



Guidance for the conduct of demonstration flights



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Introduction

According to AMC1 ARO.GEN.310(a), point (a)(3) of Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Part-ARO of Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council and ICAO Annex VI Part I, 4.2.1.3 and Attachment E and ICAO Document 8335, chapter 5.4, civil aviation authorities may require demonstration flights to test operator's repeated ability to conduct line operations in compliance with regulations and safe operating practices. Croatian Civil Aviation Agency will require Croatian aircraft operators to conduct demonstration flights according to the below guidance.

Initial contact meeting with the operator

During the initial contact meeting CCAA determines the need for demonstration flights. Demonstration flights are required for:

- a) Applicants for initial issue of Air Operator Certificate (AOC);
- b) Applicants seeking authorization/approval to operate new types of aircraft;
- c) Applicants seeking authorization to conduct special operations in compliance with regulatory requirements

Assignment of the CCAA Test Team

The CCAA test team should include the following personnel, as required by the requested type of authorization(s):

- a) Inspector OPS/CAT (test team leader)
- b) Inspector OPS/GOI
- c) Inspector OPS/CCI
- d) Inspector TECH/ARI

All members of the CCAA test team must become familiar with the pertinent parts of the applicant's manuals, procedures, training, and policies. The test team leader and the applicant must reach a common understanding of what the applicant must do, what role the CCAA will play, and what reports and documents the applicant must prepare during the testing process. Both the test team and the applicant must research applicable regulatory and advisory material.

The CCAA test team will determine the number, type and specifics of demonstration flights and will inform the applicant. The determination by the CCAA on the number and type of demonstration flights, will depend upon the CCAA's assessment of the capabilities of the operational and maintenance systems established by the applicant, type of operation, complexity, size and number of engines of aircraft types used, previous experience, proposed area of operations, flight and cabin crew experience.

In order to demonstrate repeated ability to conduct normal line operations in compliance with regulations and safe operating practices an applicant for initial issue of AOC or for introduction of new aircraft type which is by complexity, size and number of engines different from existing aircraft operated under AOC, an applicant shall conduct 3 return flights on sectors defined by responsible inspector.

In order to demonstrate repeated ability to conduct normal line operations in compliance with regulations and safe operating practices an applicant for introduction of new aircraft type which is by complexity, size

and number of engines similar to existing aircraft operated under AOC, an applicant shall conduct 1 return flight on sectors defined by responsible inspector.

In order to demonstrate repeated ability to conduct normal line operations in compliance with specific regulations and safe operating practices an applicant for ETOPS and LVO operations shall conduct 1 return flight on sectors defined by responsible inspector.

Formal Demonstration flights plan

The formal Demonstration flights plan must be submitted at least 30 days in advance of any in-flight demonstration (including training or ferry flights) that the applicant desires to have credited toward the demonstration flights requirements. Any subsequent change to the plan must be coordinated with the test team. The Demonstration flights plan must include at least the following information:

- a) Identification of the company coordinator,
- b) Detailed schedule of all proposed flights, including dates, times, and airports to be used.

The schedule should clearly differentiate which flights will be conducted for training, ferry, positioning or representative en route flights. Training, ferry and positioning flights may be credited towards demonstration flights requirements. An applicant shall plan to conduct a representative number of demonstration flights into en route airport. These are airports that the applicant plans to use in scheduled operations or is likely to use in nonscheduled operations. The CCAA test team must determine what constitutes a representative airport or area of en route operation (and the number of representative airports and areas).

- c) List of names and positions of flight crew members on each flight,
- d) Names, titles, and company affiliation of all non-crewmembers on each flight.

Many situations occur during demonstration flights that require decisions by the applicant's supervisory personnel to correct deficiencies observed during the flights. Therefore, the applicant's participants should include:

- 1) Applicable crewmembers (i.e., pilots, flight engineers, flight attendants, flight instructors);
 - 2) Directors of operations, maintenance, and quality control (if applicable); and
 - 3) Supervisory personnel needed to act on behalf of the applicant if actions are required to resolve discrepancies (e.g., in-flight management representatives).
- e) Any other information that the test team determines is necessary to properly plan and conduct the demonstration flights.

The test team must review the applicant's plan initially to determine if the appropriate documentation has been submitted. The plan must contain a realistic proposal that will permit the CCAA to adequately observe and evaluate the applicant's overall abilities. This review should be accomplished within five working days after receipt of the applicant's plan. Based on the results of this initial review, the CCAA test team must take one of the following actions:

- 1) Accept the Plan. If the applicant's plan is feasible, accompanied by supporting documentation, and satisfies regulatory and CCAA policy requirements, the test team leader should verbally notify the applicant. Any changes should be mutually agreed upon at this time.
- 2) Decline the Plan with Explanation. If the applicant's plan lacks appropriate documentation, or does not satisfy regulatory or CCAA policy requirements, the CCAA test team must return it to the applicant as soon as possible. A letter that briefly describes the principal reasons for the plan's return should accompany the plan.

In depth review of the Demonstration flights plan

The CCAA test team should review the test plan for:

- a) Regulatory compliance.
- b) Safe operating practices.
- c) Logic of sequence.
- d) Other areas (e.g., training programs, crew/dispatcher qualifications, operational control issues, acceptable participants, schedules, and competent/appropriately trained company personnel located at all points along the proposed route).

The applicant having appropriately trained outsourced providers under contract (if required) in at least, but not limited to, the following areas:

- a) Aircraft handling and proper servicing,
- b) Cargo loading and control,
- c) Deicing when appropriate,
- d) Flight operations,
- e) Applicant's maintenance procedures, and
- f) Preventative maintenance of the applicant's aircraft and auxiliary equipment.

Test team briefing and task assignments to the inspectors

The CCAA test team leader provides specific team members with schedules and assignments for the demonstration flights, including:

- a) Flight times,
- b) Locations,
- c) Inspections, and
- d) Reporting requirements.

The test team establishes in-flight and ground inspections and other means of testing the ability of crewmembers and the applicant to cope with actual operational procedures and practices independently and safely. Such inspections are effective when evaluating the applicant's overall and specific abilities. The inspections and their results will be retained and become part of the permanent record of the certification and/or request.

NOTE: Inspectors may wish to attach a copy of the company procedures for quick reference.

All team members must clearly understand in-flight and ground inspections in terms of individual roles and responsibilities. In addition, the inspections should be multi-disciplinary in nature, i.e., involve flight operations, airworthiness, cabin safety, operational control, and/or stations issues, or any combination of these. The team leader must ensure that the applicant is not encumbered with so many inspection activities that a proper evaluation of its proposed routine operation is inhibited. Inspections should focus on areas of weakness found during the submission of Formal Demonstration Flights Plan and its in-depth review.

Since the primary purpose of demonstration flights is to ensure basic compliance with the regulations and safe operating practices during routine operations, the team leader should not permit *emergency scenarios* to occur.

If an actual emergency occurs, inspectors shall discontinue inspection activities that might obstruct normal and safe flight operation. However, in such cases inspectors shall continue to monitor crew's conduct and activities in relation to the emergency and use the observations for the inspection purposes.

The following examples of typical situations may be useful for evaluating the applicant's capabilities:

- a) Diversion to alternate airports for reasons such as weather or maintenance. This situation tests the applicant's communications, maintenance, and other operational control capabilities.
- b) MEL or CDL situations. These situations test the crewmembers' understanding of specific operational limitations and the applicant's operations and maintenance procedures. For example, dispatching with inoperative generator overwater tests the applicant's ability to comply with the operational and maintenance provisions of the MEL.
- c) Performance problems. These situations require aircrew and operational control personnel to demonstrate competency and knowledge of items, such as aircraft performance, airport analysis programs, and alternative company procedures. For example, inoperative antiskid or thrust reverser while operating on contaminated runways (ice, slush, or snow) tests the applicant's ability to deal with performance issues.
- d) Security and/or hazardous cargo situations. These situations require the aircrew and other applicant company personnel to function in accordance with established company hazardous materials and security procedures.

NOTE: Hijack or other security-related inspections are prohibited during demonstration flights. Aircrew knowledge and company procedures must be examined by inspectors through other methods.

- e) Situations that exercise dispatch, flight-following, or flight locating procedures. These situations test communications, Notices to Airmen (NOTAM), weather information dissemination, and other operational control issues. An effective example for testing these capabilities is adverse destination weather situation that would require a diversion. This situation tests the communications and weather reporting capability of the facility and also the applicant's procedural contingencies as demonstrated by the flight crew.
- f) Maintenance situations. Maintenance problem, however minor, at any location into which the operator operates tests the applicant's ability to communicate and resolve problems that flight crews may experience. Maintenance inspections should be flexible enough to accommodate any real maintenance problems that could arise during a demonstration flight.
- g) Emergency situations. These situations enable inspector to determine crewmember's knowledge and competency in handling emergency situations in accordance with the applicant's procedures. They also test applicant communications, maintenance, and other operational capabilities.

No simulated emergency situations are allowed during demonstration flights.

Examples include:

- 1) Engine failure. An inspector will *not*, under any circumstances, require an actual engine shutdown.
- 2) Incapacitated passengers in need of immediate medical assistance.
- 3) Lavatory fire.
- 4) Loss of pressurization.
- 5) Landing gear extension or retraction problems.
- 6) Auxiliary power unit (APU) inoperative (e.g., inoperative air flow, inoperative electric output).
- 7) Cabin safety situations. Flight attendants play a very important role in proving runs. Therefore, in-flight policies and procedures might be verified by following cabin situations:
 - Carry-on baggage,
 - Exit seating,
 - Incapacitated flight attendant,
 - Passenger smoking in cabin or lavatory,
 - Passenger noncompliance, and
 - Intoxicated passenger.

Issue of approval to conduct demonstration flights

The approval to conduct demonstration flights is issued in the form of the letter of approval. The letter of approval must contain following information:

- a) Applicant's coordinator,
- b) Demonstration flights schedule,
- c) Flight crew members,
- d) Cabin crew members,
- e) Non-crew members.

Conduct demonstration flights

All CCAA participants conducting the demonstration flights must review the carrier's operation, operations manual, and the Demonstration flights plan in order to report deficiencies in any of these areas.

The CCAA test team leader conducts briefings with the applicant daily, or as necessary to establish what the test team expects the applicant to accomplish during each demonstration flight. Briefings should include at least the following items:

- a) Purpose of the demonstration flight,
- b) Status of the inspector in the jump seat,
- c) Status of the onboard team of inspectors (they are treated as passengers),
- d) Changes in status of passenger to CCAA inspector when a CCAA credential is revealed,
- e) Procedures for initiating verifications, see i) below, and what action is expected from the applicant,
- f) Procedures for reacting to an actual emergency during the demonstration flight,
- g) Copies of flight plans, load manifests, and other documents that are expected and that should be provided,
- h) Procedures for treating maintenance discrepancies, and
- i) Debriefing at the conclusion of each day unless major problems require it sooner. (Major discrepancies must be resolved before the demonstration flight may resume the following day).

Inspectors conducting demonstration flights inspections shall act in the following way:

- a) Inspectors may play the role of a passenger, and in such cases must conceal their inspector's credentials from view. The operations inspector assigned to the flight deck is always in an inspector role,
- b) Inspectors observe normal and routine operations, such as preflight duties, carry-on baggage, correct announcements, briefing of passengers at emergency exit seats, and/or crew signals,
- c) Inspectors perform as passengers in "real life scenarios," and should act the part,
- d) Inspectors should discreetly communicate with each other when a verification is about to begin.
- e) Inspectors should not touch or operate any emergency equipment onboard.
- f) Company personnel and/or inspectors should not actually position engine controls, switches, etc. to initiate, or in response to, a verification.
- g) The test team will discuss the results of each inspection as a team at the end of the day, and then the applicant will be briefed.
- h) The test team leader (or designee) carries the flight schedule, crewmember names, checklists and coordinates with the inspectors onboard. In the event the test team leader (or designee) cannot be onboard for a particular day, he or she will designate another team member to act in that capacity.
- i) The CCAA test team may initiate a verification using any of the following methods:

- A note containing specific instructions handed to an employee,
- A “passenger” engaging in some activity, or
- Verbal instructions given by a CCAA inspector who is holding his or her inspector’s credential visible.

As a result of Demonstration Flight changes to approved/accepted Operational Procedures may be requested.

The test team’s plan for inspecting and evaluating an applicant’s competency during the en route segment should include verifications and other testing mechanisms designed to test the effectiveness of the applicant’s:

Flight Crew

- a) compliance with rules of the air;
- b) adequacy of flight deck procedures;
- c) crew discipline, co-ordination and vigilance;
- d) altitude control and procedures for altitude/level change;
- e) the operations manual, including the aircraft operating manual, to confirm that it will meet requirements that may arise during flight;
- f) use of flight deck security procedures;
- g) competence of crew members, including the language proficiency of flight crew members in the language used for radiotelephony communications;
- h) flight crew use of company frequencies and operational control of the flight;
- i) use of en-route and terminal navigation facilities;
- j) adequacy of weather information and environmental data provided and their use by the flight crew;
- k) use of air/ground communications;
- l) use of navigation procedures and equipment;
- m) use of checklists for each phase of flight;
- n) adherence to ATC clearances and to changes to clearances;
- o) compliance with meteorological reporting procedures and with procedures for reporting hazardous flight conditions;
- p) use and availability of flight documents, whether these are provided electronically or as hard copy. Special notice should be taken of the manner in which the maps and charts contained in the route guide section of the operations manual are used in flight and in the conduct of departure, arrival, approach and missed approach procedures;
- q) adequacy and use of breathing oxygen in flight;
- r) flight crew use of safety harnesses;
- s) use of passenger cabin “no-smoking” and “seat belt” signs;
- t) general compliance with the regulations;
- u) flight crew management of the flight, including human performance , threat and error management and decision making, and proficiency in the manual and automatic control of the aircraft in all phases of flight;
- v) conduct of flight crew arrival, approach and landing briefing;
- w) adherence to aerodrome/heliport operating minima; and

- x) conduct of approach and landing procedures, after landing procedures, taxi and shut-down procedures and use of appropriate checklists.

Note. — All of the foregoing inspections are to be conducted without interfering with crew duties and vigilance in flight. In some cases it may be necessary for the CCAA inspector to complete the check during the post-flight phase.

Cabin crew

- a) stowage of carry-on baggage;
- b) observing the “no-smoking” signs;
- c) how and when to use seat belts;
- d) when seat backs are required be in the full upright position;
- b) procedures for donning oxygen masks and restrictions during use of oxygen;
- c) emergency procedures including the location and use of emergency exits;
- d) location and use of life jackets;
- e) restrictions on the use of toilets; and
- f) location and content of passenger emergency briefing cards.

The CCAA inspector should note that cabin crew members are provided with, and occupy, for take-off and landing, forward or rearward facing seats equipped with safety harnesses and that such seats are located near floor level and other emergency exits, as required by the valid regulations.

Cabin crew might be questioned regarding their familiarity with the location and use of various types of emergency equipment, i.e. life rafts, emergency locator transmitter, medical kits, first aid kits, etc., and with their specific duties in the event of an emergency such as a ditching or an emergency evacuation. This discussion with the cabin crew members provides an opportunity for the CCAA inspector to assess the effectiveness of their training. The performance of cabin crew will be evaluated with regard to their effectiveness in performing their assigned duties and the fulfillment of their responsibilities for requiring passengers to comply with their instructions and the applicable regulations.

Airport/Station Facilities

The test team determines whether the airports and the applicant's station facilities are adequate to support the specific aircraft and type of operation proposed by evaluating, at a minimum:

- a) Runways and taxiways,
- b) Runway and taxiway lighting,
- c) Approach lighting,
- d) Navigational Aids (NAVAID),
- e) Gate, ramp, and loading area conditions (such as markings, congestion, and lighting),
- f) Station operations manuals, maintenance manuals, and facilities,
- g) Ground crew qualifications and training (if applicable),
- h) Passenger enplaning and deplaning procedures,
- i) Baggage and cargo loading,
- j) Aircraft fueling and servicing, and
- k) Gate arrival and departure procedures and equipment.

Operational control. At applicable locations, the CCAA test team evaluates and inspects:

- a) Flight planning,

- b) Dispatch, flight release, and flight locating procedures,
- c) Airport and route information collection and dissemination,
- d) Driftdown and diversionary procedures,
- e) Weather information collection and dissemination,
- f) Dispatch and flight control personnel competency,
- g) Communications capability within the company, with the aircraft, and with other agencies,
- h) Load control (for example, the accuracy of the passenger count and the ability to convey weight and balance changes to and from the aircraft before takeoff),
- i) Scheduling,
- j) Flightcrew duty and rest time,
- k) Manuals,
- l) Crew qualifications,
- m) Maintenance control (procedures and records),
- n) Flight crew briefings,

NOTE: The utilization of a dispatch-qualified Inspector – OPS/GOI is mandatory.

Record of the outcome of demonstration flights

Completion as Planned. The applicant completes the planned demonstration flights schedule without significant change.

Early Completion. The demonstration flights may conclude sooner than planned when all inspection objectives have been met, and the applicant has demonstrated a repeated ability to conduct line operations in compliance with regulations and safe operating practices. The team should be satisfied that the applicant will continue to function in a satisfactory manner.

Extension. The demonstration flights may be extended beyond the point of scheduled termination. This action is taken when the applicant has not completely demonstrated the ability to conduct operations in compliance with regulations and safe operating practices, but shows the potential to do so in a reasonable number of hours. Applicants may not count demonstration flights segments which are not completed successfully toward the required total proving test hours.

Unacceptable Performance. The team may terminate testing when it is apparent that the applicant is not capable of correcting deficiencies. When a decision is made to terminate demonstration flights due to extensive deficiencies, the following must be accomplished:

The test team leader immediately informs the Head of Flight Operations Department of the reasons for the decision and receives his/her concurrence before concluding testing.

The test team leader then notifies the applicant of the decision. These remarks list deficient areas and specify corrective actions that must be taken before further en route testing may continue. The applicant is advised that a new demonstration flights plan will have to be developed by the applicant and submitted to the CCAA before further en route testing may resume.

Acceptable performance. The demonstration flights may conclude when all inspection objectives have been met, and the applicant has demonstrated a repeated ability to conduct line operations in compliance with regulations and safe operating practices. The team should be satisfied that the applicant will continue to function in a satisfactory manner. The satisfactory performance of demonstration flights shall be documented in the explanation part of the AOC issue/variation administrative decision.