators, lights and/or other caution and warning systems.

System integration is particularly effective where aircraft are equipped with relatively sophisticated computerized navigation, flight director, performance, and/or autoflight systems. The key to effectiveness in this area is to use training equipment which provides an accurate, real time capability, and interactive media for student practice. The functional requirements of these devices do not necessarily include motion, visual systems or aircraft specific flight handling characteristics. However, each device should accurately portray relevant keyboards, switches, other controls, CRT's and other displays and will usually include air/ground and flight path logic.

D. Emergency Drill Training

The fourth subject area of a qualification curriculum is Emergency Drill Training. This training might include at least the following events:

(1) Operation of each type of emergency exit in the normal and emergency modes.

(2) Operation of each type of hand held fire extinguisher.

(3) Operation of each type of emergency oxygen system.

(4) Donning, use, and inflation of life preservers and the use of other flotation devices (if applicable).

(5) Ditching procedures (if applicable) including cockpit preparation, crew coordination, passenger briefing and cabin preparation, the use of lifelines, and boarding of passengers and crew into a life-raft or slide raft.

(6) Donning and use of protective breathing equipment.

Appendix C—Tables of Qualification Events and Associated Flight Training Equipment

The following tables provide a list of qualification events which may be used in developing approved flight curriculum segments for airplane operations. An applicant who proposes to deviate from the provisions in these tables should consult the guidance in Chapter 7 of this AC. Symbols used in these tables are as follows:

(S) The certificate holder or training center should specify in its curriculums if the event requires seat specific qualification.

Q Whenever a pilot first undergoes qualification (with the particular Part 121 and Part 135 certificate holder) to operate a specific category and class of aircraft with a specific kind of powerplant, certain events should be accomplished in at least the media indicated by the letter "Q." For example: A Convair 580 PIC who was never qualified in a turbojet with the same airline would be required to use at least a Level C flight simulator for qualification in a DC–9.

[ ] Indicates an event which should be included in a curriculum if the certificate holder's operations specifications authorize the specific kind of operation.

X Indicates the beginning and end of the range of media authorized for use in training, evaluation, and certification.

P Indicates that partial task credit is awarded using the indicated media. Full credit may be taken on the media between the lowest and highest "X."

M Indicates motion is required to perform the event in the specified level of training device.

V Indicates specified events that may be performed in the designated level of simulator if the National Simulator Program Manager determines the simulator's visual system is adequate for the event.

(ME) Indicates an event applicable only to multiengine aircraft.

Others Is for additional events, identified by AQP development methods, including maneuvers and procedures unique to an aircraft or its operation.

Performance Turn A turn using the minimum turn radius as limited by available thrust and by compliance with the certificate limits established for the aircraft. Performance turns are intended to demonstrate handling and performance qualities in accelerated flight and to demonstrate the characteristics and features of automatic flight control systems in turning, banking, and accelerated flight.

BILLING CODE 4910–13–M

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

FLIGHT PHASE	EVENT	TRAINING DEVICE LEVEL 4	5	6	7	SIMULATOR LEVEL A	B	C	D	ACFT
PREPARATION	Visual Inspection									*X
	Pre Taxi Procedures	X								X
	Flight Planning * Weather * MEL/CDL * Performance Limitations * Weight & Balance			X						X
	Others									
SURFACE OPERATIONS	Normal/Alternate									
	Starting	X								X
	Pushback (S)					X				X
	[] Powerback (S)						X			X
	Taxi (S)							X		X
	[] CAT III Taxi (S)							X	X	
	Pre Takeoff Checks	X								X
	Post Landing Checks	X								X
	Parking (S)							X		X
	Shutdown	X								X
	Others									

* A set of properly detailed and sequenced pictorials may be approved.

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
SURFACE OPERATIONS	[Abnormal/Emergency]									
	Starting	X								X
	Emergency Evacuation			X						X
	Shutdown	X								X
	Open									
TAKEOFF	[Normal/Alternate]									
	Normal					X		Q		X
	Crosswind					X		Q		X
	Special Performance					X		Q		X
	[] Low Visibility					X		Q		X
	Open									
	[Abnormal/Emergency]									
	Crosswind (Normal in an aircraft when no crosswind situation exists) w/simulated failure of the most critical powerplant at the most critical point along the takeoff path which requires a decision to discontinue the takeoff.					X		Q		X
	Open									

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

FLIGHT PHASE	EVENT	TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
		4	5	6	7	A	B	C	D	
TAKEOFF	Abnormal/Emergency									
	Crosswind (ME) (Normal in aircraft if no crosswind situation exists) with a simulated failure of the most critical powerplant at the most critical point along the takeoff path which requires a decision to continue the takeoff.					X		Q		X
	Rejected Special Performance with maximum braking			P	P	X			X	P
	[] Rejected Low Visibility					X				X
	Open									

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
INFLIGHT OPERATION	Normal/Alternate									
	Climb			X	—	—	—	—	—	X
	Enroute Navigation		X	—	—	—	—	—	—	X
	High Speed Handling Characteristics					X	—	—	Q	X
	High Altitude Handling Characteristics					X	—	—	Q	X
	Descent			X	—	—	—	—	—	X
	Others									
	Abnormal/Emergency									
	Climb with failure of critical powerplant (ME)					X	—	—	—	X
	Enroute Navigation		X	—	—	—	—	—	—	X
	Maximum Rate Descent					X	—	—	—	X
	Others									
INFLIGHT MANUEVER	High Angle of Attack Manuevers					X	—	—	Q	X
	Performance Turns					X	—	—	—	X
	Others									

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
VFR ENROUTE TERMINAL OPERATIONS (REQUIRED IF CERTIFICATE HOLDER IS AUTHORIZED TO CONDUCT VFR ENROUTE OPERATIONS)	Normal/Alternate									
	Traffic Patterns							V	V	X
	Others									
	Abnormal/Emergency									
	Traffic Patterns -any emergency/ abnormal airplane configurations							V	V	X
	Others									
NONPRECISION IFR APPROACHES	Normal/Alternate									
	[] Nonprecision Skill Group 1 (includes ASR)		X	—	—	—	—	—	—	X
	[] Nonprecision Skill Group 2 (includes NDB)			X	—	—	—	—	—	X
	[] Nonprecision Skill Group 3 (includes LOC B/C)			X	—	—	—	—	—	X
	[] Nonprecision Skill Group 4 (includes VOR, RNAV, TACAN)		X	—	—	—	—	—	—	X
	[] Nonprecision Skill Group 5 (includes AZI, LDA, LOC, SDF)		X	—	—	—	—	—	—	X

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
NONPRECISION IFR APPROACHES	[] Nonprecision Skill Group 6 (DME ARC)		X							X
	Open									
	Abnormal/Emergency [] Nonprecision Skill (Any Group) including missed approach with failure of the most critical powerplant during approach procedure				X					X
	Open									

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
PRECISION IFR APPROACH	Normal/Alternate									
	[] Precision Skill Group 1 (includes PAR)			X						X
	[] Precision Skill Group 2 (includes ILS/MLS & CAT I ILS/MLS)			X						X
	[] Precision Skill Group 3 (CAT II ILS/MLS) (S)			X						X
	[] Precision Skill Group 4 (CAT III ILS/MLS) (S)			X						X
	[] Precision Skill Group 5 (Steep ILS/MLS)			X						X
	Open									
	Abnormal/Emergency									
	[] Precision Skill (Any Group) including missed approach with failure of most critical power-plant during the approach				X					X
	Open									

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

FLIGHT PHASE	EVENT	TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
		4	5	6	7	A	B	C	D	
VISUAL SEGMENT AND LANDING	Normal/Alternate									
	[] From VFR Traffic Pattern from VFR Enroute							V	V	X
	From a Non-Precision Instrument Approach (including final approach segment)							X	Q	X
	[] From a Circling Approach (including final approach segment)							V	V	X
	From a Precision Approach (including final approach segment)							X	Q	X
	[] From a CAT II Approach							X		X
	[] From a CAT III Approach							X	X	
	[] Special Performance							X	Q	X
	Crosswind							X	Q	X
	Currency Landings						X			X
	Others									

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

FLIGHT PHASE	EVENT	TRAINING DEVICE LEVEL 4	5	6	7	SIMULATOR LEVEL A	B	C	D	ACFT
	Abnormal/Emergency									
	[ ] From a VFR Pattern from VFR Enroute								V	X
	From a Precision or Non-Precision App. (including the final approach segment)							X		X
	Of the following:									
	1. Rejected Landing							X		X
	2. Landing with Trim Malfunction							X		X
	3. Landing with 50% available power-plants with the loss of power on one side of the airplane (Center engine and 1 outboard engine failed on 3 engine airplanes) (ME)	For 2-Engine Airplanes						X		X
		For Airplanes With 3 or More Engines				X			X	
	4. Landing with 1 powerplant inop for aircraft with 3 or more engines (ME)							X		X
	5. With Flap/Slat Malfunction							X		X
	6. With loss of Flight Control Power (if applicable)							X		X
	Others									

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
DURING ANY PHASE	Normal/Alternate									
	Airframe and Powerplant Systems Operations									
	Airconditioning									
	Antiicing/Deicing									
	Auxiliary Powerplant									
	Communications									
	Electrical									
	Flaps									
	Flight Controls									
	Fuel and Oil									
	Hydraulic									
	Landing Gear									
	Pneumatic									
	Powerplant									
	Pressurization									
	Others									

FYI: When these systems are operated in conjunction with a particular event, the level of required flight training device or flight simulator is as required for that particular event. When an isolated system is operated, it may be done using any approved flight training equipment.

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
DURING ANY PHASE	Normal/Alternate									
	Flight Management & Guidance Systems	FYI: When these systems are operated in conjunction with a particular event, the level of required flight training device or flight simulator is as required for that particular event. When an isolated system is operated, it may be done using any approved flight training equipment.								
	Airborne Radar									
	Auto. Landing Aids									
	Autopilot									
	Collision Avoidance System									
	Flight Data Displays									
	Flight Management Computers									
	Navigation Systems									
	Stall Warning/ Avoidance									
	Stability & Control Augmentation									
	Windshear Avoidance Equipment									
	Others									
	Airborne Procedures									
	Holding		X							X
	Others									

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
DURING ANY PHASE	Abnormal/Emergency									
	Airframe and Powerplant Systems Operations									
	Airconditioning									
	Antiicing/Deicing									
	Auxiliary Powerplant									
	Communications									
	Electrical									
	Fire in any System or Location									
	Flaps									
	Flight Controls									
	Fuel and Oil									
	Hydraulic									
	Landing Gear									
	Pneumatic									
	Powerplant									
	Pressurization									
	Others									

FYI: When these systems are operated in conjunction with a particular event, the level of required flight training device or flight simulator is as required for that particular event. When an isolated system is operated, it may be done using any approved flight training equipment.

FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

FLIGHT PHASE	EVENT	TRAINING DEVICE LEVEL 4	5	6	7	SIMULATOR LEVEL A	B	C	D	ACFT
DURING ANY PHASE	Abnormal/Emergency									
	Flight Management & Guidance Systems	FYI: When these systems are operated in conjunction with a particular event, the level of required flight training device or flight simulator is as required for that particular event. When an isolated system is operated, it may be done using any approved flight training equipment.								
	Airborne Radar									
	Auto. Landing Aids									
	Autopilot									
	Collision Avoidance System									
	Flight Data Displays									
	Flight Management Computers									
	Navigation Systems									
	Stall Warning/ Avoidance									
	Stability & Control Augmentation									
	Windshear Avoidance Equipment									
	Others									
	Airborne Procedures									
	Air Hazard Avoidance						X	—	—	X
	Windshear/Microburst			X*	X*	X	—	—	X	
	X* Note: For those operators required to comply with Part 121, windshear/microburst events must be accomplished in a Flight Simulator.									
	Others									

SPECIAL PURPOSE
ADDITIONAL FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
TAKEOFF	(Normal/Alternate) Short Field							X	Q	X
	Soft Field								X	X
	Obstacle Clearance							X	Q	X
	Open									
	(Abnormal/Emergency) Rejected Short Field (Max Breaking)					X				X
	Open									

SPECIAL PURPOSE
ADDITIONAL FLIGHT QUALIFICATION EVENTS
PILOTS
LAND AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
VISUAL SEGMENT AND LANDING	(Normal/Alternate) Short Field								X	X
	Soft Field								X	X
	Obstacle Clearance							X		X
	Open									
	(Abnormal/Emergency) Rejected Obstacle Clearance					X				X
	Open									

FLIGHT QUALIFICATION
WATER OPERATIONS EVENTS
PILOTS
AMPHIBIOUS AND SEAPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
SURFACE OPERATION	(Normal/Alternate) Taxiing								X	X
	Step Taxiing								X	X
	Sailing								X	X
	Docking/Mooring								X	X
	Ramp Operations								X	X
	Open									
	(Abnormal/Emergency) Rough Water Taxi								X	X
	Taxiing with one Power Plant Inoperative (ME)								X	X
	Emergency Evacuation				X					X
	Open									

FLIGHT QUALIFICATION
WATER OPERATIONS EVENTS
PILOTS
AMPHIBIOUS AND SEAPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
TAKEOFF	(Normal/Alternate)									
	Normal								X——	——X
	Crosswind								X——	——X
	Obstacle Clearance								X——	——X
	Rough Water								X——	——X
	Glassy Water								X——	——X
	Open									
	(Abnormal/Emergency)									
	Crosswind (normal in an aircraft if no crosswind exists) with failure of the most critical powerplant at the most critical point along the takeoff path which requires a decision to discontinue the takeoff. (ME)								X——	——X
	Rejected Obstacle Clearance							X——	——	——X
	Open									

FLIGHT QUALIFICATION
WATER OPERATIONS EVENTS
PILOTS
AMPHIBIOUS AND SEAPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
VISUAL SEGMENT AND LANDING	(Normal/Alternate) Crosswind								X	X
	Obstacle Clearance								X	X
	Glassy Water								X	X
	Rough Water								X	X
	Open									
	Crosswind (normal in an aircraft if no crosswind exists) with most critical powerplant inoperative. (ME)								X	X
	Rejected Obstacle Clearance								X	X
	Open									

FLIGHT QUALIFICATION EVENTS
FLIGHT ENGINEERS
TRANSPORT CATEGORY AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
PREPARATION	Airplane Preflight * Logbook * Safety Checks * Cabin/Interior * Exterior Walkaround * Deicing * Servicing	Exterior walkaround can be done using approved pictorial displays								X
GROUND OPERATION	Performance Data * TOLD * Airport Analysis * Weight & Balance	X								X
	Use of Checklist * Panel Setup			X						X
	Starting * Normal * Abnormal - External Pwr - External Air - Battery Only	X								X
	Communications * Station Procedures * ACARS		X							X
	Taxi		X							X
TAKEOFF	Normal			M	M	X				X
	Rejected * Brake Energy			M	M	X				X
	Engine Failure/Fire		X							X
	Fuel Jettison			X						X
	Emergency Return			X						X

FLIGHT QUALIFICATION EVENTS
FLIGHT ENGINEERS
TRANSPORT CATEGORY AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
CLIMB	Normal * Power		X							X
	One Engine Inop.		X							X
	Fuel Management	X								X
	Pressurization * Manual * Automatic	X								X
EN ROUTE	Cruise Power		X							X
	Step Climb		X							X
	Fuel Management		X							X
	High Altitude Performance		X							X
	Powerplant Shutdown and Restart		X							X
DESCENT	Normal		X							X
	Maximum Rate			M	M	X				X
APPROACH	Landing Data	X								X
	Landing Gear Malfunctions			M	M	X				X
	Flap/Spoiler Malfunctions			M	M	X				X
	Approach Monitoring		X							X
LANDING	Normal			M	M	X				X
	With Landing Gear Malfunction			M	M	X				X
	Emergency Evacuation			X						X

FLIGHT INSTRUCTION/EVALUATION
FLIGHT ENGINEERS
TRANSPORT CATEGORY AIRPLANES

		TRAINING DEVICE LEVEL				SIMULATOR LEVEL				ACFT
FLIGHT PHASE	EVENT	4	5	6	7	A	B	C	D	
DURING ANY PHASE Normal, Abnormal, Alternate, and Emergency Procedures	Fires			X						X
	Smoke Control			X						X
	Powerplant Failure			X						X
	Pressurization		X							X
	Pneumatic	X								X
	Air Conditioning	X								X
	Fuel and Oil	X								X
	Electrical		X							X
	Hydraulic		X							X
	Flight Control			X						X
	Anti Icing & Deicing		X							X
	Cabin Equipment									X

BILLING CODE 4910-13-C

Appendix D—Program Audit Database Table of Contents

The following is the Program Audit Database Table of Contents. Descriptions and guidance for creating and maintaining the listed documents are in Chapter 7 of this AC.

APPENDIX D—PROGRAM AUDIT DATA BASE TABLE OF CONTENTS APPROVAL PHASE RELATIONSHIPS AND APPROVAL AUTHORITY

Document Title With Sections	Approval Phases					Approval Authority
	I	II	III	IV	V	
Program Audit Data Base Master List	D	U	U	M	M	AFS-210
Application Cover Letter	D					
Transition Plan	D	U	M	O		AFS-210
Supporting Data Package	D	U	U	M	M	AFS-210
Supporting Task Analysis		D/O	M	M	M	AFS-210
Qualification Standards		D/O	M	M	M	AFS-210
Curriculum Development Methodology		D/O	M	M	M	AFS-210
AQP Curriculum		D	O/M	O/M	O/M	AFS-210/POI
AQP Training Resource Requirements		D	O	M	M	AFS-210/POI
AQP Implementation and Operations Plan		D	O/M	O/M	O/M	AFS-210/POI/NSPM
1. Curriculum Schedule		D	O/M	O/M	O/M	AFS-210/POI
2. Transition Plan	D	U	O	O		AFS-210
3. Equipment Test Plan		D	O			AFS-210/NSPM
4. Formative Evaluation Plan		D	O			AFS-210/POI/NSPM
5. Summative Evaluation Plan		D	U	O		AFS-210/POI
6. AQP Maintenance Plan		D	U	O	O	AFS-210/POI
7. ADP Equipment Plan		D	U	O	O	AFS-210
8. Data Collection Procedures		D	U/O	O	O	AFS-210
AQP Implementation and Operations Plan		D	O/M	O/M	O/M	AFS-210/POI/NSPM
1. Curriculum Schedule		D	O/M	O/M	O/M	AFS-210/POI
2. Transition Plan	D	U	O	O		AFS-210
3. Equipment Test Plan		D	O			AFS-210/NSPM
4. Formative Evaluation Plan		D	O			AFS-210/POI/NSPM
5. Summative Evaluation Plan		D	U	O		AFS-210/POI
6. AQP Maintenance Plan		D	U	O	O	AFS-210/POI
7. ADP Equipment Plan		D	U	O	O	AFS-210
8. Data Collection Procedures		D	U/O	O	O	AFS-210

D=Develop.
U=Update.
M=Maintenance.
O=Operate.
AFS 210=Manager, Air Carrier Training Branch.
POI=Principal Opertions Inspector.
NSPM=National Simulator Program Manager.
Note: Data on security and hazardous materials will be reviewed by the Air Carrier Traning Branch, Office of Civil Aviation Security.

Appendix E—Task/Subtask Analysis Worksheets

The following worksheets may assist an applicant to accomplish and document the task/subtask analysis and proficiency objective development described in chapter 7 of this AC.

APPENDIX E—PROGRAM AUDIT DATA BASE TABLE OF CONTENTS APPROVAL PHASE RELATIONSHIPS AND APPROVAL AUTHORITY

Document Title With Sections	Approval Phases					Approval Authority
	I	II	III	IV	V	
Program Audity Data Base Master List	D	U	U	M	M	AFS-210
Application Cover Letter	D					
Transition Plan	D	U	M	O		AFS-210
Supporting Data Package	D	U	U	M	M	AFS-210
Supporting Task Analysis		D/O	M	M	M	AFS-210
Qualification Standards		D/O	M	M	M	AFS-210
Curriculum Development Methodology		D/O	M	M	M	AFS-210
AQP Curriculum		D	O/M	O/M	O/M	AFS-210/POI
AQP Training Resource Requirements		D	O	M	M	AFS-210/POI
AQP Implementation and Operations Plan		D	O/M	O/M	O/M	AFS-210/POI/NSPM
1. Curriculum Schedule		D	O/M	O/M	O/M	AFS-210/POI
2. Transition Plan	D	U	O	O		AFS-210
3. Equipment Test Plan	D	O				AFS-210/NSPM
4. Formative Evaluation Plan		D	O			AFS-210/POI/NSPM
5. Summative Evaluation Plan		D	U	O		AFS-210/POI
6. AQP Maintenance Plan		D	U	O	O	AFS-210/POI
7. ADP Equipment Plan		D	U	O	O	AFS-210
8. Data Collection Procedures		D	U/O	O	O	AFS-210
9. Courseware and Equipment Test Document Catalog			D	M	M	AFS-210/POI/NSPM
AQP Implementation and Operation Plan Results			O	O	O	AFS-210/POI
1. Formative Evaluation of Courseware/Curriculum			O			AFS-210/POI

APPENDIX E—PROGRAM AUDIT DATA BASE TABLE OF CONTENTS APPROVAL PHASE RELATIONSHIPS AND APPROVAL AUTHORITY—Continued

Document Title With Sections	Approval Phases					Approval Authority
	I	II	III	IV	V	
2. Summative Evaluation Results				O		AFS-210/POI
3. Maintenance Plan Results				O	O	AFS-210/POI
4. Equipment Test Results			O	O		AFS-210/POI/NSPM
AQP Continuing Program Evaluation Results					O	AFS-210/POI

D=Develop.
U=Update.
M=Maintain.
O=Oper.

Appendix F—Flight Training Equipment Descriptions

A. Level 4—Flight Training Device

(1) Purpose. To permit learning, development, and practice of skills and cockpit procedures necessary to understand and operate the integrated systems of a specified aircraft.

(2) Functional Description. A level 4 training device has the following characteristics and components:

- A replica of the flight deck panels, switches, controls, and instruments in proper relationship to represent the aircraft for which training is to be accomplished.
- Systems indications which respond appropriately to switches and controls which are required to be installed for the training or evaluation to be accomplished.
- Air/ground logic, not simulated aerodynamic capabilities are required.

B. Level 5—Flight Training Device

(1) Purpose. To permit learning, development, and practice of skills, cockpit procedures, and instrument flight procedures necessary to understand and operate the integrated systems of a specific aircraft in typical flight operations in real time.

(2) Functional Description. A level 5 training device has the following characteristics and components:

- A replica of the flight deck panels, switches, controls, and instruments in proper relationship to represent the aircraft for which training is to be accomplished.
- Systems indications which respond appropriately to switches and controls which are required to be installed for the training or evaluation to be accomplished.
- Simulated aerodynamic capabilities representative of the make, model, and series of the aircraft (or variant).
- Functional flight and navigational controls, displays, and instrumentation.
- Control forces and control travel of sufficient precision to manually fly an instrument approach.

C. Level 6—Flight Training Device

(1) Purpose

- To permit learning, development, and practice of skills in cockpit procedures, instrument flight procedures, certain symmetrical maneuvers and flight characteristics necessary to operate the integrated systems of a specific aircraft in typical flight operations.
- To permit the use of previously approved nonvisual simulators and the continued use of advanced training devices (ATD) for those part 135 operators approved to use them.

(2) Functional Description. A level 6 training device has the following characteristics and components:

- Systems indications which respond appropriately to switches and controls which are required to be installed.
- Replication of the cockpit of the aircraft for which training is to be accomplished.
- Simulated aerodynamic capabilities which closely represent the specific aircraft in ground and flight operations.
- Functional flight and navigational controls, displays, and instrumentation.
- Control forces and control travel which correspond to the aircraft.
- Instructor controls.

(Note: Nonvisual Simulators Are Categorized With Level 6 Training Devices.)

D. Level 7—Flight Training Device

(1) Purpose. To permit learning, development, and practice of skills in cockpit procedures, instrument flight procedures and maneuvers, and flight characteristics necessary to operate the integrated systems of a specific aircraft in typical flight operations.

(2) Functional Description. A level 7 training device has the following characteristics and components:

- Systems representations, switches, and controls which are required by the type design of the aircraft and by the approved training program.
- Systems which respond appropriately and accurately to the switches and controls of the aircraft being simulated.
- Full-scale replication of the cockpit of the aircraft being simulated.
- Correct simulation of the aerodynamic and ground dynamic characteristics of the aircraft being simulated.
- Correct simulation of the effects of selected environmental conditions which the simulated aircraft might encounter.
- Control forces, dynamics, and travel which correspond to the aircraft.
- Instructor controls and seat.

E. Level a Flight Simulator

(1) Purpose. To permit development and practice of the necessary skills for accomplishment of flight operational tasks to a prescribed standard of airman competency in a specific aircraft and duty position. Level A flight simulators may be used for specified pilot recency of experience requirements and specified flight operational task training requirements.

(Note: Level A Flight Simulators Comply With The Technical Standards Specified For Basic (Visual) Simulators in AC 120-40, as Amended.)

(2) *Functional Description.* Level A flight simulators have the following characteristics and components:

- Systems representations, switches, and controls which are required by the type design of the aircraft and by the user's approved training program.
- Systems which respond appropriately and accurately to the switches and controls of the aircraft being simulated.
- Full-scale replication of the cockpit of the aircraft being simulated.
- Correct simulation of the aerodynamic characteristics of the aircraft being simulated.
- Correct simulation of the effects of selected environmental conditions which the simulated aircraft might encounter.
- Control forces and travel which correspond to the aircraft.
- Instructor controls and seat.
- At least a night visual system with at least a 45 degree horizontal by 30 degree vertical field of view for each pilot station.
- A motion system with at least 3 degrees of freedom.

F. Level B Flight Simulator

(1) Purpose. To permit development and practice of the necessary skills for accomplishment of flight operational tasks to a prescribed standard of airman competency in a specific aircraft and duty position. Level B flight simulators may be used for pilot recency of experience requirements and specified flight operational task training requirements.

(Note: Level B Flight Simulators Comply With the Technical Standards Specified for Phase I Simulators in part 121, appendix H and AC 120-40, as Amended.)

(2) Functional Requirements. Level B flight simulators have the following characteristics and components:

- Systems representations, switches, and controls which are required by the type design of the aircraft and by the user's approved training program.

• Systems which respond appropriately and accurately to the switches and controls of the aircraft being simulated.
• Full-scale replication of the cockpit of the aircraft being simulated.
• Correct simulation of the aerodynamic characteristics including ground effect, and ground dynamic characteristics of the aircraft being simulated.
• Correct simulation of the effects of selected environmental conditions which the simulated aircraft might encounter.
• Control forces and travel which correspond to the aircraft.
• Instructor controls and seat.
• At least a night visual system with at least a 45 degree horizontal by 30 degree vertical field of view for each pilot station.
• A motion system with at least 3 degrees of freedom.

G. Level C Flight Simulator

(1) Purpose. To permit development and practice of the necessary skills for accomplishment of flight operational tasks to a prescribed standard of airman competency in a specific aircraft and duty position. Level C flight simulators may be used for pilot recency of experience requirements and specified flight operational task training.

(Note: Level C Flight Simulators Comply With the Technical Standards Specified for "Phase II Simulators" in Part 121, Appendix H and AC 120-40, as Amended.)

(2) Functional Description. Level C flight simulators have at least the following characteristics and components:

• Systems representations, switches, and controls which are required by the type design of the aircraft and by the user's approved training program.
• Systems which respond appropriately and accurately to the switches and controls of the aircraft being simulated.
• Full-scale replication of the cockpit of the aircraft being simulated.
• Correct simulation of the aerodynamic characteristics including ground effect, and ground dynamic characteristics of the aircraft being simulated.
• Correct simulation of the effects of selected environmental conditions which the simulated aircraft might encounter.
• Control forces, dynamics, and travel which correspond to the aircraft.
• Instructor controls and seat.
• At least a night and dusk visual system with at least a 75 degree horizontal by 30 degree vertical field of view for each pilot station.
• A motion system with at least 6 degrees of freedom.

H. Level D Flight Simulator

(1) Purpose. To permit development and practice of the necessary skills for the accomplishment of flight operational tasks to a prescribed standard of airman competency in a specific aircraft and duty position. Level D flight simulators may be used for all flight operational task training except for static aircraft training.

(Note: Level D Flight Simulators Comply With the Technical Standards Specified for Phase III Simulators: in part 121, appendix H and AC 120-40, as Amended)

(2) Functional Description. Level D flight simulators have the following characteristics and components:

• Systems representations, switches, and controls which are required by the type design of the aircraft and by the user's approved training program.
• Systems which respond appropriately and accurately to the switches and controls of the aircraft being simulated.
• Full-scale replication of the cockpit of the aircraft being simulated.
• Correct simulation of the aerodynamic characteristics including ground effect, and ground dynamic characteristics of the aircraft being simulated.
• Correct simulation of selected environmentally affected aerodynamic and ground dynamic characteristics of the aircraft being simulated considering the full range of its flight envelope in all approved configurations.
• Correct any realistic simulation of the effects of environmental conditions which the aircraft might encounter.
• Control forces, dynamic, and travel which correspond to the aircraft.
• Instruction controls and seat.
• A daylight, dusk, and night visual system with at least a 75 degree horizontal by 30 degree vertical field of view for each pilot station.
• A motion system with at least 6 degrees of freedom.

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