



Barbados Civil Aviation  
Department

**BCAD Document OAC-013**

# OPERATIONS ADVISORY CIRCULAR

## LINE ORIENTED FLIGHT TRAINING (LOFT)

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# LINE ORIENTED FLIGHT TRAINING

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# LINE ORIENTED FLIGHT TRAINING (LOFT)

## 1. PURPOSE.

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

## 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-1970s, some 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 that contain normal, abnormal, and emergency procedures that may be expected in line operations.

(B). LOFT is a useful training method because it gives crewmembers the opportunity to practice line operations (such as manoeuvres, 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, decision making, and communication skills. The overall objective of LOFT is to improve total flight crew performance, thereby preventing incidents and accidents during operational flying. Since the early 1980s, new issues that are related to other Line Operational Simulations have emerged. One such Issue, which requires an updating of applicable guidelines, is:

### (C). 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 regulators and industry have recognized the importance of Cockpit Resource Management (CRM) in crewmember training. CRM training addresses human factors (such as 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.

### **3. SUMMARY.**

This AC identifies three types of Line Operational Simulations: (1) Recurrent LOFT, (2) Qualification LOFT and (3) Special Purpose Operational Training, which is training that may be used for various unique purposes such as aircraft differences or CRM training. It defines the terms used in describing Line Operational Simulations. It provides guidance for designing and conducting LOFT and Special Purpose Operational Training, and it defines the role of instructors and evaluators.

### **4. DEFINITIONS.**

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

(i). 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.

(ii). Line Familiar.

Describes a flight crewmember or instructor who is familiar with an AOC holder's line operations. This person is either line qualified or otherwise qualified by participation in an approved line observation program.

(iii). Task Familiar.

Describes a flight crewmember that 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.

(iv). Qualification LOFT.

An approved flight simulator course of LOFT to facilitate transition from training using flight simulation to operational flying.

(v). Recurrent LOFT.

An approved flight simulator course of LOFT which may be used to meet recurrent flight training requirements.

(vi). 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; such as, training in variant aircraft or special aircraft equipment.

## **5. BASIC ELEMENTS OF LOFT.**

### **(A). 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.

### **(B). 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.

*NOTE: The Instructor may act as a Cabin Crewmember when such training is restricted to Cockpit Crew and it is impractical to have a Cabin Crew in the simulator.*

### **(C). 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 enroute operation is completed. In cases of flights involving repetitive events, the enroute 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 are able to resume or restart the scenario without confusion.

### **(D). NO-JEOPARDY TRAINING.**

LOFT is "no-jeopardy" training, that is, 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 that 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.

(E). 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.

(F). FEEDBACK.

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

(G). 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.

(i). 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 (that is, the Instructor is considered "not present," except as an Air Traffic Controller (ATC) or as another ground base entity). The role of the flight crew should be discussed in the briefing (that is, 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.

(ii). Preflight Planning Documents and Activities.

Preflight planning documents (such as 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 unfavourable weather conditions or how to correct improper fuel loads. Preflight activities include cockpit setup, computation of takeoff data, etc.

(iii). 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.

(iv). Debriefing.

Debriefing should include feedback to crewmembers on their performance. Positive comments regarding crew performance should be 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 (L) and (M) for further discussion of critiques, debriefing, and use of video records.)

#### (H). 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 hours of LOFT scenarios. Reasonable amounts of time should be allowed for problem solving (such as 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 hours of LOFT scenarios may be utilized for other specific training requirements. All crewmembers participating in a LOFT session are credited with 4 hours of training time.

#### (I). LOFT SCENARIOS.

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

##### (i). 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 runways, then the scenarios should be designed to include exposure to that particular operational problem. Training objectives may also be identified by the CAA based upon documented trends. Other specific objectives may include thunderstorm operations training, unusual airport or runway operations, alternate operation of automated systems, etc.

##### (ii). 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 (such as short vs. long routes).
- (2) Revised arrival procedures (such as an unexpected runway change).
- (3) Alternate operation of flight management systems.

- (4) Abnormal and emergency conditions, including simple conditions (such as a potential hot start) and complex conditions which continue for the entire flight (such as a failed essential AC bus).
- (5) Adverse weather conditions (such as thunderstorms).
- (6) Partial or full loss of integrated flight management systems.

(iii). Timing.

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

(iv). Realism.

Scenarios should contain realistic circumstances such as 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 (such as wind shear, 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.

(J). APPROVAL OF SCENARIOS.

Scenarios must be approved by the CAA. 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 that 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 that comply with the elements, provided in this AC and that 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.

(K). 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 maneuver/procedure learning objectives. In addition, focused CRM training could be provided independently during separate Special Purpose Operational Training.

(L). 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 flight crew 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 (such as company operations manuals and flight manuals), workload reducing devices (such as autopilot and flight management systems), and other crewmembers.

#### (M). 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 behaviour. Recorded audiovisual feedback should be destroyed at completion of the debriefing.

#### (N). ADDITIONAL TRAINING/LOFT COMPLETION.

Decisions that 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 in 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.

#### (O). BASIC ELEMENTS OF LOFT: SUMMARY.

LOFT is defined by the following basic concepts:

- (i). It takes place in a simulated line operational environment.
- (ii). It uses a complete crew with total participation.
- (iii). It contains real-world incidents, unfolding in real time.
- (iv). It is "no-jeopardy" training.
- (v). It contains scenarios and segments that run uninterrupted.
- (vi). It contains scenarios tailored to the operator's learning objectives.
- (vii). It incorporates CRM skills.
- (viii). It provides critique of individual and crew performance.

## 6. TYPES OF LOFT.

### (A). 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.

### (B). RECURRENT LOFT.

Recurrent LOFT is designed to ensure that each crewmember maintains proficiency in the type of aircraft and crewmember duty position involved, it 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.

### (C). GUIDELINES FOR RECURRENT LOFT.

Recurrent LOFT should meet the following guidelines:

#### (i). 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.

#### (ii). Crew Composition.

Recurrent LOFT requires scheduling of a complete crew that is line qualified.

#### (iii). Crew Substitutes.

The use of substitutes is discouraged and should only be used when the composition of the scheduled line qualified crew cannot be maintained and should be used only as a last resort to prevent interruption of scheduled training.

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

#### (iv). Number and Type of Segments.

A Recurrent LOFT scenario may include one or more flight segments, depending upon the training objectives.

#### (v). Training Media.

The highest level flight simulator available should be scheduled for Recurrent LOFT. 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.

(E). 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.

(F). GUIDELINES FOR QUALIFICATION LOFT.

Qualification LOFT should meet the following guidelines:

(i). 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.

(ii). 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.

(iii). Crew Substitutes.

The use of substitutes is highly discouraged and substitution should only be implemented rarely. When the composition of the scheduled crew cannot be maintained, the operator may substitute crewmembers

(iv). 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.

(v). Training Media.

Qualification LOFT will be conducted in flight simulators qualified at Levels C or D.

## **7. SPECIAL PURPOSE OPERATIONAL TRAINING.**

### **(A). 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 wind shear training.
- d. Trains in special aircraft equipment, such as navigational equipment and flight management systems.

### **(B). 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 that may vary from LOFT are described below.

### **(C). 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.

#### **(i). Direct Instruction and Scenario Interruption.**

Special Purpose Operational Training permits direct instruction and allows for interruption of the scenario by the instructor.

#### **(ii). Crew Composition.**

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

#### **(iii). Crew Substitutes.**

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

(iv). Number and Type of Segments.

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

(v). Training Media.

Special Purpose Operational Training may use a wide range of flight simulators and flight training devices, depending upon the training objectives.

## **8. THE ROLE OF INSTRUCTORS**

### **(A). 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:

(i). Line Familiar.

Instructors should be Line Familiar, that is, 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 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.

(ii). Qualified as Instructors/Check Airmen.

Instructors/Check Airmen should be qualified as defined in Barbados Civil Aviation (General Application and Personnel Licensing) Regulations 2007, or as otherwise approved. They are not required to hold a current medical certificate to qualify and serve as simulator or flight training device instructors.

(iii). Trained in CRM Skills.

Instructors/Check Airmen will receive training in CRM skills in order to observe and critique these areas in Line Operational Simulations.

(iv). 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.

(B). INSTRUCTOR RESPONSIBILITIES AT EACH STAGE OF LINE OPERATIONAL SIMULATIONS.

The following is a description of the roles and responsibilities expected of instructors:

(i). 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; that is, as an observer and not considered present unless playing a role in the scenario.

(ii). 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.

(iii). 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.