U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: LINE OPERATIONAL SIMULATIONS: LINE-ORIENTED FLIGHT TRAINING, SPECIAL PURPOSE OPERATIONAL TRAINING, LINE OPERATIONAL EVALUATION

Date: 9/6/90
Initiated by: AFS-210

AC No: 120-35B
Change:

1. PURPOSE. This advisory circular (AC) presents guidelines for the design and implementation of Line Operational Simulations, including Line-Oriented Flight Training (LOFT), Special Purpose Operational Training, and Line Operational Flight Evaluation. This document does not interpret the regulations; interpretations are issued only under established agency procedures.

2. CANCELLATION. Advisory Circular 120-35A, Line-Oriented Flight Training Programs, dated August 11, 1981, is cancelled.

3. RELATED FEDERAL AVIATION REGULATIONS.

a. Part 121, Certification and Operations: Domestic, Flag, and Supplemental Air Carriers and Commercial Operators of Large Aircraft; Subpart N - Training Program; Appendix F - Proficiency Check Requirements; Appendix H - Advanced Simulation Plan.

b. Part 135, Air Taxi Operators and Commercial Operators; Subpart H - Training.

c. Special Federal Aviation Regulation (SFAR) No. 58, Advanced Qualification Program.

4. RELATED READING MATERIAL.

a. AC 120-51, Cockpit Resource Management Training.

b. AC 120-40, Airplane Simulator Qualification, as amended.

c. AC 120-45, Airplane Flight Training Device Qualification, as amended.

5. BACKGROUND.

a. Training which uses flight simulators and flight training devices is an important element for ensuring the qualification of flight crewmembers, both as individuals and as part of a crew. In the mid-1970's, the concept of

LOFT was introduced as a form of simulator training for a complete crew. LOFT was later allowed to be substituted for alternate proficiency checks under recurrent training programs. In 1980, LOFT was allowed under an Advanced Simulation Plan as a means to provide most or all flight crewmember training in flight simulators.

b. Since the early 1980's, as the technology of flight simulators and flight training devices advanced, the number of training applications has increased. These training applications are now grouped under the general term of Line Operational Simulations. The increase in the number of individual training applications requires clarification and updating of applicable guidelines. These guidelines are presented in this AC and cover the following:

(1) Up-to-date details on implementing LOFT for a complete crew under both recurrent training programs and Advanced Simulation Plans;

(2) Guidelines on implementing other types of Line Operational Simulations (for purposes other than those in (1) above). These include: Special Purpose Operational Training (e.g., training in cockpit resource management skills; differences training) and Line Operational Flight Evaluation (i.e., LOFT-like training which includes an evaluation component).

6. COMMENTS INVITED. Suggestions or comments on this AC should be addressed to the Director, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591.

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CHAPTER 1. INTRODUCTION

1. PURPOSE. The purpose of this advisory circular is to provide updated guidance in designing and implementing Line Operational Simulations, which includes: LOFT, Special Purpose Operational Training, and Line Operational Evaluation.

2. BACKGROUND.

a. The use of flight training devices and flight simulators has become increasingly important in training flight crewmembers. As the level of sophistication in simulators increased, air carriers have come to rely on simulators for part or all of their flight training programs. Since the mid-1970's, some FAR Part 121 and Part 135 operators have implemented alternative simulator training, which is now known as LOFT, to train crewmembers. LOFT is training in a simulator with a complete crew using representative flight segments which contain normal, abnormal, and emergency procedures that may be expected in line operations. FAR § 121.409(b) delineates the requirements of LOFT; FAR § 121.441 allows LOFT to substitute for alternate proficiency checks. In 1978 and 1981, AC's 120-35 and 120-35A, respectively, provided guidance for the use of LOFT in recurrent training programs and set forth guidelines for its design and implementation. This type of LOFT is now termed "Recurrent LOFT." In 1980, the FAA published the Advanced Simulation Plan in FAR Part 121, Appendix H. This plan provides the option of providing most or all crewmember flight training in flight simulators. Appendix H mandates LOFT to facilitate flight crewmember transition from training in advanced simulators to operational flying. This type of LOFT is now termed "Qualification LOFT."

b. LOFT is a useful training method because it gives crewmembers the opportunity to practice line operations (e.g., maneuvers, operating skills, systems operations, and the operator's procedures) with a full crew in a realistic environment. Crewmembers learn to handle a variety of scripted real-time scenarios which include routine, abnormal, and emergency situations. They also learn and practice cockpit resource management skills, including crew coordination, judgment, decisionmaking, and communication skills. The overall objective of LOFT is to improve total flightcrew performance, thereby preventing incidents and accidents during operational flying. Since the early 1980's, new issues that are related to the requirements of FAR § 121.409, Part 121, Appendix H, and expanding opportunities for the use of LOFT or other Line Operational Simulations have emerged. Issues which require an updating of applicable guidelines are:

(1) Requirements of FAR § 121.409. Section 121.409(b) delineates the requirements of Recurrent LOFT, which may be substituted on an alternate basis for the proficiency check requirement as specified in FAR § 121.441. Section 121.409(b) requires a complete crew to be utilized in Recurrent LOFT, but does not provide detail on what constitutes a complete crew. The guidance provided in this AC recognizes a complete crew as one which is Line Qualified. (See definitions in Chapter 2.)

(2) Requirements of FAR Part 121, Appendix H. Part 121, Appendix H, contains guidelines for operators who choose to provide flight crewmember training under an Advanced Simulation Plan. While Appendix H provides a detailed description for implementing training, the specific LOFT components are not clearly described. This AC presents guidelines for implementing Qualification LOFT as required under Appendix H or as may be used within any other approved training program. This AC discusses how Qualification LOFT is designed to help flight crewmembers transition from a training environment to operational flying.

(3) Special Purpose Operational Training. New training concepts and training media have identified a need for other types of training in operational simulations called Special Purpose Operational Training. This type of operational simulation includes the concepts listed below. In addition, other types of Special Purpose Operational Training may evolve over time.

(i) Both the FAA and industry have recognized the importance of Cockpit Resource Management (CRM) in crewmember training. CRM training addresses human factors (e.g., leadership, communication skills. time management, situational awareness, and attitudes in flight operations). Training to improve performance in these areas has been identified as a factor in reducing the number of airline accidents and incidents. CRM training is designed for a complete crew environment. Application of CRM skills appears to be an integral part of safe and successful line operations. This AC addresses the relationship of CRM to Special Purpose Operational Training, as well as to LOFT.

(ii) Current regulations do not presently address the use of Special Purpose Operational Training for Differences Training. This AC presents guidelines in conducting Special Purpose Operational Training for Differences Training.

(4) Line Operational Evaluation. Recently, a new concept related to the training, qualification, and evaluation of flight crewmembers has emerged. In February 1989, the FAA published a proposed Special Federal Aviation Regulation (SFAR) No. 58, which would authorize the establishment of an Advanced Qualification Program (AQP); i.e., a voluntary training and evaluation program as an alternative to meeting the training and qualification requirements of FAR Part 121 or Part 135. The proposed SFAR allows greater flexibility in designing training programs that reflect recent advancements in aircraft technology as well as the development of new training and evaluation techniques. Requirements of an AQP include training and evaluation in operationally accurate flight simulations using realistic line-oriented scenarios. Evaluation is a necessary element of this process to provide initial and subsequent assessments of flightcrew and individual flight crewmember competency. Simulations using realistic, line-oriented scenarios as a training and evaluation tool have been demonstrated to provide effective instruction. The element of evaluation in this new proposal is distinct from LOFT as a training vehicle because, unlike LOFT, the proposed simulations will now involve evaluation. Therefore, the term "Line Operational Evaluation" is used to describe operationally oriented simulations that involve evaluation. (See chapter 6 for further detail.)

3. SUMMARY. This AC identifies four types of Line Operational Simulations: (1) Recurrent LOFT (in reference to FAR §§ 121.409, 121.427, 121.433, 121.441, and Part 121, Appendix F), (2) Qualification LOFT (in reference to FAR Part 121, Appendix H), (3) Special Purpose Operational Training, which is training that may be used for various unique purposes such as aircraft differences or CRM training, and (4) Line Operational Evaluation, which is designed for persons participating in an AQP, or for persons who meet the general training requirements of FAR § 121.401 or § 135.323 and wish to conduct operational evaluations. It defines the terms used in describing Line Operational Simulations. It provides guidance for designing and conducting LOFT, Special Purpose Operational Training, and Line Operational Evaluation. It defines the role of instructors and evaluators.

4.-8. RESERVED.

CHAPTER 2. DEFINITIONS

9. GENERAL. The following terms are used throughout this advisory circular and are defined as follows:

a. Line Qualified. Describes a flight crewmember or instructor who is current and qualified to conduct actual flight operations in an assigned aircraft and duty position.

b. Line Familiar. Describes a flight crewmember or instructor who is familiar with a certificate holder's line operations. This person is either line qualified or otherwise qualified by participation in an approved line observation program. (An acceptable line observation program would include observation from the cockpit jump seat of a line crew on at least two operational flight segments. This should be accomplished twice annually, and the line observation program should be included as a part of the approved training program.)

c. Task Familiar. Describes a flight crewmember who is familiar with and can satisfactorily accomplish the duties of a particular cockpit duty position though not qualified for that duty position. For example, a second-in-command (SIC) candidate who performs the duties of the pilot-in-command (PIC) during simulator training.

d. Qualification LOFT. An approved flight simulator course of LOFT to facilitate transition from training using flight simulation to operational flying. Qualification LOFT meets the requirements of FAR Part 121, Appendix H.

e. Recurrent LOFT. An approved flight simulator course of LOFT which may be used to meet recurrent flight training requirements and to substitute for alternate proficiency checks. Recurrent LOFT meets the requirements of FAR § 121.409 as allowed under FAR § 121.441(a).

f. Line Operational Evaluation. An evaluation of crewmembers and crews in a flight training device or flight simulator during real-time Line Operational Simulations.

g. Special Purpose Operational Training. An approved course of operationally oriented flight training, conducted in a flight simulator or flight training device, which may be used to learn, practice, and accomplish specific training objectives; e.g., training in variant aircraft or special aircraft equipment.

CHAPTER 3. BASIC ELEMENTS OF LOFT

10. GENERAL. Certain elements about LOFT must be understood to ensure that its primary objective, to provide realistic line-oriented training, is met. These elements apply to both Recurrent and Qualification LOFT and are described in this chapter. (NOTE: Some or all of these elements may also apply to Special Purpose Operational Training and Line Operational Evaluation. See chapters 5 and 6 for more information on how these concepts apply to these types of Line Operational Simulations.)

11. CREW COMPOSITION AND PARTICIPATION. LOFT should take place in a line operational environment with a complete crew. A complete crew will always be scheduled and every effort will be made to maintain crew integrity. During LOFT, each crewmember performs both as an individual and as a member of a team, as is expected during line operations.

12. REAL-WORLD SITUATIONS. LOFT should contain scenarios of real-world, line operational situations, which progress in real time. These scenarios should be representative of flight segments where an entire en route operation is completed. In cases of flights involving repetitive events, the en route segments may be compressed. However, enough time should be allotted to allow crewmembers to become sufficiently familiar with the scenario to ensure that if the scenario is compressed, crewmembers will be able to resume or restart the scenario without confusion.

13. NO-JEOPARDY TRAINING. LOFT is "no-jeopardy" training, i.e., the instructor does not issue a passing or failing grade to a participating crewmember. As a LOFT scenario progresses, it is allowed to continue without interruption so crewmembers may learn by experiencing the results of their decisions. Decisions which produce unwanted results do not indicate a training failure, but serve as a learning experience. If the LOFT instructor identifies crewmember performance deficiencies, additional training or instruction will be provided. This training or instruction may be in any form, including additional LOFT. Before the crewmember may return to line operations, the performance deficiencies will be corrected and the instructor will document the training as satisfactorily completed. The "no-jeopardy" concept allows crewmembers to use their full resources and creativity without instructor interference. At the end of a LOFT session and after debriefing, the instructor certifies that the training has been completed.

14. UNINTERRUPTED TRAINING. LOFT scenarios run full-length, with no interruption by the instructor permitted. The effects of crewmember decisions are allowed to accrue and influence the rest of the flight. The concept is that crewmembers will learn more effectively if they are allowed to learn from their experiences, rather than being interrupted and corrected by an instructor. In rare cases, and only during Qualification LOFT, an instructor may choose to intervene if he determines negative learning is taking place.

15. FEEDBACK. LOFT includes feedback to crewmembers on their performance in the scenario. This takes place during the debriefing phase. (See the following paragraph for further detail on feedback and debriefing.)

16. PHASES OF LOFT. LOFT scenarios should contain the following phases: briefing, preflight planning documents and activities, flight time, and debriefing. These are described in the following paragraphs.

a. Briefing. Before the flight segment begins, the instructor should brief crewmembers on the LOFT scenario, including the training objectives, and the role of the instructor (i.e., the instructor is considered "not present," except as an Air Traffic Controller (ATC) or as another ground base entity). The role of the flightcrew should be discussed in the briefing (i.e., flight crewmembers should perform their duties just as they would in line operations). Information about "the environmental setting of the scenario" should also be discussed.

b. Preflight Planning Documents and Activities. Preflight planning documents (e.g., weather reports and flight plans) should be prepared with the operator's particular training objectives in mind. For example, the operator may choose to have crewmembers learn how to handle unfavorable weather conditions or how to correct improper fuel loads. Preflight activities include cockpit setup, computation of takeoff data, etc.

c. Flight Segment. The flight segment includes taxiing, takeoff, flying, and landing. It should also include the time in which communication with ATC and other ground agencies takes place.

d. Debriefing. Debriefing should include feedback to crewmembers on their performance. Positive comments regarding crew performance should be emphasized in the debriefing as well as crew performance which needs improvement. The debriefing involves instructor critiques of individual crewmembers and of the crew as a team. Also, it is important that crewmembers be given the opportunity to critique and analyze their own performance and review key points of the video record, if used. (See paragraphs 21 and 22 for further discussion of critiques, debriefing, and use of video records.)

17. TRAINING HOURS, RECURRENT AND QUALIFICATION LOFT. Both recurrent and qualification LOFT sessions should be based on at least 4 hours of total crewmember training activity, which should include at least 2 1/2 hours of LOFT scenarios. Reasonable amounts of time should be allowed for problem solving (e.g., consulting minimum equipment lists and operations manuals, preparing takeoff data, as well as other crew actions which are occasioned by the training scenario). For qualification LOFT, the 4 hours of crewmember training should include cockpit preparation, preflight activities, crew briefings, and interactions with flight dispatch and other ground agencies. For Recurrent LOFT, any additional hours of training, beyond the 2 1/2 hours of LOFT scenarios necessary to comply with FAR § 121.409(b) may, subject to the approval of the FAA, be utilized for other specific training requirements. All crewmembers participating in a LOFT session are credited with 4 hours of training time.

18. LOFT SCENARIOS. LOFT scenarios should be constructed with the following guidelines in mind:

a. Objectives. The operator should assign specific training objectives to each scenario. These training objectives should be based on the particular needs of the operator. For example, if an operator is experiencing an unusual frequency of a specific operational problem, such as wet or icy runways, then the scenarios should be designed to include exposure to that particular operational problem. Training objectives may also be identified by the FAA based upon documented trends. Other specific objectives may include winter operations training, unusual airport or runway operations, alternate operation of automated systems, etc.

b. Constructing Scenarios. A variety of scenarios can be constructed by choosing different combinations of elements from the suggested categories listed below. Scenarios should normally be representative of the flight segment appropriate to the operations being conducted by the operator.

(1) Origin, routing, and destination (e.g., short vs. long routes).

(2) Revised arrival procedures (e.g., an unexpected runway change).

(3) Alternate operation of flight management systems.

(4) Abnormal and emergency conditions, including simple conditions (e.g., a potential hot start) and complex conditions which continue for the entire flight (e.g., a failed essential A.C. bus).

(5) Adverse weather conditions.

(6) Partial or full loss of integrated flight management systems.

c. Timing. Scenarios should run in real time. This may include inactive time to realistically resemble actual operations.

d. Realism. Scenarios should contain realistic circumstances; e.g., messages from the ATC, or flight attendant interruptions.

Operators may use these elements to design full-length, real-time scenarios, as well as shorter scenarios which teach specific skills (e.g., windshear, special navigation equipment, TCAS, etc.). Scenarios should also be developed to observe checklist management procedures, standard callouts, leadership qualities, assertiveness, crew coordination, and communication. Scenarios should be updated periodically to ensure they continue to meet training objectives. Just as crewmembers could not anticipate all flight operational situations, operators should try to prevent crewmembers from anticipating the entire content of the scenarios.

19. APPROVAL OF SCENARIOS. Scenarios will be approved by the FAA. When submitting LOFT scenarios for approval, operators should state what training objectives are expected to be attained through completion of the LOFT. Operators may elect to submit specific LOFT scenarios or a description of a

system which uses a menu of different flight situations and environmental conditions which can be selected randomly to construct a variety of LOFT scenarios. In any case, scenarios which comply with the elements provided in this AC and meet the operator's stated training objectives may be approved. Detailed scripts of the scenarios need not be considered for approval. When updated, scenarios should conform to the same guidelines that apply to original approval.

20. LOFT AND CRM. LOFT scenarios should contain CRM skills, whereby crewmembers utilize and reinforce various CRM concepts. CRM skills should be integrated into each operator's manuever/procedure learning objectives. In addition, focused CRM training could be provided independently during separate Special Purpose Operational Training. (For further information on CRM skills, see AC 120-51, Cockpit Resource Management Training.)

21. CRITIQUE OF CREWMEMBER PERFORMANCE. Critique of crewmembers should take place during the debriefing by the instructor. Critiques should include positive feedback regarding crew performance. Critiques should include discussion of individual and flightcrew performance by the instructor as well as assessment by the crewmembers of their own performance. The critique should consider the crewmember's judgment and the crew's interaction with all resources in handling problems. This includes interaction with ATC, company communications, software materials (e.g., company operations manuals and flight manuals), workload-reducing devices (e.g., autopilot and flight management systems), and other crewmembers.

22. USE OF AUDIOVISUAL EQUIPMENT. Recorded audiovisual feedback is very useful as a debriefing aid for most types of LOFT because it allows crewmembers to view themselves from a third person perspective. This feedback helps crewmembers to better understand their performance, identify and accept their weak areas, and build upon their strong areas, thereby encouraging positive changes in attitudes and behavior. Recorded audiovisual feedback should be destroyed at completion of the debriefing.

23. ADDITIONAL TRAINING/LOFT COMPLETION. Decisions which produce unwanted results do not indicate a training failure, but serve as a learning experience which may indicate need for additional instruction or modified training activities. The additional training could be any form, including additional LOFT. In any case, required additional training shall be provided and documented as satisfactorily complete prior to the crewmember's return to line operations. Although additional training for a particular individual may be necessary, each LOFT scenario will be recorded as "complete" at the end of the debriefing stage.

24. BASIC ELEMENTS OF LOFT: SUMMARY. LOFT is defined by the following basic concepts:

a. It takes place in a simulated line operational environment.

b. It uses a complete crew with total participation.

c. It contains real-world incidents, unfolding in real time.

d. It is "no-jeopardy" training.

e. It contains scenarios and segments which run uninterrupted.

f. It contains scenarios tailored to the operator's learning objectives.

g. It incorporates CRM skills.

h. It provides critique of individual and crew performance.

25. FAA PHILOSOPHY REGARDING LOFT.

a. The FAA believes that the effectiveness of LOFT is dependent on four important aspects. First, the use of the highest fidelity simulator available. Second, ensuring that only line qualified crewmembers are scheduled to participate in Recurrent LOFT, and that only crewmembers who are in training for a particular duty position or line qualified crewmembers are scheduled to participate in Qualification LOFT. Third, that LOFT scenarios run their full, uninterrupted course. Fourth, that a variety of scenarios, fully compatible with training objectives, are available and periodically updated to ensure that the LOFT experience does not become repetitive or stale.

b. In keeping with this philosophy the FAA expects that an operator, who has available a range of flight simulators for a particular model aircraft, will conduct LOFT in the flight simulator with the most fidelity. For example, if the operator has both a Level A and a Level D B-737-300 simulator at its training facility, the FAA expects the operator will conduct LOFT in the Level D simulator.

c. The FAA believes that the training value of LOFT can be seriously diminished when inappropriate crew substitutions are made. Operators should not schedule any person other than "line qualified" crewmembers for Recurrent LOFT. For Qualification LOFT, operators should schedule only line qualified crewmembers or those crewmembers who are in training for a particular duty position. In both cases, the FAA expects operators to make every reasonable effort to meet these scheduling guidelines. When, due to reasons beyond the control of the operator, the need for substitution arises, the substitution tables in this AC may be used. However, these tables are intended to be used only after the operator has made all reasonable efforts to provide a substitute crewmember of equal status to the person originally scheduled. The FAA recommends that the operator have an identified pool of cockpit crewmembers available to serve as substitutes in LOFT. This pool might include reserve crewmembers and/or newly qualified crewmembers. (Newly qualified crewmembers could benefit from the additional experience they would receive by serving as substitutes.) In any case, the FAA would expect operators to use the contingency features of the substitution tables only to permit continuation of scheduled training for extraordinary and infrequent situations.

d. The FAA considers interruption of LOFT scenarios a determent to the learning qualities inherent in LOFT. Arbitrary interruption of LOFT is not acceptable. LOFT scenarios should be allowed to continue to their logical completion. In Qualification LOFT, if the instructor is certain that negative training is occurring, the scenario may be interrupted. The FAA believes that well-thought-out and properly developed scenarios will not lead often to situations which require interruption.

e. Proper planning and development of LOFT scenarios are essential to ensure that training objectives are met. This is a critical characteristic of any FAA approved LOFT program. Training value is diminished when students become familiar with scenarios. Therefore, a variety and a sufficient number of LOFT scenarios are required to guard against crewmembers experiencing repetitious situations. In addition, the FAA expects operators to regularly update LOFT scenarios, thereby ensuring that crewmembers are exposed to new technology, procedures, and current operational problems.

26.-30. RESERVED.

CHAPTER 4. TYPES OF LOFT

31. GENERAL. As discussed throughout this AC, there are two types of LOFT; Recurrent LOFT and Qualification LOFT. Guidelines for designing and conducting these types of LOFT are presented below.

32. RECURRENT LOFT. Recurrent LOFT is designed to ensure that each crewmember maintains proficiency in the type of aircraft and crewmember duty position involved. (See §§ 121.409, 121.427, 121.433, and 121.441.) Recurrent LOFT is intended for flight crewmembers who are presently qualified in a particular make model and series aircraft. Recurrent LOFT is best conducted with a complete line qualified crew. Interruption of Recurrent LOFT is not permitted. Recurrent LOFT may be substituted on an alternate basis for the proficiency check requirements of FAR § 121.441.

33. GUIDELINES FOR RECURRENT LOFT. Recurrent LOFT should meet the following guidelines:

a. No Direct Instruction or Scenario Interruption. Recurrent LOFT does not permit direct instruction and normally does not permit interruption of the scenario by the instructor.

b. Crew Composition. Recurrent LOFT requires scheduling of a complete crew which is line qualified.

c. Crew Substitutes. The use of substitutes is discouraged and substitution should be rare. When the composition of the scheduled line qualified crew cannot be maintained, the operator may use substitutions based on the guidelines in Table 4-1. However, the operator will attempt first to substitute with another line qualified crewmember. This table should be used only as a last resort to prevent interruption of scheduled training.

Table 4-1. Recurrent LOFT Substitution Table

	Pilot-in-Command Position	Second-in-Command Position	Flight Engineer (FE) Position
1.	Another person of the same status for that position.		
2.	PIC[1]	SIC[1]	FE[1]
3.	Pilot Instructor[2]	PIC[1]	FE Instructor[2]
4.		Pilot Instructor[2]	

[1] - Includes those who are either line qualified or in training for the position.

[2] - May act as a substitute when a line qualified crewmember is not available. The instructor should not have previous knowledge of the scenario; however, when this is unavoidable, the instructor should not use that knowledge to influence or direct the scenario.

NOTE: The instructor conducting the LOFT session may not act as a substitute crewmember.

d. Number and Type of Segments. A Recurrent LOFT scenario may include one or more flight segments, depending upon the training objectives.

e. Training Media. The highest fidelity flight simulator available should be scheduled for Recurrent LOFT. (See AC 120-40, Airplane Simulator Qualification, as amended.) Recurrent LOFT may be conducted in a Level A, B, C, or D flight simulator, however, the use of the highest level simulator (Level D) is encouraged and the use of Level A simulators is discouraged.

34. QUALIFICATION LOFT. Qualification LOFT is designed to prepare crewmembers, who are not yet fully qualified for line operations and whose training has been provided in accordance with an Advanced Simulation Plan, for actual flight operations. Qualification LOFT provides training that facilitates the transition from flight simulator training to operational flying. Scenarios are designed to represent typical flight segments. Qualification LOFT is instructional in nature; therefore, when it is essential to do so, instructors may momentarily interrupt a scenario for instructional purposes. Qualification LOFT is best conducted when the student crewmember, who is not yet fully qualified, is scheduled with a crew complement whose other members are line qualified. For example, a PIC candidate would be scheduled with a line qualified SIC and FE.

35. GUIDELINES FOR QUALIFICATION LOFT. Qualification LOFT should meet the following guidelines:

a. Direct Instruction and Scenario Interruption. Qualification LOFT permits minimal interruption of the scenario for the purpose of instruction. Interruption is allowed only when the instructor is certain that negative learning is taking place.

b. Crew Composition. Qualification LOFT requires the scheduling of a complete crew complement. Ideally, the crewmember who is qualifying would be scheduled with other crewmembers who are fully line qualified. In any case, the crewmembers will be Task Familiar with their assigned duty position but need not be Line Familiar.

c. Crew Substitutes. The use of substitutes is highly discouraged and substitution should be implemented rarely. When the composition of the scheduled crew cannot be maintained, the operator may substitute crewmembers using Table 4-2. Operators should attempt first to substitute another person in the same status.

Table 4-2. Qualification LOFT Substitution Table

Pilot-in-Command Position	Second-in-Command Position	Flight Engineer Position
1. Another person of the same status for that position.		
2. PIC[1]	SIC[1]	FE[1]
3. SIC[1]	PIC[1]	FE Instructor
4. Pilot Instructor	Pilot Instructor	Pilot Instructor

[1] - Includes those who are either qualified or in training for the position and will be Task Familiar for the position in which they are substituting.

d. Number and Type of Segments. Qualification LOFT should consist of at least two flight segments, one containing normal line operations and one containing abnormal and emergency occurrences.

e. Training Media. Qualification LOFT will be conducted in flight simulators qualified at Levels C or D. (See AC 120-40, Airplane Simulator Qualification, as amended.)

36.-40. RESERVED.

CHAPTER 5. SPECIAL PURPOSE OPERATIONAL TRAINING

41. GENERAL. Special Purpose Operational Training is designed for training crewmembers in a flight simulator or flight training device. Special Purpose Operational Training is useful whenever coordinated crew performance is required. It may not be substituted for Recurrent LOFT or Qualification LOFT. Examples of Special Purpose Operational Training may include training which:

a. Focuses on CRM skills.

b. Provides differences training on variant aircraft.

c. Provides windshear training.

d. Trains in special aircraft equipment, e.g., navigational equipment and flight management systems.

42. ELEMENTS RESEMBLING LOFT. Special Purpose Operational Training contains some elements which are similar to those found in LOFT, including line environment, scenarios which are real world and real time, no-jeopardy training, and the use of feedback and critique. Elements of Special Purpose Operational Training which may vary from LOFT are described below.

43. GUIDELINES FOR SPECIAL PURPOSE OPERATIONAL TRAINING. The components of Special Purpose Operational Training vary, depending on the purpose or objective of the training. Therefore, the following provides only general guidelines for Special Purpose Operational Training.

a. Direct Instruction and Scenario Interruption. Special Purpose Operational Training permits direct instruction and allows for interruption of the scenario by the instructor.

b. Crew Composition. Special Purpose Operational Training may include use of a complete or partial crew, depending upon the training objectives.

c. Crew Substitutes. The use of crew substitutes in Special Purpose Operational Training depends upon the type of training being provided.

d. Number and Type of Segments. Special Purpose Operational Training may contain any number of full or partial flight segments, depending upon the training objectives.

e. Training Media. Special Purpose Operational Training may use a wide range of flight simulators and flight training devices, depending upon the training objectives. (See AC 120-40, as amended, Airplane Simulator Qualification and AC 120-45, as amended, Airplane Flight Training Device Qualification.)

44.-50. RESERVED.

CHAPTER 6. LINE OPERATIONAL EVALUATION

51. GENERAL. Line Operational Evaluation is primarily designed for crewmember evaluation under an Advanced Qualification Program (AQP). Line Operational Evaluation is conducted in a flight simulator or flight training device and is designed to check for both individual and crew competence. Line Operational Evaluation may also be used to evaluate a specific training objective. Line Operational Evaluation includes the concepts listed below.

52. ELEMENTS RESEMBLING LOFT. Line Operational Evaluation contains elements similar to those in LOFT; i.e., line environment; complete crew; scenarios which are real world, real time; and may run uninterrupted. An inventory of operational problems and environmental conditions should be developed which allows scenarios to be selected on a random basis. This will ensure that flight crewmembers are not familiar with repetitive scenarios. An important factor is that every attempt be made to have a complete crew complement scheduled and maintained. Flight crewmember substitution is highly discouraged. If crew substitutions are necessary, the substitute crewmember will be either another qualified crewmember or a Task Familiar crewmember in a training status comparable to the person being evaluated. Instructors and evaluators may not serve as a substitute crewmember.

53. EVALUATION. Unlike LOFT, Line Operational Evaluation requires evaluation of both crewmember and crew competence and performance. Therefore, Line Operational Evaluation contains an element of "jeopardy," as opposed to the "no-jeopardy" environment in LOFT.

54. EVALUATORS. The role of an evaluator (including check airmen) in Line Operational Evaluation is to observe and evaluate crewmember performance during the simulation. The evaluator must be qualified in accordance with the operator's approved training program. The evaluator is responsible for informing crewmembers, prior to the start of the exercise, that they will be evaluated.

55. FLIGHT SIMULATORS/FLIGHT TRAINING DEVICES. Operators conducting Line Operational Evaluation may be approved to use any level of flight simulator or flight training device, depending on the objective of the evaluation and the capability of the device. The level of the flight simulator or flight training device required to support evaluation in Line Operational Evaluation will depend upon the evaluation objectives and the device's capability to support the objectives.

56.-60. RESERVED.

CHAPTER 7. THE ROLE OF INSTRUCTORS

61. MINIMUM QUALIFICATIONS. Instructors should be trained in the philosophy, skills, and conduct of Line Operational Simulations and CRM. They should be able to effectively observe and critique both individual and crew performance during the scenario. To do this, they should meet the minimum requirements discussed in the following paragraphs:

a. Line Familiar. Instructors should be Line Familiar, i.e., familiar with the operations for which they are providing training. This will ensure that instructors accurately perceive and evaluate situations as they arise. In cases where instructors currently are not line qualified, an approved line observation program (see paragraph 9a, Line Qualified) should ensure that they are familiar with line operational procedures and problems. In this way, instructors will maintain an understanding of the operational demands confronting line crewmembers.

b. Qualified as Instructors. Instructors should be qualified as defined in FAR § 121.411(b) or § 135.337(b), or as otherwise approved. They are not required to hold current medical certificates to qualify and serve as instructors.

c. Trained in CRM Skills. Instructors will receive training in CRM skills in order to observe and critique these areas in Line Operational Simulations. (See AC 120-51, Cockpit Resource Management Training, for further information on the skills of CRM.)

d. Trained in Methods for Briefing, Debriefing, and Critique. Instructors should be trained to conduct the briefing and debriefing/critique phases of Line Operational Simulations, including how to provide feedback in a non-threatening and sensitive manner.

62. INSTRUCTOR RESPONSIBILITIES AT EACH STAGE OF LINE OPERATIONAL SIMULATIONS. The following is a description of the roles and responsibilities expected of instructors:

a. Briefing and Preparation. Instructors should be able to effectively convey the purpose of the Line Operational Simulation and how it is representative of line operations. Instructors should also explain the instructor's role during the training; i.e., as an observer and not considered present unless playing a role in the scenario.

b. Flight Segment. Instructors should be able to both observe and perform ancillary roles. They should be trained in observing both technical and CRM skills. The instructor should also be trained in proper pacing, proper introduction of abnormal/emergency procedures, and methods of handling unforeseen crew actions.

c. Debriefing and Critique. Instructors should provide both positive and negative feedback during critiques of individual and crew performance. Prior to the instructor's critiques, crewmembers should be encouraged to

critique themselves. Instructors will provide feedback to the crew to encourage the changes needed for improved performance. Instructors should also provide specific recommendations to improve individual crewmembers' performance.

63.-70. RESERVED.