RWANDA
CIVIL AVIATION AUTHORITY

ADVISORY CIRCULAR
AC 09-005

GUIDANCE & PROCESS FOR DISTANCE LEARNING APPROVALS

SECTION 1   GENERAL

1.1   PURPOSE

This Advisory Circular (AC) provides general guidance to training organizations that desire to supplement their training delivery with distance learning method(s).

1.2   STATUS OF THIS ADVISORY CIRCULAR

This is an original issuance of this AC.

1.3   BACKGROUND

A. Advancements in electronic media have made the presentation of educational information using distance learning mainstream. The aviation industry has been one of the largest benefactors of the revolution in digital presentations and interactive media.

- Systems now include modern training products, many of which are being effectively used in aviation courses conducted by accredited universities and other aviation training programs approved by the RCAA.

B. Collectively, those products fall under a relatively new heading called "distance learning" or "distance education." As the quality of those products continues to improve, the training/ learning process stands to benefit even more.

C. RCAA guidance indicates that traditional classroom training is the minimum acceptable delivery method, but does not restrict the use of other delivery methods

- Besides the proven effectiveness of modern training products, distance learning affords a low-cost alternative to classroom ground training, an alternative that is timely and appropriate in today's challenging economic environment.

- The use of new technology and alternative training methods can, and often does, improve the quality of training.

> However, alternative training must meet or exceed the training standards that it is intended to replace.

1.4   APPLICABILITY

A. An ATO may apply for approval of distance learning methods for credit towards the completion of an approved core or specialty curriculum.

> Only cognitive (theoretical) or knowledge-based training is eligible for consideration under the provisions of this Bulletin.

B. This AC applies only to training curricula/courses that have been approved by the RCAA in accordance with the requirements of Part 7, Part 9, Part 14 or Part 26.

1.5   RELATED REGULATIONS

The following regulations are directly applicable to the guidance contained in this advisory circular—

- RCAR Part 7, Personnel Licensing
- RCAR Part 9, Approved Training Organizations
- RCAR Part 14, AOC Personnel Qualification

1.6   RELATED PUBLICATIONS

For further information on this topic, individuals, instructors and examiners are invited to consult the following publications—

1) RCAA-FSS

- AC 09-001, Application & Process: Approved Training Organization

> Copies may be obtained from the RCAA-FSS.

1.7   DEFINITIONS & ACRONYMS

A. The following definitions are used in this advisory circular—

1) **Aircraft – category.** Classification of aircraft according to specified basic characteristics, e.g. aeroplane, rotorcraft, glider, lighter-than-air, powered-lift.

2) **Competency.** A combination of skills, knowledge and attitudes required to perform a task to the prescribed standard.

3) **Crew resource management**. A program designed to improve the safety of flight operations by optimizing the safe, efficient, and effective use of human resources, hardware, and information through improved crew communication and coordination.

4) **Distance Learning**. A formalized method of learning remotely without being in regular face-to-face contact with a teacher in the classroom.

5) **Error.** An action or inaction by the flight crew that leads to deviations from organizational or flight crew intentions or expectations.

6) **Error management.** The process of detecting and responding to errors with countermeasures that reduce or eliminate the consequences of errors and mitigate the probability of further errors or undesired aircraft states.

B. The following acronyms are used in this advisory circular—

1) **AC** = Advisory Circular

2) **ATO** = Approved Training Organization

3) **FSTD** = Flight Simulation Training Device

4) **PEL** = Personnel Licensing

5) **RCAA** = Rwanda Civil Aviation Authority

6) **RCAA-FSS** = Flight Safety Services of the Rwanda Civil Aviation Authority

7) **RCAR** = Rwanda Civil Aviation Regulations

SECTION 2   APPLICATION FOR APPROVAL OF DISTANCE LEARNING

2.1   QUALIFICATIONS REQUIREMENTS FOR DISTANCE LEARNING SUBMISSIONS

A. ATOs requesting the inclusion of distance learning must submit a curriculum module or element that qualifies for distance learning. All requests must include—

1) Specific detail outlining the curriculum module or element(s) proposed.

2) The ATO's implementation and evaluation plan.

3) All training and study materials, including clearly defined training objectives, phase test, final exams, and the validation testing and methodology proposed for verifying the knowledge gained through approved distance learning modules.

   ♦ Each trainee that participates in an approved curriculum/course of training that incorporates distance learning must complete a "validation exam," in person and under the supervision of a qualified instructor or the Administrator, prior to the commencement of any flight or skill-related training at the ATO.

   ♦ Validation exam(s) are used to verify the knowledge objectives of distance learning module(s) and are in addition to any testing that may have been a part of the distance-learning module.

2.2   DISTANCE LEARNING OBSERVATION PRIOR TO APPROVAL

When a request is received from a ATO, the RCAA will observe the current classroom module(s) for which the operator has requested a distance learning substitution.

The purpose of this observation is to determine both the quality and quantity of the current training.

- Based on personal observations and review of the training materials, the RCAA will be better prepared to determine if the proposed distance learning will effectively duplicate the classroom training it has been designed to replace.

2.3   ACCREDITATION

2.3.1   SCOPE OF CREDITABILITY OF DISTANCE LEARNING

Distance learning credit is currently only available for knowledge and cognitive skill objectives.

> Distance learning will not be credited or considered for any required flight training modules/elements.

- Distance learning creditability for psychomotor skills are not authorized by this Bulletin.

2.3.2   LIMITS ON CREDITABILITY OF DISTANCE LEARNING

A. The RCAA recognizes the great training potential of distance learning that is well planned and effectively validated.

- Ground training developed in accordance with an implementation plan (described later in this Bulletin) is subject to RCAA approval.

- Distance learning may be as much 100 percent creditable toward the knowledge and cognitive skill training objectives defined in the ground training segment of a ATO's approved curriculum(s).

B. Initial implementation of distance learning by a ATO should be approved cautiously.

- The substitution of ground training previously conducted in a classroom environment by the ATO in favor of distance learning modules should be integrated into the ATO's curriculum.

> This substitution may be done in steps that are based on the ATO's demonstrated ability to design and implement a distance learning system.

C. Distance learning modules should approved in phases or through an initial approval process followed by a trial period prior to issuing final approval.

2.4   GROUND TRAINING MEDIA

The general nature and specific characteristics of training media used for distance learning vary widely.

- Examples include paper media, videotape, computer-based training (CBT), CDs, Web-based training, and virtual classroom.

- The media used should meet the requirements of the respective training objective.

- Validation of training effectiveness is one of the most important components of the implementation plan described below.

SECTION 3   IMPLEMENTATION PLAN

Any proposal for ground training accomplished by distance learning must include a plan for startup, validation, operation, and maintenance of that training.

3.1   STARTUP

A. The startup phase must identify the knowledge and cognitive training objectives of the distance learning curriculum/course.

B. Ground training objectives can be reduced to simple terms such as being able to—

1) Recall,

2) Recognize,

3) Comprehend,

4) Apply, and

5) Identify the media used for ground training and testing.

3.2   VALIDATION STRATEGY

A. ATOs must develop a distance learning validation strategy that addresses the effectiveness of the ground training itself, and the learning accomplished by each person trained.

B. Key features of a satisfactory validation strategy include—

3.2.1   MEASURING THE EFFECTIVENESS OF THE GROUND TRAINING BEING CONDUCTED

A. One validation method is to establish a performance baseline as a reference from which to measure the effectiveness of the ground training proposed. baselines exist in most ongoing training programs.

- Examples of performance baselines include average ground training hours a trainee spends in learning a certain subject, average pass/fail rates for tests of ground training content, median scores, average pass/fail rates for flight checks, and many others.

B. A performance baseline may be set by using an existing baseline or by referring to some other existing standard.

- Validation depends upon maintaining the currency of the ground training to be conducted. A reliable method to do so is an essential part of a ground training proposal.

3.2.2   LEARNING ACCOMPLISHED BY EACH PERSON TRAINED

A. Testing should be designed to determine that training objectives are being met by each trainee.

B. Tracking is a method for keeping test results and tracking each individual's performance.

3.2.3   VALIDATION OF MODULE OBJECTIVES

A. Validation of the ground training objectives for distance learning will be accomplished through written exams.

> These exams must determine that the training proposed actually succeeds in meeting the performance objectives for the subject training.

B. Validation exams should not be confused with the oral/written testing required by the appropriate Skill Test Standard (STS).

- Validation exams are intended to authenticate the effectiveness of approved distance learning modules.

- They neither substitute for nor replace the required testing outlined in the appropriate STS.

C. The validation of a ATO's distance learning module(s) must be designed to evaluate the trainee's technical systems knowledge and cognitive skill (if appropriate).

- For example, a trainee's ability to list the items considered appropriate when accomplishing a takeoff and/or landing performance calculation is a measure of the trainee's technical knowledge.

- The appropriate use of those items in the calculation of a takeoff and/or landing performance problem is a measure of the trainee's cognitive skill.

3.2.4   SUBMISSION OF VALIDATION EXAMS

A. Validation exam procedures must be submitted to the RCAA and designed to—

1) Collect data related to the trainee's performance for the purposes of verifying the effectiveness of the training;

2) Identify the specific questions taken and trainee responses to the validation exam; and

3) Provide a basis for documenting that the distance learning module is as effective as the ATO's previously used classroom training module (if appropriate).

3.2.5   IMPLEMENTATION OF VALIDATION EXAMS

A. A method should be developed to ensure integrity of tests, including integrity of test questions and test answers, and controlled access to tests and test results.

B. Trainers must develop measures by which the identity of a person taking the test and the integrity of test answers may be confirmed.

- Printed or electronic test answers must not be able to be reproduced and distributed among trainees so as to beat the test.

C. The minimum passing score for all distance learning validation exams is 80 percent on each training objective.

> It is important to note that the minimum passing score must be achieved on each element or objective within the validation exam.

D. Distance learning validation exams must be conducted in a proctored environment and observed by a qualified instructor or the Administrator.

- All trainees that meet or exceed the minimum grade of 80 percent will have their test corrected to 100 percent immediately following the exam.

> A score of less than 80 percent will require the trainee to be retrained and tested in the substandard areas by a qualified instructor in a proctored environment.

E. Distance learning techniques or procedures may not be used to accomplish any required retraining resulting from an unsatisfactory exam.

- Subsequent reexamination will be accomplished using a random test generator to ensure the individual is not subjected to the same test that was originally taken.

- All training and testing must be satisfactorily accomplished before the trainee may continue their training course.

3.2.6   INTEGRITY OF TEST QUESTIONS

A. A library of questions should be developed that thoroughly cover the training objectives.

B. Multiple questions must be developed for each training objective.

- A question bank that includes <u>at least five questions at the **element** level </u>for each subject within the training module should be developed whenever practical.

> - An element is a subgroup of related content within a training module.
> - It is the fourth level of curriculum detail: curriculum, curriculum segment, training module, and element.

- For example, "Hydraulic System" is one training module; the yellow system, the green system and the standby system are elements.

- In this example, the ATO's question bank would contain at least 15 questions relating to the hydraulic system (i.e., five for the yellow system, five for the green system, and five for the standby system).

C. Tests must be generated by random selection of questions from the library, so that no two tests are alike.

- This uniqueness does not refer to merely switching the order of the answers to a particular question without changing the question itself.

- Random answers to the same question do not qualify the question as being different for the purposes of this requirement.

D. Test questions must be reviewed as often as necessary to assure their relevancy, and to incorporate new or changed material.

- The ATO must have a quality procedure in place to ensure currency of their question banks.

SECTION 4   OPERATION & MAINTENANCE

A. The operation and maintenance of the distance learning approval includes the quality control procedures for the collection, protection, and analysis of data for tracking ground training effectiveness; also, a strategy for equipment upgrade, program update, and program adjustments driven by data and feedback from trainers and trainees.

B. ATOs must provide for *interactivity* between trainees and authorized ground instructors, and between the trainees themselves when practical.

- **When in the Field.** In particular, a trainee should have ready access to an authorized ground instructor during normal business hours to resolve questions encountered during distance learning and associated testing.

- **When at a Centralized Training Location.** Before flight training, trainees should be convened in a proctored classroom setting with an authorized ground instructor to resolve any remaining issues arising during distance learning. This interactivity is particularly beneficial in respect to the standardization of trainees enrolled in the same curriculum/course.

End of Advisory Circular

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