



CHAPTER 15

Demonstration and Special Demonstration Flights

1.0 PURPOSE

This Chapter provides guidance to inspectors on the evaluation of demonstration and special demonstration flights.

2.0 REFERENCES

- 2.1 Regulation 9.2.3.6 of the Nigeria Civil Aviation Regulations.
- 2.2 **CL: O-OPS001, CL: O-OPS001A, CL: O-OPS002, CL: O-OPS003, CL: O-OPS15, CL: O-OPS15A, CL: 015B, CL: O-OPS040, FORM: O-OPS015**

3.0 GENERAL

- 3.1 Part 9 of the Nigeria Civil Aviation Regulations requires the Authority to evaluate each applicant's ability to conduct commercial air transport operations safely and in accordance with regulations applicable to the type of operations and the type of aircraft proposed by the operator.
- 3.2 The Authority conducts its evaluation by observing the applicant's performance of demonstration flights in accordance with Regulation 9.2.3.6 of the Nigeria Civil Aviation Regulations. The Authority must consider the applicant's demonstration flights to be satisfactory before it will issue an Air Operator Certificate (AOC) to an applicant.
- 3.3 The Regulations also requires the Authority to determine that an air operator is capable of conducting operations safely and in compliance with applicable regulatory standards before authorising the certificate holder to operate in a designated special area or using a specialised navigation system.
- 3.4 The structured methods used by the Authority to determine an applicant's capabilities are called demonstration Flights and -Special-demonstration Flights. This Order contains direction and guidance to be used by inspectors for conducting these tests. For a comparison of demonstration and special demonstration flight requirements (see section 7.0)
NOTE: *The term, "applicant," as used in this Order means either a candidate applying for an AOC, or an air operator requesting additional operating authorisation.*

4.0 DEMONSTRATION FLIGHTS

- 4.1 Regulation 9.2.3.6 of the Nigeria Civil Aviation Regulations require applicants seeking authorization to operate certain types of aircraft in commercial air transport service to satisfactorily demonstrate their capability to the Authority before being granted operating authority. These applicants must conduct demonstration flights.



- 4.2** Demonstration flights consist of a demonstration of the applicant's ability to operate and maintain an aircraft new to the operator's fleet or the applicant's ability to conduct a particular kind of operation, such as scheduled or charter, passenger carrying or cargo. The applicant is required to operate and maintain the aircraft to the same standards required of a certificate holder that is fully certificated and that holds the necessary authorisations.
- 4.3** Demonstration flights should not be confused with aircraft certification tests, which are tests conducted by the aircraft manufacturer to demonstrate the airworthiness of the aircraft. Regulation 9.2.3.6 (a) of the Nigeria Civil Aviation Regulations requires an applicant to successfully complete demonstration flights before the Authority may authorise the operation of each aircraft type.

5.0 SPECIAL-DEMONSTRATION FLIGHTS

- 5.1** Regulation 9.2.3.6 of the Nigeria Civil Aviation Regulations requires an applicant to demonstrate the capability to conduct proposed operations in designated special areas, or when using specialized navigation in compliance with regulatory requirements before being granted authority to conduct these operations by the Authority.
- 5.2** The Authority requires the applicant to successfully complete special-demonstration flights in the following circumstances:
- 5.2.1** Before being authorised to add any areas of operation outside the territory of the certifying State to operations specifications and,
- 5.2.2** Before being issued any operations specifications paragraphs that authorise special means of navigation.
- 5.3** Though demonstration and special-demonstration flights satisfy different requirements, both tests may be conducted simultaneously when appropriate.

6.0 TESTING METHODS ACCEPTABLE TO THE AUTHORITY

- 6.1** Applicants must demonstrate to inspectors that they can conduct flight and maintenance operations to the standards required for commercial air transport operations. Operations could range from the relatively simple to the more sophisticated. A simple operation may involve an operator that possesses authority issued by the Authority to operate locally, but is requesting authorisation to expand operations outside Nigeria. The operator may only have to demonstrate that it has the proper documentation to conduct the expanded operations.
- 6.2** For more sophisticated operations, such as Category II (CAT II), Category III (CAT III), and extended range operations with two engines (ETOPS/EDTO), acceptable means that applicants may use to demonstrate compliance have been published in the Advisory Circular.



7.0 DISCUSSION OF DEMONSTRATION AND SPECIAL-DEMONSTRATION FLIGHTS

Part 8.0 through 12.0 of this Order contain direction and guidance to be used by inspectors for conducting demonstration flights, and Part 13.0 contains direction and guidance for conducting special-demonstration flights.

8.0 THE DEMONSTRATION AND SPECIAL-DEMONSTRATION FLIGHT PROCESS

NOTE: *The demonstration and special-demonstration flight process follows the general outline of the five phase approval process*

8.1 Phase One

8.1.1 Phase one of the demonstrations and special-demonstration flight process begins when an applicant requests authorisation from the Authority to conduct an operation for which demonstration or special-demonstration is required. The term, "applicant," as used in this section, means either an operator applying for an air operator certificate or a certificate holder requesting additional operating authority.

8.1.2 When an applicant's request requires demonstration or a special demonstration, the following steps apply:

- a) The Authority Demonstration Team. The person responsible for Safety Oversight shall organise the demonstration team:
 - (i) **Team Leader.** The team leader should be responsible for the conduct, co-ordination, and evaluation of the test. In addition, the team leader will be the spokesperson for the Authority on all matters pertaining to the test;
 - (ii) Enroute flights (representative en route) should closely simulate the routine line operations that the applicant proposes to conduct.

Inspection Team Composition. The onboard team of NCAA inspectors must include an operations inspector, qualified on the specific aircraft, who directly observes the flight crew and in-flight events and reports those observations. For those operations that include class II navigation or special use airspace, a navigation specialist or an experienced pilot-qualified inspector who is knowledgeable in class II operations and the specific special use airspace should be a member of the test team.

A qualified Ground Operations inspector should also be included to observe the operational control functions.

The majority of en route flights should also be observed by maintenance and Avionics inspectors on board the aircraft. In addition to the in-flight activities, operations and Airworthiness inspectors must also evaluate flight initiation, servicing and unscheduled maintenance, and flight termination activities. While representative en route flights are being conducted, other inspectors should observe the applicant's activities at appropriate ground facilities, such as operational or maintenance control centers.

NOTE: If traveling outside Nigeria, the CPM is responsible for ensuring all NCAA personnel involved have the required authorizations (e.g. passport, country visa etc.)



1) Qualified Operations Inspector

- a) Proving flights. A qualified operations inspector who, in order of preferences, is:
- Aircraft type-rated and current,
 - Aircraft type-rated and not current, or
 - An aviation safety inspector (ASI)- Operations, type-rated in an aircraft within the same group (group I or II) being used in the proving flight and in possession of a “Best Qualified” letter of authorization (LOA).
- b) Validation flights. A qualified operations inspector is an inspector who, in order of preference, is:
- Aircraft typed-rated and current,
 - Aircraft type-rated and not current,
 - Aircraft group qualified, or
 - An ASI in possessions of a “Best Qualified” LOA (see A3) below).

NOTE: For validation testing (with the exception of NCAA navigation specialists conducting an international validation test), the qualified operations inspector must be familiar with the testing being conducted. For Extended Operations (ETOPS/EDTO) validations flights, the qualified operations inspector should be type- rated (not necessarily current) in the specific aircraft, or type- rated in another multi-engine ETOPS/EDTO-approved aircraft, and be thoroughly familiar with the ETOPS/EDTO requirements.

(2) Ground Operations (Dispatch) - Qualified Inspectors

Proving flights. A Qualified Ground Operations inspector is an inspector who, in order of preference:

- Has completed the current approved ASI aircraft dispatch course and completed dispatchers ground training at the operator where proving flights are being conducted;
- Has completed the approved ASI course and has reviewed company material to include Dispatch Procedures Manual, Flight Operations Manual, Minimum Equipment List (MEL), Airplane Flight and Operations Manuals: or
- Has an NCAA Flight Dispatcher license, has previous dispatch experience, and has reviewed company materials to include Dispatch Procedures Manual, Flight Operations Manual, MEL, and Airplane Flight and Operations Manuals.



(3) Cabin Safety - Qualified Inspectors

For all in-flight scenarios conducted during proving flights, a qualified operations inspector must be present in the aircraft. A cabin safety Inspector (C SI) should serve as the focal point for all in-flight scenarios involving flight attendants. However, for flight involving repositioning of inspectors for proving or validation ground scenarios (i.e. flights that do not include in-flight scenarios), a qualified operations inspector does not need to be onboard the aircraft, provided the flight crew is type-rated, current, and has completed all training requirements, as applicable for the type of operation.

(iii) **Familiarisation.** All members of the Authority inspection team must become familiar with the pertinent procedures and policies from the applicant's operations Manual and maintenance control manual.

b) Preliminary Co-ordination. The demonstration team and the applicant must reach a common understanding of what the applicant must do, what role the Authority will play, and what reports and documents must be prepared during the testing process. Both the team and the applicant must research applicable regulatory and advisory material.

8.2 Phase Two

Phase two is initiated when the applicant submits the test plan to the Authority for evaluation. During this phase, the team leader must ensure that the plan is complete and in an acceptable format before a thorough review and analysis can be conducted.

8.3 Phase Three

8.3.1 Phase three is initiated when the team starts an in-depth review and analysis of the applicant's test plan for regulatory compliance, safe operating practices, logic of sequence, and other areas (such as training programmes, flight crew and flight operations officer qualifications, acceptable participants, and schedules). During this phase, the Authority must plan to co-ordinate its activities with the demonstrations that the applicant will conduct during phase four.

8.3.2 **Team Leader.** The team leader's responsibilities include the following:

- a) Notifying the Authority of demonstration flight dates, times, and locations;
- b) Assigning appropriate sections of the test plan to inspectors for review and comment;
- c) Co-ordinating with aviation security (as necessary) to obtain security inspector assistance for evaluating specific areas, such as dangerous goods and passenger screening;
- d) Ensuring that administrative requirements such as visas and diplomatic clearances are obtained in a timely manner e.g. travel arrangements, meals;
- e) Facilitating the development of test scenarios for the demonstration flights.

8.3.3 **Team Members.** Team members are responsible for performing assigned tasks, keeping the team leader informed of all actions, and ensuring that the team leader concurs with all agreements made with the applicant. In addition, team members are responsible for recording each activity accurately and completely in their reports.



8.4 Phase Four

8.4.1 Phase four is the major phase of the test process. For demonstration flights, the applicant will conduct the en-route flight segment and the maintenance test portion of the demonstration plan. In the case of special-demonstration flights, the applicant will conduct specific operations to collect data for either special-demonstration or the Authority observation purposes.

8.4.2 Phase four is concluded when the demonstration team is satisfied that all test objectives have been achieved or that the applicant is unable to complete them satisfactorily.

8.5 Phase Five

Phase five is accomplished after the successful completion or termination of the demonstration or special-demonstration flights. In this phase, the Authority demonstration team recommends the granting of approval and issues the appropriate operation specifications, or recommend that a letter of disapproval be sent to the applicant. In either case, the team leader's final action is to complete the report.

9.0 DEMONSTRATION FLIGHT TEST REQUIREMENTS

9.1 General

Each applicant must demonstrate the ability to operate safely by conducting demonstration flights in accordance with the operating, maintenance, aircraft dispatch and monitoring or flight following requirements of Part 8 of the Nigeria Civil Aviation Regulations and Part 9 of the Nigeria Civil Aviation Regulations. Demonstration flights must be conducted in a manner that closely simulates the regulatory conditions that will apply after approval has been granted.

9.1.1 **Types of Flights.** The only types of flights that can be credited towards demonstration flight requirements are described in the following subparagraphs:

- a) **Representative En-route Flights.** Representative en-route flights are conducted in compliance with Part 8 and Part 9 of the Nigeria Civil Aviation Regulations including rules applicable to AOC security and dangerous goods requirements. Before an applicant may conduct these flights, the demonstration team must be satisfied that the phase three review of the applicant's plan has been completed;
- b) **Ferry Flights.** Ferry flights conducted under Part 8 of the Nigeria Civil Aviation Regulations and approved by the Authority may be credited towards demonstration flight requirements. To obtain the approval, the applicant must show that no feature, characteristic, or condition of the aircraft would make it unsafe when operated in accordance with Part 8 of the Nigeria Civil Aviation Regulations;
- c) **Training Flights.** Training flights may be credited towards demonstration flight requirements, provided that the Authority inspector observes each flight;
- d) **Positioning Flights.** A positioning flight is a flight conducted to move an aeroplane over a non-representative route, such as from the aircraft factory to the applicant's main base.



9.1.2 **Additional Requirements.** To credit ferry hours, hours flown in provisionally certificated aircraft, or training flight hours towards demonstration flight requirements, the applicant's phase three review of the applicant's plan must have been completed. Flights must be conducted in accordance with the following:

- a) Operations Manual under Part 9 of the Nigeria Civil Aviation Regulations;
- b) Maintenance Control Manual (as applicable) under the Civil Aviation (Air Operator Certification and Administration) Regulations;
- c) Inspection or Maintenance programmes under Part 9 of the Nigeria Civil Aviation Regulations;
- d) Minimum Equipment List (MEL) and Configuration Deviation List (CDL) under Part 9 of the Nigeria Civil Aviation Regulations;
- e) Operations control requirements, operations supervision and monitoring or flight under Part 8 and Part 9 of the Nigeria Civil Aviation Regulations;
- f) Operations and maintenance record-keeping requirements under Part 8 and Part 9 of the Nigeria Civil Aviation Regulations.

9.2 Situations Requiring Demonstration Flights

9.2.1 Regulation 9.2.3.6 of the Nigeria Civil Aviation Regulations requires aircraft demonstration flights for the following situations:

- a) During the air operator certification process of an applicant proposing to operate an aircraft type in commercial air transport operations under Part 9 of the Nigeria Civil Aviation Regulations;
- b) When an air operator proposes to operate an aircraft type that the applicant has not previously used;
- c) When an air operator proposes to use an aircraft that has been materially altered in design;
- d) When an operator applies for a kind of operation not currently authorised by the operator's operation specifications (For example, an operator may request to transition from charter passenger to scheduled passenger operations, or from charter cargo, to charter passengers and cargo operations).

9.3 AOC Applicant Demonstration Flight Requirements

9.3.1 Requirements for newly manufactured aircraft, aircraft new to the applicant, and materially altered aircraft are as follows:

- a) **Aircraft New to the Applicant.** IS 9.9.2.3.6(g) of the Nigeria Civil Aviation Regulations requires that 50 hours of demonstration flights (unless the Authority determines that a satisfactory level of proficiency has been demonstrated in fewer hours) are conducted by an applicant proposing to use a type of aircraft for the first time;
- b) **Materially Altered Aircraft.** IS 9.9.2.3.6(g) of the Nigeria Civil Aviation Regulations requires an applicant to conduct at least 50 hours of demonstration flights (unless the Authority determines that a satisfactory level of proficiency has been demonstrated in fewer hours) when the type of aircraft to be used has been materially altered in design. Examples of materially altering an aircraft design include the following:
 - (i) Installation of engines that are a different type from those originally installed on the aircraft for type certification (for example, reciprocating powered engines to turbine



- powered engines, or low bypass jet engines to high bypass jet engines;
 - (ii) Any design alterations that significantly affect flight characteristics.
- c) **New Kind of Operation.** IS 9.2.3.6(g) of the Nigeria Civil Aviation Regulations requires an operator using an aeroplane that it has not previously demonstrated in that kind of operation to conduct 50 hours of demonstration flights (unless the Authority determines that a satisfactory level of proficiency has been demonstrated in fewer hours). Kind of operation is defined as scheduled, charter, passengers, cargo, passengers and cargo operations;
- d) **Night-time Requirements.** In situations where applicants are required by IS 9.2.3.6(g) of the Nigeria Civil Aviation Regulations to conduct 50 hours of aircraft demonstration flights (unless the Authority determines that a satisfactory level of proficiency has been demonstrated in fewer hours), at least 5 of those demonstration flight hours must be conducted at night.

9.4 Exemptions to Demonstration Flight Requirements

- 9.4.1 Regulation 1.4.1 of the Nigeria Civil Aviation Regulations provides for an air operator to apply to the Authority for exemption to Regulation 9.2.3.6 of the Nigeria Civil Aviation Regulations and the Authority agrees that full compliance with the regulation is unnecessary.
- 9.4.2 The applicant must comply with all other demonstration flight requirements.

9.5 Representative Number of Flights Into en Route Aerodromes

- 9.5.1 IS.9.2.3.6 (g) (4) of the Nigeria Civil Aviation Regulations requires an applicant to conduct a representative number of demonstration flights into en-route aerodromes. These are aerodromes that the applicant plans to use in scheduled operations or is likely to use in non-scheduled operations. Representative aerodromes must be within the applicant's proposed areas of en-route operations.
- 9.5.2 If an applicant plans to conduct overseas and/or international operations, the applicant must conduct demonstration flights into domestic, overseas, and/or international areas. The Authority demonstration team must make a determination of what constitutes a representative aerodrome or area of en-route operation (and the number of representative aerodromes and areas). This determination should include a consideration of factors pertinent to the proposed type of operation. Some of these factors are the same as those considered when approving a reduction to the demonstration flight hours.

9.6 Carriage of Passengers and Cargo

- 9.6.1 Carriage of revenue passengers on demonstration flights is prohibited by IS.9.2.3.6 (h) of the Nigeria Civil Aviation Regulations). The carriage of revenue cargo should be approved for any applicant that has an Air Transport Licence to carry revenue cargo.
- 9.6.2 It is Authority policy to encourage the carriage of cargo on representative en-route demonstration flights, when possible. The carriage of cargo allows for a more comprehensive test of the applicant's capabilities.



9.7 Crew Member Qualifications for Demonstration Flights

- 9.7.1 Training flights may be credited towards demonstration flight requirements, provided crew members are undergoing training according to the applicant's initially approved flight training curriculum.
- 9.7.2 Ferry flights may be credited towards demonstration flights, provided crew members and initial cadre check pilots have completed applicable proficiency, competency, and type rating checks.
- 9.7.3 Line checks and operating experience (OE) may be accomplished on demonstration flights.

10.0 PLANNING THE DEMONSTRATION FLIGHT

10.1 Applicant's Plan for Demonstration Flights

10.1.1 An applicant must submit a demonstration flight plan at least 10 days before the date of the intended demonstration flight (including training or ferry flights) that the applicant desires to have credited toward the demonstration flight test requirements. Any subsequent change to the plan must be co-ordinated with the demonstration team. The plan must contain at least the following information:

- a) Identification of the operator co-ordinator who will serve as the primary demonstration flight spokesperson;
- b) A detailed schedule of all proposed flights, including dates, times, and aerodromes to be used. The schedule should clearly differentiate which flights will be conducted for training, ferry, or representative en-route flights;

NOTE: *The Authority requires 50 percent of the scheduled demonstration flight hours to consist of representative en-route flights over routes and into aerodromes which the applicant intends to serve.*

- c) A list of names and positions of the crew members who will be participating on each flight;
- d) A list of names, titles, and operator affiliations of non-crew member personnel whom the applicant intends to have on board each flight;
- e) Any other information that the demonstration team determines is necessary to properly plan and conduct the demonstration flights.

10.2 Applicant's Plan for Reduced Demonstration Flight Hours

If the applicant requests an exemption to the number of demonstration flight test hours required by IS 9.9.2.3.6 (g) of the Nigeria Civil Aviation Regulations, the request must be made by letter. The letter must contain the applicant's plan, which is described in the previous paragraph, and it must include the justification information specified in Paragraph 12.0 of this Order.

10.3 Authority Planning for Demonstration Flights

10.3.1 **Early Planning.** Development and implementation of the Authority's plan for observation and evaluation is of crucial importance to any demonstration flight. The Authority demonstration team should



begin planning in phase one of the demonstration flight process. The Authority planning should be completed as soon as possible after the demonstration team receives the applicant's plan.

10.3.2 **Initial Review.** The demonstration 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 Authority to adequately observe and evaluate the applicant's overall abilities. This review should be accomplished within 5 working days after receipt of the applicant's plan. Based on the results of this initial review, one of the following actions must be taken:

- a) **Accept the Plan.** If the applicant's plan is acceptable and satisfies regulatory requirements, the demonstration team leader should notify the applicant in writing. Any changes should be negotiated and mutually agreed upon at this time. If the applicant's plan includes a request for exemption from the required number of demonstration flight hours, formal acceptance by letter must follow. This letter must include a statement verifying that an exemption to the appropriate Civil Aviation Regulations is granted;
- b) **Return the Plan with Explanation.** If the applicant's plan lacks appropriate documentation or does not satisfy regulatory requirements, it must be returned to the applicant as soon as possible. A letter that briefly describes the principal reasons for the plan's return should accompany the plan.

NOTE: *When the inspection team denies a request for exemption, the denial must be done by letter. This letter should contain any suggestions the team may have that would make the plan acceptable.*

10.4 Other Demonstration Flight Participants

10.4.1 IS 9.9.2.3.6 (h) of the Nigeria Civil Aviation Regulations limits the individuals who can participate in the in-flight portion of the demonstration flights to those who are required by the applicant to conduct the demonstration and to those "designated by the Authority."

10.4.2 **Government Participants.** During the demonstration phase, an applicant exercises all aspects of its operation, such as flight control, communications, flight planning, and line maintenance. It is essential that this phase be devoid of distractions created by non essential personnel. The demonstration team may authorise the participation of any government or contractor employee, including those from other agencies. These personnel should be limited to those having specific tasks to perform and to inspectors accomplishing on the job training.

10.4.3 **The Applicant's Participants.** Many situations occur during demonstration flights that require decisions by operator supervisory personnel to correct deficiencies observed during the flights. Therefore, the applicant's participants should include the following personnel:

- a) Initial cadre Pilots and Check pilots;
- b) Directors of operations and maintenance (if applicable);
- c) Those supervisory personnel needed to act on behalf of the operator if actions are required to resolve discrepancies.

10.4.4 **Other Personnel.** Other personnel, such as representatives of engine and aircraft manufacturers, may be authorised to participate if their presence materially enhances the process.



10.5 Co-ordination

During the development of the Authority plan to conduct demonstration flights, the Authority demonstration flight team leader is responsible for co-ordinating all parts of the proposed tests. The applicant's representatives and crew members, and Authority participants, must understand and agree on which tasks must be accomplished to show compliance with regulatory requirements. The Authority demonstration test team leader should notify the Director responsible for Safety Oversight and Director General/Managing Director of Civil Aviation of demonstration flight dates, times, and locations.

10.6 Pre-Demonstration Flight Test Meeting (Authority Demonstration Team)

10.6.1 The demonstration team leader shall conduct as many pre-demonstration flight test meetings as necessary to accomplish the following: request for exemption from the required number of demonstration flight hours, formal acceptance by letter must follow. This letter must include a statement verifying that an exemption to the appropriate Civil Aviation Regulations is granted;

- a) **Provide Schedules and Assignments.** The demonstration team leader shall provide specific team members with schedules and assignments for the demonstration flights (including flight times, locations, inspections, and reporting requirements);
- b) **Evaluate the Applicant's Capabilities.** The demonstration team leader shall establish in-flight and ground scenarios, simulated emergencies, and other means of testing the ability of crew members and the applicant to cope with actual operational contingencies independently and safely. The use of such scenarios is effective when evaluating the applicant's overall and specific abilities:
 - (i) **In-flight and Ground Scenarios.** Scenarios must be clearly understood by all team members in terms of individual roles and responsibilities. The demonstration flight team leader, however, must ensure that the applicant is not encumbered with so many simulated scenarios that a proper evaluation of its proposed routine operation is inhibited;
 - (aa) **Emergency Scenarios.** Since the primary purpose of demonstration flights is to ensure basic compliance with the regulations and safe operating practices during routine operations, the demonstration flight team leader shall not permit compound emergency scenarios to occur. When other agencies, such as air traffic control (ATC) and aerodrome authorities, need to be involved for safety reasons, the demonstration flight team leader must ensure that all scenarios are well co-ordinated. Should an actual emergency occur, all simulated scenarios shall be terminated;
 - (ii) **Examples of Typical Scenarios.** The following scenarios may be useful for evaluating the applicant's capabilities:
 - (aa) Diversion to alternate aerodromes for reasons such as weather or maintenance. This tests the operator's communications, maintenance, and other operational capabilities);
 - (bb) Minimum equipment list (MEL) or Configuration Deviation List (CDL)

situations (This tests the crew members' understanding of specific operational limitations and the operator's operations and maintenance procedures. (For example, dispatching with a simulated inoperative generator tests the operator's ability to comply with the operational and maintenance provisions of the MEL);

- (cc) Performance problems (This requires the flight crew and/or flight operations control personnel, to demonstrate competency and knowledge of items, such as aircraft performance, aerodrome analysis programmes, and alternative operator procedures. For example, simulating an inoperative antiskid or thrust reverser while operating on contaminated runways (ice, slush, or snow) tests the operator's ability to deal with performance issues);
- (dd) Security and dangerous goods situations (This requires the flight and cabin crew members and other operator personnel to function in accordance with established operator procedures and the Civil Aviation Regulations);

NOTE: Hijack scenarios are prohibited during demonstration flights. Inspectors or security inspectors must examine flight and cabin crew members knowledge and operator procedures through other methods. The operator's anti-hijack programme shall not be exercised during demonstration flights.

- (ee) Situations that exercise dispatch and monitoring or flight following centres (This tests communications, weather information dissemination, and other flight information distribution abilities. An effective means for testing this capability is to position an inspector who has specialised dispatch knowledge in the flight control or flight locating facility and (at a prearranged time) to initiate a scenario such as adverse destination weather that would require a diversion. This action tests the communications and weather reporting capability of the facility and also the operator's procedural contingencies as demonstrated by the flight crew);
- (ff) Maintenance scenarios (A maintenance problem simulated at any location that the operator operates into should be planned, however minor, to test the operator's ability to communicate and resolve problems that flight crews may experience. Maintenance scenarios should be flexible enough to accommodate any real maintenance problems that could arise during a demonstration flight. Examples of the many possible maintenance problems include the following: an indicator out, a minor fluid leak, or the need to determine tire wear);
- (gg) Simulated aircraft emergencies, such as an engine failure (This tests the flight crew's knowledge and competency in handling emergency situations. It also tests operator communications, maintenance, and other operational capabilities. Under no circumstances shall an inspector require an actual engine shutdown. Typically, this situation would result in a diversion). Other aircraft simulated emergencies are:
 - (i) Simulated incapacitated passengers in need of immediate medical assistance;
 - (ii) Simulated lavatory fire;
 - (iii) Simulated loss of pressurisation;
 - (iv) Simulated landing gear extension or retraction problems.



11.0 DEMONSTRATION FLIGHTS: THE DEMONSTRATION PHASE

11.1 General

The demonstration phase consists of the observation and evaluation of the applicant by Authority inspectors during demonstration flights. Demonstration flights consist of en-route flights and other acceptable flights. These flights are described in more detail in the following paragraphs.

11.2 Conduct of En-Route Flights

11.2.1 En-route flights (representative en-route) closely simulate the routine line operations that the applicant proposes to conduct. All flights in the en-route segment must be observed and evaluated either in flight or at ground facilities. When an exemption for a reduced number of demonstration flight test hours decreases the required number of hours by 50 percent or more, all en-route flights must be observed and evaluated by the Authority inspectors on board the aircraft.

11.2.2 **Inspection Team Composition.** The on board team of Authority inspectors must include an operations inspector, qualified on the specific aircraft or as designated by the Authority, who directly observes the flight crew and in-flight events, and reports those observations. For those operations that include flight through designated special areas, a flight operations inspector who is knowledgeable in such operations should be a member of the demonstration team. A flight operations inspector should also observe flight operations officers, flight followers and operational control functions. Airworthiness inspectors on board the aircraft should also observe the majority of en-route flights. In addition to the in-flight activities, operations and airworthiness inspectors must also evaluate flight initiation, servicing and unscheduled maintenance, and flight termination activities. While representative en-route flights are being conducted, other inspectors should observe the applicant's activities at appropriate ground facilities, such as operational or maintenance control centres.

11.2.3 **Pre-demonstration Flight Test Briefing with Applicant.** The demonstration team leader shall conduct briefings with the applicant daily or as necessary to establish what the demonstration team expects the applicant to accomplish during each demonstration flight. Briefings shall include at least the following items:

- a) The purpose of the demonstration flight test;
- b) Status of the inspector in the jump seat;
- c) Status of the on-board team of inspectors (They shall be treated as passengers);
- d) Changing status of passenger to Authority inspector when an Authority credential is revealed;
- e) How simulated scenarios will be initiated, and what action is expected from the applicant;
- f) How to react to an actual emergency during the demonstration flight test;
- g) Copies of flight plans, load manifests, and other documents that are expected and that should be provided;
- h) How maintenance discrepancies will be treated or terminated;
- i) Debriefing at the conclusion of each day unless major problems require it sooner (Major discrepancies must be resolved before the demonstration flight test may resume the following day).



11.2.4 **Determining Applicant Competency.** The Authority plan for inspecting and evaluating an applicant's competency during the en-route segment should include scenarios and other testing mechanisms designed to test the applicant's effectiveness in each of the following five general areas:

- (a) Flight crew;
- (b) Cabin crew members;
- (c) Aerodrome/station facilities;
- (d) Operational control;
- (e) Operator procedures.

11.2.5 **Flight crew members.** The Authority Demonstration Team shall evaluate the competency and ability of the flight crew members throughout the en-route segment. Examples of areas to be inspected and evaluated are as follows:

- a) Flight crew members qualification;
- b) Aircraft performance (including flight characteristics);
- c) Aircraft flight manual limitations;
- d) Aircraft normal, abnormal, and emergency procedures;
- e) Aircraft systems and equipment;
- f) Aerodrome data (including knowledge of required runway lengths, field elevation, facilities, and gates or parking areas);
- g) Flight management and cruise control;
- h) Operator manuals and procedures;
- i) Flight crew members discipline, situational awareness, and management;
- j) Flight crew members vigilance and collision avoidance procedures;
- k) Knowledge of en-route structure, long range navigation procedures (if applicable), and unique en-route and area of operation requirements;
- l) Knowledge of Minimum Equipment List (MEL) and Configuration Deviation List (CDL) procedures;
- m) Knowledge of, and competency in, departure and arrival procedures;
- n) Air/ground communications with the operator and also with air traffic control (ATC);
- o) Check pilot performance and effectiveness;
- p) Adequacy of aircraft training programme as demonstrated by the flight members;
- q) Cabin crew member and passenger briefings.

11.2.6 **Cabin Crew Members.** The Demonstration Team shall evaluate the cabin crew member competency and ability during the en-route segment. Examples of areas to be inspected and evaluated are as follows:

- a) Competency in all normal procedures associated with their assigned positions;
- b) Knowledge of emergency procedures (including evacuation, fire fighting, pressurization problems, passenger illness or injury, baggage in the cabin, and exit seating);
- c) Knowledge of applicable manual procedures pertaining to duties and responsibilities;
- d) Knowledge of procedures to follow when a crew member is incapacitated;
- e) Knowledge of verbal and non-verbal communication procedures between the cabin and cockpit (such as the number of chimes indicating imminent takeoff or landing);
- f) Training programme effectiveness;
- g) Cockpit co-ordination.



11.2.7 **Aerodrome/Station Facilities.** The Demonstration Team shall determine whether the aerodromes and the applicant's station facilities are adequate to support the specific aircraft and type of operation proposed by evaluating the following:

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

11.2.8 **Dispatch and Monitoring or Flight Following Centres.** Examples of items to be inspected and evaluated at applicable locations are as follows:

- a) Flight planning;
- b) Dispatch and flight release procedures;
- c) Aerodrome and route information collection and dissemination;
- d) Drift down and diversionary procedures;
- e) Weather information collection and dissemination;
- f) Dispatch and flight control personnel competency;
- g) Communications capability with the operator, with the aircraft, and with other agencies;
- h) Load control (for example, the accuracy of the passenger count and the ability to convey mass and balance changes to and from the aircraft before takeoff);
- i) Scheduling;
- j) Flight and cabin crew members flight and rest time;
- k) Manuals;
- l) High minimums Pilot in Command;
- m) Maintenance control (procedures and records);
- n) Flight and cabin crew members' briefings.

11.2.9 **Operator Procedures.** Examples of operator procedures and programmes to be inspected and evaluated are as follows:

- a) Aircraft operations;
- b) Ground operations/maintenance personnel;
- c) Fuelling facilities and equipment;
- d) Security (public protection and restricted articles);
- e) Adequacy of training programmes;
- f) MEL and CDL procedures;
- g) Procedures for accomplishing unscheduled and scheduled maintenance;
- h) Dangerous Goods;
- i) Ability to conduct operations at unscheduled stops or alternate aerodromes.



11.3 Conduct of other Flights

11.3.1 Other flights, such as training, positioning, or ferry flights may be counted toward demonstration flight hours. The Authority observation of these flights allows inspection of the applicant's training, maintenance, and other programmes.

NOTE: All training flights that are to be credited toward the demonstration flight test requirements must be observed by a qualified flight operations inspector.

11.3.2 **En-route Training.** During the en-route segment, the operator trains its initial cadre check pilot, instructors, and flight crew members. Flight crew members also gain operating experience (OE) so that commercial air transport operations may begin with minimum delay after certification. Since the Authority inspectors function as observers during this phase, it is not appropriate for them to require simulated in-flight scenarios that would either disrupt pilot training or delay these flights.

11.3.3 **Cabin Crew Member Training.** Cabin crew member training may be conducted on board flights when cockpit and cabin crew member training goals are compatible.

11.4 Termination of the En-Route Segment

11.4.1 The demonstration team may conclude the demonstration flight as follows:

- a) **Completion as Planned.** Complete the planned demonstration flight schedule without significant change;
- b) **Early Completion.** The tests may be concluded sooner than planned when all test objectives have been met and the applicant has demonstrated a repetitive ability to conduct line operations in compliance with regulations and safe operating practices. The team should be satisfied that the applicant would continue to function in a satisfactory manner. Before authorising an early completion of the demonstration flight(s), the team shall obtain the concurrence of the person responsible for safety oversight. The team must document the decision to terminate the en-route segment earlier than planned. This documentation shall become a part of the demonstration flight report;
- c) **Extension.** The tests may be extended beyond the point of scheduled completion. This action should be 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 additional hours;
- d) **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:
 - (i) The team leader shall immediately inform the person responsible for safety oversight of the reasons for the decision and receive his concurrence before concluding testing;
 - (ii) The team leader shall then notify the applicant of the decision. A letter confirming the reasons for this decision shall be forwarded to the applicant. The letter should list deficient areas and specify corrective actions that must be taken before further en-



route testing may continue. This letter should also specify that a new demonstration flight test plan will have to be developed by the applicant and submitted to the Authority before further en-route testing may resume (see figure 001).

**EXAMPLE OF LETTER TO APPLICANT TERMINATING DEMONSTRATION FLIGHT TEST**

Mr. Kiti Ondure
Director of Operations
ABC Airways
P. O. Box xxx
Ikeja

Dear Mr. Ondure:

This letter is to inform you that effective 12 March 2007 ABC demonstration flights with the B737 aircraft are hereby terminated by the Authority due to deficiencies that prevent ABC from achieving the standards as specified in Regulation 2.3.6 of Part 9 of the Nigeria Civil Aviation Regulations. Specifically, ATC failed to demonstrate compliance in the following three areas:

1. Flight Release: During two flights conducted on 10 March 2007, ABC flight operations officers did not provide the PIC with all available current reports or information on aerodrome conditions at destination and alternate aerodromes [Regulation 2.1.8 of Part 8 of the Nigeria Civil Aviation Regulations].
2. Required Cabin Crew members: On 11 March 2007, ABC attempted to operate flight number XY 224 without the required complement of cabin crew members [Regulation 3.1.7 of Part 9 of the Nigeria Civil Aviation Regulations]
3. Maintenance: On 12 March 2007 ABC did not accomplish the pre-flight inspection of flight number KC 246 in accordance with procedures established in the operator's maintenance control manual [Regulation 3.2.4 of Part 9 of the Nigeria Civil Aviation Regulations].

The Authority has determined that, in view of the above discrepancies, the continuation of demonstration flights is unwarranted and would serve no useful purpose. Before ABC may commence any additional demonstration flights for Authority consideration and evaluation, ABC must show that it has corrected the above deficiencies to the satisfaction of the Authority and submit another demonstration flight test plan and proposed schedule.

Yours Sincerely,

For: Director General

FIGURE 001



12.0 REPORTING PROCEDURES

12.1 Report Construction

12.1.1 The demonstration team shall create a report of demonstration or special-demonstration flights.

12.1.2 **Opening a Master Record.** When a demonstration team is formed, the team leader shall ensure that a master record is opened. This record will remain open until the team completes its assignment:

- a) When the master record is opened, the demonstration team leader shall ensure that a brief statement of the project's purpose is entered. The demonstration team shall ensure that appropriate explanatory or descriptive information is entered;
- b) Each job function performed by a team member shall be reported;
- c) As each of the five phases of the test process is completed, the team leader shall ensure that a comment showing the date the phase was completed is placed on the master record. This procedure will enable Director General/ to determine the status of the project.

12.1.3 **Closing the Master Record.** After the team has completed the project, the team leader shall ensure that a closing summary is prepared. The following are suggested items for the summary:

- a) Total test hours planned and actually flown;
- b) Major deficiencies that required significant corrective actions, and nature of the corrections;
- c) Major delays encountered in completing the project and reasons for those delays.

13.0 REQUESTS FOR EXEMPTION OF DEMONSTRATION FLIGHT TEST HOURS

13.1 General

13.1.1 The Civil Aviation Regulations allow reduction of the demonstration flight hours specified in the Regulations. Improvements in technology, training methods, communications, and established safe operating practices may enable an applicant to demonstrate compliance with applicable regulatory requirements in less time than the hours specified.

13.1.2 As part of the plan, the applicant may request an exemption from the applicable regulatory requirements. The request must explain how the applicant intends to demonstrate regulatory compliance with a reduced hour programme. If the applicant's plan contains a request for reduction, it must include at least the following additional information:

- a) **Total Hours of Operation.** The plan must include the total number of hours that the applicant proposes to fly in the reduced programme;
- b) **Flight Experience Resume.** The plan must include a flight experience resume for each flight crew member that the applicant intends to use during the demonstration flight. This resume must include the following:
 - (i) Licences;
 - (ii) Total flight time;



- (iii) Any previous experience in the aircraft being tested;
 - (iv) Years of experience with the applicant being tested and any other experience in a
 - (v) Other transport experience, such as military;
- c) **Justification Statement.** The statement must contain, but is not limited to, the following:
- (i) Operator experience with operations as an AOC;
 - (ii) Operator experience with aircraft of the same group or type;
 - (iii) Operator experience with the aerodromes and areas of en-route operation into which the proposed aircraft will operate;
- d) **Other information.** The plan must include any other information requested by either the FOIs, demonstration team leader (DTL) or the certification project manager (CPM) or any information that the applicant believes will be useful in justifying the reduction. Other information could include night-time routes to be flown or special aerodromes to be observed.

13.2 Evaluating the Applicant's Request

13.2.1 **Evaluation Considerations** – The following are topics that the demonstration team should consider when evaluating the request:

- a) If the aircraft has not been used previously in commercial air transportation by a Nigerian air operator, to what extent have foreign operators operated the aircraft?
- b) For newly certificated aircraft, how familiar is the demonstration team with the aircraft?
- c) For aircraft that are new to the applicant but that have been proven previously in operations under Part 8 of the Nigeria Civil Aviation Regulations, to what extent is the overall operation affected by the new aircraft?
- d) To what extent is the new aircraft substantially different from aircraft previously flown by the applicant (such as changing from turboprop to turbojet, un-pressurised to pressurised or narrow body to wide body)?
- e) To what extent is the applicant's route structure affected (for example, inauguration of international routes and use of special navigation equipment)?
- f) What is the experience level of personnel involved in the operation (for example, flight and cabin crew members' previous experience in the operation of this type of aircraft)?
- g) How does the applicant propose to conduct the demonstration flights (for example, a few long ranges versus several short range flights)?
- h) What level of management experience exists in the operator with this type or similar type or make of aircraft?

13.2.2 **Flight Hour Reduction Guide.** Demonstration teams should use figure 002 as a guide to determine whether a reduced flight hour programme is suitable.

**FLIGHT HOUR REDUCTION GUIDE**

SITUATION	PERCENT REDUCTION
New aircraft not previously proven by another commercial air transport operator	0%
New operator having no management experience with aircraft category and class	0%
Existing operator having no management experience with aircraft category and class	10%
New operator having management experience with aircraft category and class	10%
Existing operator having management experience with same category and class	25%

FIGURE 002**13.3 Co-Ordination Requirements and Approval Authority for Demonstration Flight Exemptions**

13.3.1 Any exemptions granted in response to an applicant's request for a reduction in the required demonstration flight hours shall first be co-ordinated with Director General.

13.3.2 **Letter of Approval/Denial of Exemption.** If the request for an exemption to the required number of demonstration flight hours is approved, the applicant shall be informed by letter that the exemption is approved. The letter approving the exemption must also indicate acceptance of the applicant's demonstration flight plan. If the request is denied, the applicant shall be informed of the decision by a letter that explains the reasons for denial.

13.3.3 **Conditions of Approval.** When an exemption is approved, the demonstration team must ensure that the applicant understands the following: that the exemption specifies the minimum number of demonstration flight hours that must be planned and that additional demonstration flights may be required, should the applicant fail to demonstrate the ability to comply with all applicable regulations. The applicant should also be advised that potential delays due to problems such as maintenance, additional crew member training requirements, and weather, may extend the demonstration flight schedule, which could affect the date the applicant intends to start revenue operations.

14.0 SPECIAL DEMONSTRATION REQUIREMENTS**14.1 General**

14.1.1 This section contains guidance to be used by inspectors for conducting special-demonstration flights. This guidance supplements the general guidance of paragraph 3 and the reporting guidance of paragraph 7 of this Order.

14.1.2 **Regulatory Background.** Regulations, such as Regulation 8.8.1.21 of the Nigeria Civil Aviation Regulations require applicants proposing to operate in designated special areas or using



specialized navigation systems to demonstrate to the satisfaction of the Authority, the operator's.

ability to conduct such operations safely and in compliance with regulatory requirements. One process by which an applicant demonstrates this capability to the Authority has come to be known as special-demonstration flights:

- (a) **Special Demonstration Flights.** The most common method used by the Authority to validate an applicant's capability is to observe the applicant conduct flight operations;
- (b) **Special Demonstration Testing.** The Regulations do not require an applicant to conduct actual flights when flights are not necessary for safety, considering the availability of adequate facilities and of able personnel to conduct the operation. Special-demonstration flights are expensive for the Authority and for the applicant. Inspectors should, therefore, avoid requiring applicants to conduct flights when they are not required. This section contains guidelines for teams to use in making this determination. In the interest of standardised treatment, the Director General shall concur with team recommendations before teams deviate from the guidelines of this section;
- (c) **Areas of Emphasis.** When the Authority conducts special-demonstration testing with or without an actual flight, an in-depth review is conducted of the applicable portions of the applicant's proposed procedures (especially flight following), training programmes, manuals, facilities, and maintenance programmes.

NOTE: *The term, "applicant," as used in this Section, means either a candidate applying for an air operator certificate or air operator certificate holder requesting additional operating authorisation.*

14.1.3 Combined Demonstration and Special-Demonstration Flights. Demonstration flights are conducted to show the applicant's capability to operate a specific type of aircraft. Special-demonstration flights are conducted so that an applicant can demonstrate its capability to operate over specific routes in designated special areas (MNPS, North Pacific Airspace - NOPAC, areas of known magnetic unreliability, etc.) while using specific navigational equipment, or to operate within specified limitations in critical areas. Though demonstration and special-demonstration flights satisfy different regulatory requirements, it is acceptable for applicants to conduct both tests simultaneously.

14.2 Situations Requiring Special-Demonstration Flights or Tests

14.2.1 This paragraph contains guidance for inspectors and demonstration team leaders concerning those situations where special-demonstration flights or tests are required for compliance with Regulation 2.3.6(b) of Part 9 of the Nigeria Civil Aviation Regulations.

14.2.2 Definitions:

Class I Navigation. Class I navigation is any en-route flight operation or portion of an operation that is conducted entirely within the designated operational service volumes [or International Civil Aviation Organisation (ICAO) equivalents] of ICAO standard airway navigation facilities (VOR, VOR/DME, NDB). Class I navigation also includes en route flight operations over routes



designated with an —MAGAP (or ICAO equivalent).

Class II Navigation. Class II navigation is any en-route flight operation, which is not, defined as class I navigation. Class II navigation is any en-route flight operation or portion of an en-route flight operation (irrespective of the means of navigation) which takes place outside (beyond) the designated operational service volume (or ICAO equivalents) of ICAO standard airway navigation facilities (VOR, VOR/DME, NDB).

- 14.2.3 **Operations Outside Nigerian Airspace.** When an applicant plans to operate to a destination outside of this airspace, the test team must verify that the applicant has the required Air Transport Licence, knowledge of applicable operating rules, and has completed adequate planning for the proposed operation. Normally, special-demonstration testing for this purpose alone does not require a flight.
- 14.2.4 **Class II Navigation Authorisations.** There are four situations in which special-demonstration testing is required in association with approval of Class II navigation:
- Initial approval;
 - Approval of the addition of a long range navigation system;
 - Operations into new areas;
 - The addition of special or unique navigation procedures.
- 14.2.5 **Special Performance Authorisations.** Special-demonstration flights are required when an applicant proposes to conduct operations that require confirmation of the applicant's ability to operate an aircraft type within specified performance limitations. These limitations are based on the following situations:
- Character of the terrain (or extended over-water areas);
 - Type of operation;
 - Performance of the aircraft.
- 14.2.6 **Special Operational Authorisations.** Special-demonstration flights are required when an applicant proposes to conduct in-flight or ground manoeuvres that require special operational authorisations
- 14.3 Class II Navigation Authorisations**
- 14.3.1 Before adding a geographic area to the operation specifications, in which Class II navigation is required, demonstration teams must validate the applicant's capability to safely conduct these operations.
- 14.3.2 **Initial Approval.** When an applicant has no prior authorisation to conduct Class II navigation, a special-demonstration flight is normally required before the team may issue operations specifications paragraphs or add appropriate geographic areas to the operation specifications. These areas include the following:
- Remote and extensive land areas not served by reliable ICAO surface based navigational aids (NAVAID);
 - Extensive over water areas beyond the range of surface based navigation facilities.



14.3.3 Authorisation for Long Range Navigation Systems. Special-demonstration flights are required when an applicant that already has Class II navigation authorisation proposes to add authorization for a new long-range system/aircraft combination to the operator's operation specifications.

- a) Long Range Systems;
 - (i) Inertial navigation systems (INS) and inertial reference systems (IRS);
 - (ii) Global Navigation Satellite System (GNSS), when approved;
 - (iii) Any combination of these.

- b) Special-Demonstration Testing in Lieu of Special-Demonstration Flights. When special-demonstration testing is conducted to add a new aircraft/navigation system combination to the applicant's operation specifications, a special-demonstration is normally conducted by means of a flight. Director General may approve special-demonstrations by means of testing. However, when the applicant can show that the combination of aircraft/navigation system and operation is not significantly different from those the applicant is currently authorised, or with which the applicant can show satisfactory current experience, the special-demonstration can be conducted without flight. When special-demonstration is conducted without a flight, the applicant must show training and qualification of flight crew members in accordance with Authority guidance material and acceptable equipment procedures. Demonstration teams can determine the current level of flight crew training and qualification by conducting oral tests of knowledge and procedures and by evaluating flight records.

- c) The following examples are situations where special-demonstration testing may be authorised in lieu of special-demonstration flights:
 - (i) An applicant with a satisfactory history of conducting Class II navigation by using an LR-55/Delco Carousel IV INS combination proposes to add the Delco IV INS to a B-737 that the applicant is already authorised to operate in Class I airspace.
 - (ii) Additional Geographic Areas. Applicants requesting authority to operate in additional geographic areas (other than special areas) may normally be authorised to do so without the need to complete a special-demonstration flight. As a minimum for this situation, the demonstration team must verify that the applicant has the required Air Transport Licence, knowledge of applicable operating rules, and has completed adequate planning for the proposed operation. Demonstration teams may determine, however, that the specific circumstances require a flight.

14.3.4 **Special Areas of Operation.** Certain areas of Class II airspace are considered special operating airspace for purposes of validation:

- a) Extensive Areas of Magnetic Unreliability. Due to the nature of the procedures involved, applicants are required to conduct special-demonstration flights through these areas before being issued operation specification authorisation. Director General may approve special demonstrations by means of testing in lieu of flights when an applicant that already holds operation specification authorisation, proposes to operate new combinations of

aircraft and navigation systems in these areas. The applicant must show that the required procedures are not significantly different from those currently authorised;

- b) North Atlantic Minimum Navigation Performance Specifications (NAT/MNPS) Airspace and Canadian MNPS Airspace. Approvals for these two blocks of airspace are normally conducted concurrently. Due to the navigational tolerances and the procedures involved, applicants are required to conduct special-demonstration flights through these areas before being initially authorised to conduct revenue operations in these areas. In some cases (such as with the use of Omega systems), the applicant may be required to conduct flights and collect data outside MNPS airspace before conducting a final special-demonstration flight through the airspace. Initial special-demonstration flights, as described in subparagraph B1 of this paragraph, may be conducted in North Atlantic or Canadian MNPS airspace if the required navigational accuracy was demonstrated before the supplemental type certificate (STC) was issued. An applicant holding operation specification authorisation for flight in MNPS airspace, who seeks authorisation to operate new combinations of aircraft and navigation systems in MNPS airspace, may be required to conduct special-demonstration flights to have that combination added to operation specifications, but the applicant is not normally required to conduct those flights through MNPS airspace;
- c) Central East Pacific (CEPAC) Composite Airspace and North Pacific (NOPAC) Airspace. During special-demonstrations for approval of CEPAC and NOPAC areas, demonstration teams should focus on flight planning, especially for engine out and loss of pressurisation contingencies. An applicant that already holds operation specifications for class II navigation and has a satisfactory operating history in extended Class II navigation is normally not required to conduct a special-demonstration flight to be issued CEPAC or NOPAC operating authorisation. An applicant for an authorisation to operate new combinations of aircraft and navigation systems may be required to conduct special-demonstration flights before that combination is added to operation specifications, but the applicant is not normally required to conduct those flights through CEPAC or NOPAC airspace;
- d) Arctic Ocean and Antarctica Airspace. Applicants proposing to conduct terminal area operations within these areas are normally required to conduct special-demonstration flights. Applicants conducting over-flight, but not terminal area operations, are not required to conduct special-demonstration flights. During special-demonstrations for approval of over-flight of these areas, demonstration teams should focus on flight planning, especially for engine-out, loss of pressurisation contingencies, and emergency airfield procedures;

NOTE: Arctic and Antarctic operating approvals are separate and distinct from approval for areas of magnetic unreliability.

- e) Politically Sensitive Areas of Operation. When an inspector requires information concerning an operator's request to conduct operations into sensitive international areas, the inspector should contact Director General for the most current guidance;
- f) Special or Unique Navigation Procedures. Special-demonstration flights are normally required when an applicant proposes to use navigation procedures that have not been previously demonstrated.



14.4 Special Performance Authorisations

14.4.1 The following are examples of operational situations that normally require special demonstration flights and special performance authorisations for each type of aircraft to be used by an applicant:

- a) Terminal area operations in areas of mountainous terrain requiring drift down or specialised contingency procedures;
- b) Part 8 of the Nigeria Civil Aviation Regulations, extended-range operations with two-engine aeroplanes (ETOPS/EDTO) over routes containing a point further than 60 minutes flying time from an adequate aerodrome;
- c) High Altitude aerodrome operations
- d) Power back operations (reverse thrust taxi);
- e) Unimproved runway operations;
- f) Helicopter or seaplane operations in highly congested urban areas.

14.5 Special Operational Authorisations

14.5.1 Special-demonstration flights are normally required when proposed operational situations require special equipment and a special operational authorisation for each type of aircraft used. Some examples follow:

- a) Category II instrument approach and landing systems;
- b) Category III instrument approach and landing systems;
- c) Use of automatic landing systems for landing operations;
- d) Use of manually flown flight control guidance systems approved for landing operations (heads-up or heads-down flight control systems);
- e) Use of airborne radar approach (ARA) systems;
- f) Area navigation (RNAV) system;
- g) Use of RNAV systems for approach and landing operations.

14.6 Planning the Special-Demonstration Flights

14.6.1 An applicant that is required to conduct a special-demonstration test must develop and submit a test plan. The plan and test objectives must be specifically tailored to the situation.

14.6.2 The Authority demonstration team and the applicant should follow the following guidelines in planning special-demonstration flights:

- a) **Form and Content of the Test Plan.** The variety of operational situations and requirements that determine the makeup of special-demonstration flights makes it impossible to specify the form and content for each special-demonstration test plan. The Regulations, advisory circulars (AC) and specific instructions in this Order have been developed to assist the applicant and the Authority inspectors in determining the necessity of special-demonstration testing and the planning of special-demonstration flights. In many situations, these documents contain specific procedures that must be followed or that provide acceptable methods that an applicant can use to acquire a special authorisation;

- b) **Demonstration Team and Applicant Co-ordination.** The applicant and demonstration team must agree on the form and content of the test plan, and they must establish mutual understandings of test objectives, the degree of demonstration required, and the criteria to be met. During development of the plan, the applicant should be encouraged to co-ordinate with and confer frequently with the Authority demonstration team concerning the makeup of the special-demonstration flights and the methods to be used in conducting them;
- c) **Operational Demonstrations.** Most special-demonstration flights will require some form of operational demonstration. When operational demonstrations are required, the special demonstration test plan must include a schedule for those demonstrations;
- d) **Determining Number of Flight Hours.** A required number of hours for a special-demonstration flight is not specified by regulation and must be determined on a case by case basis. When the test objectives can be adequately met, the demonstration team may reduce flight hours to zero;
- e) **Revisions to Applicant Documents and Training Programme.** Most special authorisations require revisions to the applicant's checklists, Minimum Equipment Lists (MEL), Configuration Deviation List (CDL), Operations Manual (OM), Maintenance Manual (MM), Maintenance Control Manual (MCM) and Training Programme. These revisions should be submitted with the special-demonstration test plan for Authority review and approval or acceptance, as appropriate;
- f) **Amendment to operation specifications.** All special authorisations require an amendment to the operation specifications; the applicant should apply for the amendment at the same time the special-demonstration plan is submitted.

14.7 Areas Evaluated on Special-Demonstration Flights or Tests

14.7.1 The types of activities and items that need to be inspected and evaluated on special-demonstration flights or tests vary with the type of authorisation requested by the applicant.

14.7.2 The following list provides examples of activities and items requiring inspection and evaluation:

- a) Flight crew training (and cabin crewmember training, if applicable);
- b) Operations manual information and flight and cabin crew member procedure;
- c) Checklists, MELs and CDLs ;
- d) Maintenance manual information and maintenance programme;
- e) Equipment certifications and installation approvals;
- f) Reliability and accuracy of applicable operational and maintenance records;
- g) Operational flight control and operator communication capabilities;
- h) Flight crew competency in use of equipment, procedures, and techniques;
- i) Co-ordination procedures between the flight crew members, maintenance personnel, and other ground personnel.

14.8 Carriage of Revenue Passengers on Special-Demonstration Flights

- 14.8.1 The Regulations do not forbid the carriage of revenue passengers on special-demonstration flights. With the concurrence of the Director General/Managing Director, the demonstration team may authorise the applicant to carry revenue passengers aboard the special-demonstration flight when the proposed operation is similar to those in the applicant's previous experience. This paragraph contains guidelines for teams to use in making this determination.
- 14.8.2 Non-permissible Situations. The carriage of revenue passengers shall not normally be permitted during special-demonstration flights in the following situations:
- a) When the applicant is seeking initial approval to conduct Class II navigation;
 - b) When the applicant is seeking approval to conduct Class II navigation by a long range navigation system when the applicant has not previously been approved for that means of navigation;
 - c) When the applicant is seeking approval to conduct Class II navigation by means of a long range navigation procedure that has not previously been approved for that applicant;
 - d) When the applicant has not previously operated a specific aircraft type in operations that require a special performance authorisation.
- 14.8.3 **Exceptions to Subparagraph 13.8.1.** In the preceding situations, demonstration teams may consider permitting the carriage of revenue passengers if the applicant meets the following conditions:
- a) Use of a Previously Authorised System. For those applicants seeking approval to conduct Class II navigation by means of a new system of long range navigation or by means of a new procedure, the applicant may use a previously authorised navigation system as an independent means of verifying position;
 - b) Previous Demonstration of Competence. For operations requiring a special performance authorisation, the applicant must have already successfully demonstrated competence by safely conducting those operations, using the necessary special performance, in the specific aircraft. This may have been accomplished through an approved flight simulation test programme, or in an actual aircraft flight test programme (non revenue) in the specific aircraft.
- 14.8.4 **Special Operational Authorisation.** For operations requiring a special operational authorisation for approach and landing operations, the carriage of revenue passengers should normally be permitted, provided higher minima or visual flight rules (VFR) operations are specified during the special-demonstration flights.



14.8.5 Additional Considerations. The following factors should be considered in all cases:

- a) The applicant's previous experience with the proposed operation, the specific aircraft, and equipment combinations;
- b) The Authority's previous experience with the proposed operation, the specific aircraft, and equipment combinations;
- c) The in service history and performance considerations of any new aeroplane, component, appliance, or other piece of equipment;
- d) Degree of backup system redundancy and sole dependency of any particular system, appliance, or component.