



# **NAMIBIAN CIVIL AVIATION AUTHORITY**

## **Advisory Pamphlet (AP)**

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### **DEMONSTRATION AND SPECIAL DEMONSTRATION FLIGHTS**

**08/2021**

## 1. Advisory Pamphlets (AP) system.

1. The Namibian Civil Aviation Authority (NCAA) issues advisory pamphlets in accordance with NAMCARs 2001, Part 3, regulation 3.04.4 to inform the aviation public in a systematic way of non-regulatory material. Unless incorporated into a regulation by reference, the contents of an advisory circular are not binding on the public. Advisory pamphlets are issued in a numbered-subject system corresponding to the subject areas of the Namibian Civil Aviation Regulations (NAMCARs)
2. Advisory Pamphlets are intended to provide information and guidance to illustrate a means but not necessarily the only means of complying with the Regulations, or to explain certain Regulatory requirements by providing interpretative and explanatory material. Where an AP is referred to in a 'Note' below the regulation, the AP remains as guidance material.
3. APs should always be read in conjunction with the referenced regulations.
4. Demonstration and Special Demonstration Flights is set out in the Schedule attached hereto.
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# DEMONSTRATION AND SPECIAL-DEMONSTRATION FLIGHTS

## SECTION 1. BACKGROUND

### I. GENERAL.

Part 121, 127, 133, 135, & 137 of the Namibian Civil Aviation Regulations (NAM-CARs) requires the Directorate of Civil aviation (NCAA) 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. The NCAA conducts its evaluation by observing the applicant's performance of demonstration flights in accordance with NAM-CAR 121.06.6 (3) and 135.06.6 (3). The NCAA must consider the applicant's demonstration flights to be satisfactory before it will issue an Air Operator Certificate (AOC) to an applicant. The NAM-CAR also requires the NCAA to determine that an AOC holder 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. The structured methods used by the NCAA to determine an applicant's capabilities are called "Demonstration Flights" and "Special-demonstration Flights". This Advisory Pamphlet contains direction and guidance to be used by inspectors for conducting these tests. For a comparison of demonstration and special demonstration flight requirements (see figure 001)

*NOTE: The term, "applicant," as used in this Advisory Pamphlet, means either a candidate applying for an AOC, or an AOC holder requesting additional operating authority.*

### II. DEMONSTRATION FLIGHTS.

NAM-CAR 121.06.6(3) and NAMCAR 135.06.6(3) requires applicants seeking authority to operate certain types of aircraft in commercial air transport service to satisfactorily demonstrate their capability to the NCAA before being granted operating authority. These applicants must conduct demonstration flights. 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. 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.

If the Director is not satisfied that the requirements of subregulation (2) of Part 121.06.6 and 135.06.6 have been met, the Director may require the conduct of one or more demonstration flights operated as if they were commercial air transport flights. the Director may require an



applicant to successfully complete demonstration flights before the NCAA may authorise the operation of each aircraft type.

Figure 001  
Comparison of Demonstration and Special Demonstration Flights

\* A kind of operation is a scheduled operation; charter operation, passenger carrying and/or cargo,

| Type of Demonstration                | Definition   | NAM-CAR                     | When Required  | No. Of flights Required  |
|--------------------------------------|--|-----------------------------|--|--|
| <b>Demonstration Flights</b>         | A demonstration flight is a demonstration and test of proposed operations. It tests the operator's ability to conduct all line operation functions with a specific aircraft. | 121.06.6(2)<br>135.06.6.(2) | <ul style="list-style-type: none"> <li>▪ During initial AOC certification.</li> <li>▪ When a new type of aircraft is added to the fleet.</li> <li>▪ After material alterations are made to aircraft.</li> <li>▪ For each kind* of operation the operator proposed to conduct.</li> </ul> | <p>1 or more</p> <p>1 or more</p> <p>1 or more</p> <p>1 or more</p> <p>Note: The NCAA may reduce flight hours sooner than planned when all test objectives have been met.</p> <p>Note: The operator may petition for a deviation from the required No of Flights .</p> |
| <b>Special Demonstration Flights</b> | A special demonstration flight is a test of a <u>specific</u> line operation that an operator wants authorised.  | 121.06.6(3)<br>135.06.6(3)  | <ul style="list-style-type: none"> <li>▪ For each specialised navigation system.</li> <li>▪ For each designated special area.</li> </ul>   | May consist of a single flight operation, or a series of flight operations. Total hours of tests must be tailored to the situation.  |

domestic operations, international operations, etc.

### III. SPECIAL-DEMONSTRATION FLIGHTS



The NCAA requires an applicant to demonstrate the capability to conduct proposed operations in designated special areas, or when using specialised navigation in compliance with regulatory requirements before being granted NCAA authority to conduct these operations. The NCAA requires the applicant to successfully complete special-demonstration flights in the following circumstances: (1) before being authorised to add any areas of operation outside the territory of the certificating State to specific operating provisions (SOP/OPSPECSs) and, (2) before being issued any SOP/OPSPECS paragraphs that authorise special means of navigation. Though demonstration and special-demonstration flights satisfy different requirements, both tests may be conducted simultaneously when appropriate.

#### **IV. TESTING METHODS ACCEPTABLE TO THE NCAA.**

Applicants must demonstrate to inspectors that they can conduct flight and maintenance operations to the standards required for revenue service. Operations could range from the relatively simple to the more SOP/OPSPECS sophisticated. A simple operation may involve an operator that possesses Caribbean authority, but is requesting authorisation to expand operations to South America. The operator may only have to demonstrate that it has the proper documentation to conduct the expanded operations. For the more SOP/OPSPECS sophisticated operations, such as Category II (CAT II), Category III (CAT III), and extended range operations with two engines (ETOPS), acceptable means that applicants may use to demonstrate compliance have been published in other advisory pamphlets (APs). In recent years, however, operators have proved their competence by using such methods as flight simulation, mathematical modelling, and operational research, which have helped to reduce flight hours and costs. An applicant may use methods other than those specified in APs, provided that the applicant can demonstrate the following:

- A. The validity and reliability of the testing method.
- B. That the test results verify acceptable applicant performance.

*NOTE: Actual flights may not be required when an applicant can demonstrate competence and compliance with appropriate regulations without conducting a flight.*

#### **V. ADVISORY PAMPHLET DISCUSSION OF DEMONSTRATION AND SPECIAL-DEMONSTRATION FLIGHTS.**

Sections 3 through 7 of this Advisory Pamphlet contain direction and guidance to be used by inspectors for conducting demonstration flights, and Section 8 contains direction and guidance for conducting special-demonstration flights.

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## **SECTION 2. THE DEMONSTRATION AND SPECIAL-DEMONSTRATION FLIGHT PROCESS**

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### **I. PHASE ONE.**



Phase one of the demonstration and special-demonstration flight process begins when an applicant requests authorisation from the NCAA to conduct an operation for which demonstration or special-demonstration is required. The term, "applicant," as used in this section, means either a candidate applying for an operating certificate or a certificate holder requesting additional operating authority. When an applicant's request requires demonstration or a special demonstration, the following steps apply:

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

A. NCAA Test Team. The NCAA manager shall organise a test team.

1. Team Leader. The team leader should normally be one of the principal inspectors assigned to the applicant and shall be responsible for the conduct, co-ordination, and evaluation of the test. In addition, the team leader will be the spokesperson for the NCAA on all matters pertaining to the test.
2. Team Personnel. The NCAA test team should include the following personnel, as required:
  - a. The team leader
  - b. All assigned inspectors
  - c. An Operations Inspector qualified on the equipment
  - d. Maintenance and Avionics inspectors trained on the installed equipment (where required)
3. Familiarisation. All members of the NCAA 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 NCAA test team and the applicant must reach a common understanding of what the applicant must do, what role the NCAA will play, and what reports and documents must be prepared during the testing process. Both the test team and the applicant must research applicable regulatory and advisory material.

## **II. PHASE TWO.**

Phase two is initiated when the applicant submits the test plan to the NCAA 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.

## **III. PHASE THREE.**

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 programs, crew and flight operations officer/dispatchers qualifications, acceptable participants, and schedules). During this phase, the NCAA must plan to co-ordinate its activities with the demonstrations that the applicant will conduct during phase four.



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

1. Notifying NCAA Executive Director of demonstration flight dates, times, and locations.
2. Assigning appropriate sections of the test plan to inspectors or specialists for review and comment.
3. Co-ordinating with aviation security (as necessary) to obtain security inspector assistance for evaluating specific areas, such as dangerous goods and passenger screening.
4. Ensuring that administrative requirements such as visas and diplomatic clearances are obtained in a timely manner.
5. Facilitating the development of test scenarios for the demonstration flights.

B. 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.

#### **IV. PHASE FOUR.**

Phase four is the major phase of the test process. For demonstration flights, the applicant will conduct the enroute 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 NCAA observation purposes. Phase four is concluded when the test team is satisfied that all test objectives have been achieved or that the applicant is unable to complete them satisfactorily. Before concluding phase four, the team leader shall obtain the concurrence of the NCAA Executive Director.

#### **V. PHASE FIVE.**

Phase five is accomplished after the successful completion or termination of the demonstration or special-demonstration flights. In this phase, the NCAA team both grants approval and issues the appropriate SOP/OPSPECSs, or sends a letter of disapproval to the applicant. In either case, the team leader's final action is to complete the report.



## **SECTION 3. DEMONSTRATION TEST REQUIREMENTS**

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### **I. 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 the NAM-CARs as appropriate. Demonstration flights must be conducted in a manner that closely simulates the regulatory conditions that will apply after approval has been granted.

- A. 1. Types of Flights. The only types of flights that can be credited towards demonstration flight requirements are described in the following subparagraphs:
1. Representative Enroute Flights. Representative enroute flights are conducted in compliance with Parts NAMCATS-OPS 121.04.3 including rules applicable to AOC security and dangerous goods requirements. Before an applicant may conduct these flights, the test team must be satisfied that the phase three review of the applicant's plan has been completed.
  2. Ferry Flights. Ferry flights conducted under Part 21, subpart 8 & NAMCATS-OPS 121.04.3 and approved by the NCAA may be credited towards demonstration flight requirements. To obtain NCAA approval, the applicant must show that no feature, characteristic, or condition of the aircraft would make it unsafe when operated in accordance with NAM-CAR Part 21, subpart 8 & NAMCATS-OPS 121.04.3.
  3. Training Flights. Training flights may be credited towards demonstration test requirements, provided that a NCAA inspector observes each flight.
  4. 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. Positioning flights may be credited towards demonstration test requirements, provided that a NCAA inspector observes each flight.
- B. Additional Requirements. To credit ferry hours, hours flown in provisionally certificated aircraft, or training flight hours towards demonstration test requirements, the applicant's phase three review of the applicant's plan must have been completed. Also, the applicable manual must be in a state of completion that is acceptable to the test team for that applicant. Flights must be conducted in accordance with the following:
1. Proposed NAM-CAR Part 121, 127, 133, 135, & 137 operations manual
  2. Proposed NAM-CAR Part 121, 127, 133, 135 & 137 maintenance control manual
    - a. Proposed inspection or maintenance programs
  3. Proposed minimum equipment list (MEL) NAMCATS-OPS 121.04.3(2.2.10)



4. Flight control requirements (dispatch and monitoring or flight following) of Parts NAMCATS-OPS 121 of the NAM-CARs.
  - a. Operations and maintenance recordkeeping requirements of Parts 91 and 121,127, 133, 135 & 137 of the NAM-CARs.

## **II. SITUATIONS REQUIRING DEMONSTRATION FLIGHTS.**

NAM-CAR 121.06.6 and 135.06.6 may 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 121, 135, of the NAM-CAR.
- B. When an AOC holder proposes to operate an aircraft type that the applicant has not previously used.
- C. When an AOC holder 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 SOP/OPSPECSs (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).

## **III. AOC APPLICANT DEMONSTRATION TEST REQUIREMENTS.**

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

- A. Aircraft New to the Applicant. 121.06.6 and 135.06.6 may requires that 1 or more demonstration flights (unless the NCAA determines that a satisfactory level of proficiency has been demonstrated in fewer flights) are conducted by an applicant proposing to use a type of aircraft for the first time.
- B. Materially Altered Aircraft. may requires an applicant to conduct at least 1 or more demonstration flights (unless the NCAA 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:
  1. 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.
  2. Any design alterations that significantly affect flight characteristics.
- C. New Kind of Operation. may require an operator using an aeroplane that it has not previously demonstrated in that kind of operation to conduct 1 or more demonstration flights (unless the NCAA determines that a satisfactory level of proficiency has been demonstrated in fewer flights). Kind of operation is defined as scheduled, charter, passengers, cargo, passengers and cargo operations.



- D. Night-time Requirements. In situations where applicants require night operations and are required to conduct 1 or more demonstration flights (unless the NCAA determines that a satisfactory level of proficiency has been demonstrated in fewer hours), at least 5 of those demonstration test hours must be conducted at night.

#### **IV. DEVIATIONS TO DEMONSTRATION FLIGHT REQUIREMENTS.**

NAM-CAR: Part 3 provides for an AOC holder to petition the NCAA for deviations/exemption to NAM-CAR Part 121.06.6 and the NCAA agrees that full compliance with the regulation is unnecessary under some circumstances. The applicant must comply with all other demonstration test requirements.

#### **V. REPRESENTATIVE NUMBER OF FLIGHTS INTO EN ROUTE AERODROMES**

121.06.6 may require an applicant to conduct a representative number of demonstration flights into enroute 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 enroute operations. 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 NCAA test team must make a determination of what constitutes a representative aerodrome or area of enroute 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 test hours.

#### **VI. CARRIAGE OF PASSENGERS AND CARGO.**

Carriage of revenue passengers on demonstration flights is prohibited by the NAMCARS (NAMCATS-OPS 121.04.3 (2.1.9)(7)) The carriage of revenue cargo should be approved for any applicant that has appropriate economic authority to carry revenue cargo. Applicants seeking NCAA certification that do not have appropriate economic authority are not permitted to carry revenue cargo; however, the carriage of company or simulated cargo should be encouraged. It is NCAA policy to encourage the carriage of cargo on representative enroute demonstration flights, when possible. The carriage of cargo allows for a more comprehensive test of the applicant's capabilities.

#### **VII. CREW QUALIFICATIONS FOR DEMONSTRATION FLIGHTS.**

Training flights may be credited towards demonstration test requirements, provided crewmembers are undergoing training according to the applicant's initially approved flight training curriculum. Ferry flights may be credited towards demonstration flights, provided crewmembers and initial cadre check airmen have completed applicable proficiency, competency, and type rating checks. Line checks and operating experience (OE) may be accomplished on demonstration flights refer to (NAMCATS-OPS 121.04.3 (2.1.9)(7))



## SECTION 4. PLANNING THE DEMONSTRATION TEST

### I. APPLICANT'S PLAN FOR DEMONSTRATION FLIGHTS.

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

- A. Identification of the company co-ordinator who will serve as the primary demonstration test 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 enroute flights.

*NOTE: It is NCAA policy for 50 percent of the scheduled demonstration flights to consist of representative enroute flights over routes and into aerodromes which the applicant intends to serve.*

- C. A list of names and positions of the crewmembers who will be participating on each flight.
- D. A list of names, titles, and company affiliations of non-crewmember personnel whom the applicant intends to have on board each flight.
- E. Any other information that the test team determines is necessary to properly plan and conduct the demonstration flights.

### II. APPLICANT'S PLAN FOR REDUCED DEMONSTRATION TEST Flights.

If the applicant requests a deviation to the number of demonstration test flights required by the implementing standard, the request must be made by letter. The letter must transmit the applicant's plan, which is described in the previous paragraph, and it must include the justification information specified in section 7 of this Advisory Pamphlet.

### III. NCAA PLANNING FOR DEMONSTRATION FLIGHTS.

- A. Early Planning. Development and implementation of the NCAA's plan for observation and evaluation is of crucial importance to any demonstration test. The NCAA inspection team should begin planning in phase one of the demonstration test process. NCAA planning should be completed as soon as possible after the inspection team receives the applicant's plan.
- B. Initial Review. The inspection 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 NCAA 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:

1. Accept the Plan. If the applicant's plan is feasible and satisfies regulatory and NCAA policy requirements, the inspection team leader should verbally notify the applicant. Any changes should be negotiated and mutually agreed upon at this time. If the applicant's plan includes a request for deviation from the required number of demonstration test hours, formal acceptance by letter must follow. This letter must include a statement verifying that a deviation to the appropriate NAM-CAR is granted.
2. Return the Plan with Explanation. If the applicant's plan lacks appropriate documentation or does not satisfy regulatory or NCAA policy 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 deviation, the denial must be done by letter. This letter should contain any suggestions the team may have that would make the plan acceptable.*

#### **IV. OTHER DEMONSTRATION TEST PARTICIPANTS.**

The NAMCARs limit 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 tests and to those "designated by the NCAA."

- A. 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 nonessential personnel. The test 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.
- B. The Applicant's Participants. Many situations occur during demonstration flights that require decisions by company supervisory personnel to correct deficiencies observed during the flights. Therefore, the applicant's participants should include the following personnel:
  1. Initial cadre check airmen.
  2. Directors of operations and maintenance (if applicable).
  3. Those supervisory personnel needed to act on behalf of the company if actions are required to resolve discrepancies.
- C. Other Personnel. Other personnel, such as representatives of engine and aircraft manufacturers, may be authorised to participate if their presence materially enhances the process.



## **V. CO-ORDINATION.**

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

## **VI. PRE-DEMONSTRATION TEST MEETING (NCAA TEAM).**

The demonstration test team leader shall conduct as many pre-demonstration test meetings as necessary to accomplish the following:

- A. Provide Schedules and Assignments. The demonstration test 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 test team leader shall establish in-flight and ground scenarios, simulated emergencies, and other means of testing the ability of crewmembers 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.
  1. 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.
  2. 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.
  3. Examples of Typical Scenarios. The following scenarios may be useful for evaluating the applicant's capabilities:
    - a. Diversion to alternate aerodromes for reasons such as weather or maintenance (This tests the company's communications, maintenance, and other operational capabilities.)
    - b. Minimum equipment list (MEL) or configuration deviation list (CDL) situations (This tests the crewmembers' understanding of specific operational limitations and the company's operations and maintenance procedures. For example, dispatching with a simulated inoperative generator tests the



company's ability to comply with the operational and maintenance provisions of the MEL).

- c. Performance problems (This requires the aircrew and/or flight control personnel, to demonstrate competency and knowledge of items, such as aircraft performance, aerodrome analysis programs, and alternative company procedures. For example, simulating an inoperative antiskid or thrust reverser while operating on contaminated runways (ice, slush, or snow) tests the company's ability to deal with performance issues).
- d. Security and dangerous goods situations (This requires the aircrew and other company personnel to function in accordance with established company procedures and NCAA regulations).

*NOTE: Hijack scenarios are prohibited during demonstration flights. Inspectors or security inspectors must examine aircrew knowledge and company procedures through other methods. The company's anti-hijack program shall not be exercised during demonstration flights.*

- e. 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 company's procedural contingencies as demonstrated by the flight crew).
- f. Maintenance scenarios (A maintenance problem simulated at any location that the operator operates into should be planned, however minor, to test the company'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).
- g. Simulated aircraft emergencies, such as an engine failure (This tests the flight crew's knowledge and competency in handling emergency situations. It also tests company 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



## **SECTION 5. DEMONSTRATION FLIGHTS: THE DEMONSTRATION PHASE**

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### **I. GENERAL.**

The demonstration phase consists of the observation and evaluation of the applicant by the Namibia Civil Aviation Authority (NCAA) inspectors during demonstration flights. Demonstration flights consist of enroute flights and other acceptable flights. These flights are described in more detail in the following paragraphs.

### **II. CONDUCT OF ENROUTE FLIGHTS.**

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

- A. **Inspection Team Composition.** The on board 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 flight through designated special areas, a navigation specialist or a pilot-qualified inspector who is knowledgeable in such operations should be a member of the test team. A dispatch-qualified inspector should also be included to observe flight operations officers, flight followers and operational control functions. Maintenance and avionics inspectors on board the aircraft should also observe the majority of enroute 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 enroute flights are being conducted, other inspectors should observe the applicant's activities at appropriate ground facilities, such as operational or maintenance control centres.
- B. **Pre-demonstration Test Briefing with Applicant.** The demonstration test team leader shall conduct briefings with the applicant daily or as necessary to establish what the test team expects the applicant to accomplish during each demonstration test. Briefings shall include at least the following items:
  - 1. The purpose of the demonstration test.
  - 2. Status of the inspector in the jump seat.
  - 3. Status of the on-board team of inspectors (They shall be treated as passengers).
  - 4. Changing status of passenger to NCAA inspector when an NCAA credential is revealed.
  - 5. How simulated scenarios will be initiated, and what action is expected from the applicant.
  - 6. How to react to an actual emergency during the demonstration test.
  - 7. Copies of flight plans, load manifests, and other documents that are expected should be provided.
  - 8. How maintenance discrepancies will be treated or terminated.



9. Debriefing at the conclusion of each day unless major problems require it sooner (Major discrepancies must be resolved before the demonstration test may resume the following day).
- C. Determining Applicant Competency. The NCAA plan for inspecting and evaluating an applicant's competency during the enroute segment should include scenarios and other testing mechanisms designed to test the applicant's effectiveness in each of the following five general areas:
1. Flight crew
  2. Cabin crew
  3. Aerodrome/station facilities
  4. Operational control
  5. Company procedures
- D. Flight crew. The NCAA Team shall evaluate the competency and ability of the flight crew throughout the enroute segment. Examples of areas to be inspected and evaluated are as follows:
1. Flight crew qualification.
  2. Aircraft performance (including flight characteristics).
  3. Aircraft flight manual limitations.
  4. Aircraft normal, abnormal, and emergency procedures.
  5. Aircraft systems and equipment.
  6. Aerodrome data (including knowledge of required runway lengths, field elevation, facilities, and gates or parking areas).
  7. Flight management and cruise control.
  8. Company manuals and procedures.
  9. Crew discipline, situational awareness, and crew management.
  10. Crew vigilance and collision avoidance procedures.
  11. Knowledge of enroute structure, long range navigation procedures (if applicable), and unique enroute and area of operation requirements.
  12. Knowledge of minimum equipment list (MEL) and configuration deviation list (CDL) procedures.
  13. Knowledge of, and competency in, departure and arrival procedures.
  14. Air/ground communications with the company and also with air traffic control (ATC).
  15. Check airman performance and effectiveness.
  16. Adequacy of aircraft training program as demonstrated by the flight crew.
  17. Cabin crew and passenger briefings.
- E. Cabin Crew. The NCAA Team shall evaluate the cabin crew competency and ability during the enroute segment. Examples of areas to be inspected and evaluated are as follows:
1. Competency in all normal procedures associated with their assigned positions.
  2. Knowledge of emergency procedures (including evacuation, fire fighting, pressurisation problems, passenger illness or injury, baggage in the cabin, and exit seating).



3. Knowledge of applicable manual procedures pertaining to duties and responsibilities.
  4. Knowledge of procedures to follow when a crewmember is incapacitated.
  5. Knowledge of verbal and non-verbal communication procedures between the cabin and cockpit (such as the number of chimes indicating imminent takeoff or landing).
  6. Training program effectiveness.
  7. Cockpit co-ordination.
- F. Aerodrome/Station Facilities. The NCAA 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:
1. Runways and taxiways
  2. Runway/taxiway lighting.
  3. Approach lighting.
  4. Navigational aids (NAVAID).
  5. Gate/ramp/loading areas (such as markings, congestion, and lighting).
  6. Station operations manuals, maintenance manuals, and facilities.
  7. Ground crew qualifications and training (if applicable).
  8. Passenger enplaning and deplaning procedures.
  9. Baggage and cargo loading.
  10. Aircraft fuelling and servicing.
  11. Gate arrival and departure procedures and equipment.
- G. Dispatch and Monitoring or Flight Following Centres. Examples of items to be inspected and evaluated at applicable locations are as follows:
1. Flight planning
  2. Dispatch and flight release procedures
  3. Aerodrome and route information collection and dissemination
  4. Drift down and diversionary procedures
  5. Weather information collection and dissemination
  6. Dispatch and flight control personnel competency
  7. Communications capability with the company, with the aircraft, and with other agencies
  8. 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)
  9. Scheduling
  10. Crew flight and rest time
  11. Manuals
  12. High minimums captains
  13. Maintenance control (procedures and records)
  14. Flight crew briefings
- H. Company Procedures. Examples of company procedures and programs to be inspected and evaluated are as follows:
1. Aircraft operations



2. Ground operations/maintenance personnel
3. Fuelling facilities and equipment
4. Security (public protection and restricted articles)
5. Adequacy of training programs
6. MEL and CDL procedures
7. Procedures for accomplishing unscheduled and scheduled maintenance
8. Dangerous Goods
9. Ability to conduct operations at unscheduled stops or alternate aerodromes

### **III. CONDUCT OF OTHER FLIGHTS.**

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

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

- A. Enroute Training. During the enroute segment, the company trains its initial cadre check airmen, instructors, and line crewmembers. Crewmembers also gain operating experience (OE) so that revenue operations may begin with minimum delay after certification. Since NCAA inspectors function as observers during this phase, it is not appropriate for them to require simulated in-flight scenarios that would either disrupt airman training or delay these flights.
- B. Cabin Attendant Training. Cabin attendant training may be conducted on board flights when flight deck and cabin attendant training goals are compatible.

### **IV. TERMINATION OF THE ENROUTE SEGMENT.**

The test 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 test, the team shall obtain the concurrence of their NCAA Manager. The team must document the decision to terminate the enroute 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:

1. **NCAA Concurrence.** The team leader shall immediately inform his/her Director of the reasons for the decision and receive the NCAA Director's concurrence before concluding testing.
2. Notification of Applicant. 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 enroute testing may continue. This letter should also specify that a new demonstration test plan will have to be developed by the applicant and submitted to the NCAA before further enroute testing may resume (see figure 002).



**Namibia Civil Aviation  
Authority -  
Safety Division**

**ADVISORY PAMPHLET  
Demonstration and Special  
Demonstration Flights**

**FIGURE 002**



Private Bag 12003 Windhoek Namibia | (Tel) +264 83 235 2100 | (Web) <http://www.ncaa.com.na>

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

[date]

Mr. Robert Smith  
Director of Operations  
ABC Airlines  
(Address)

Dear Mr. Smith:

This letter is to inform you that effective March 12, 0000, ABC Airlines' demonstration flights with the B737 aircraft are hereby terminated by the Namibian Civil Aviation Authority (NCAA) due to deficiencies that prevent ABC Airlines from achieving the standards as specified in Civil Aviation Regulation 121.06.6. Specifically, ABC failed to demonstrate compliance in the following three areas:

1. Flight Release: During two flights conducted on March 10, 0000, ABC flight operations officers/ dispatchers did not provide the PIC with all available current reports or information on aerodrome conditions at destination and alternate aerodromes (NAM-CAR 121.08.5).
2. Required Crewmembers: On March 11, 1987, ABC attempted to operate flight number 216 without the required complement of cabin attendants (NAM-CAR: 121.02.10).
3. Maintenance: On March 12, 0000, ABC did not accomplish the preflight inspection of flight number 217 in accordance with procedures established in the operator's maintenance control manual (NAM-CARs: 121, subpart 10).

The NCAA 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 NCAA consideration and evaluation, ABC must show that it has corrected the above deficiencies to the satisfaction of the NCAA and submit another demonstration test plan and proposed schedule.

Sincerely, \_\_\_\_\_



## **SECTION 6. REPORTING PROCEDURES**

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### **I. REPORT CONSTRUCTION.**

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

- A. Opening a Master Record. When a test 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.
  - 1. When the master record is opened, the test team leader shall ensure that a brief statement of the project's purpose is entered. The test team shall ensure that appropriate explanatory or descriptive information is entered.
  - 2. Each job function performed by a team member shall be reported.
  - 3. As each of the five phases of the test process are 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 NCAA Executive Director to determine the status of the project.
  
- B. 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:
  - 1. Total test hours planned and actually flown.
  - 2. Major deficiencies that required significant corrective actions, and nature of the corrections.
  - 3. Major delays encountered in completing the project and reasons for those delays.



## **SECTION 7. REQUEST FOR DEVIATION OF DEMONSTRATION TEST HOURS**

---

### **I. GENERAL.**

Civil Aviation Regulations (NAM-CARs) contain authority for the NCAA to reduce the demonstration flight hours specified in the basic NAM-CAR. 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. Advanced simulation, line oriented flight training (LOFT) scenarios, loading and maintenance exercises, and operational research and statistical analysis are some of the means applicants may use to demonstrate competence. As part of the plan, the applicant may request a deviation from the applicable regulatory requirements. The request must explain how the applicant intends to demonstrate regulatory compliance with a reduced hour program. 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 program.
- B. Flight Experience Resume. The plan must include a flight experience resume for each flight crewmember that the applicant intends to use during the demonstration flight. This resume must include the following:
  1. Licenses.
  2. Total flight time.
  3. Any previous experience in the aircraft being tested.
  4. Years of experience with the applicant being tested and any other experience in commercial air transportation operations as an AOC.
  5. Other transport experience, such as military.
- C. Justification Statement. The statement must contain, but is not limited to, the following:
  1. Company experience with operations as an AOC
  2. Company experience with aircraft of the same group or type
  3. Company experience with the aerodromes and areas of enroute operation into which the proposed aircraft will operate
- D. Other information. The plan must include any other information requested by either the assigned principal inspectors or the Certification Project Manager (CPM), if applicable, 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.



## II. EVALUATING THE APPLICANT'S REQUEST.

- A. Evaluation Considerations. The following are topics that the test team should consider when evaluating the request:
1. If the aircraft has not been used previously in commercial air transportation by a Namibian AOC holder, to what extent have foreign operators operated the aircraft?
  2. For newly certificated aircraft, how familiar is the test team with the aircraft?
  3. For aircraft that are new to the applicant but that have been proven previously in NAM-CAR Part 91 operations, to what extent is the overall operation affected by the new aircraft?
  4. To what extent is the new aircraft substantially different from aircraft previously flown by the applicant (such as changing from turboprop to turbojet, unpressurised to pressurised, or narrow body to wide body)?
  5. To what extent is the applicant's route structure affected (for example, inauguration of international routes and use of special navigation equipment)?
  6. What is the experience level of personnel involved in the operation (for example, flight and cabin crewmembers' previous experience in the operation of this type of aircraft)?
  7. How does the applicant propose to conduct the demonstration flights (for example, a few long range versus several short range flights)?
  8. What level of management experience exists in the company with this type or similar type or make of aircraft?
- B. Flight Hour Reduction Guide. Test teams should use figure 003 as a guide to determine whether a reduced flight hour program is suitable.

FIGURE 003

### FLIGHT HOUR / NUMBER 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      | 10%               |
| Existing operator having no management experience with aircraft category and class | 20%               |
| New operator having management experience with aircraft category and class         | 20%               |
| Existing operator having management experience with same category and class        | 25%               |



### **III. CO-ORDINATION REQUIREMENTS AND APPROVAL AUTHORITY FOR DEMONSTRATION FLIGHT DEVIATIONS.**

Any deviations granted in response to an applicant's request for a reduction in the required demonstration flight numbers / hours shall first be co-ordinated with Executive Director of NCAA.

- A. Letter of Approval/Denial of Deviation. If the request for a deviation to the required number of demonstration flight hours is approved, the applicant shall be informed by letter that the deviation is approved. The letter approving the deviation 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.
- B. Conditions of Approval. When a deviation is approved, the test team must ensure that the applicant understands the following: that the deviation 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 crewmember training requirements, and weather, may extend the demonstration flight schedule, which could affect the date the applicant intends to start revenue operations.



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## SECTION 8. SPECIAL-DEMONSTRATION TEST REQUIREMENTS

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### I. GENERAL.

This section contains guidance to be used by inspectors for conducting special-demonstration flights. This guidance supplements the general guidance of Section 2 and the reporting guidance of Section 6 of this Advisory Pamphlet.

- A. Regulatory Background. Regulations, such as NAM-CAR 121.06.6 require applicants proposing to operate in designated special areas or using specialised navigation systems to demonstrate to the satisfaction of the NCAA 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 NCAA has come to be known as special-demonstration flights.

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

1. Special-Demonstration Flights. The most common method used by the NCAA to validate an applicant's capability is to observe the applicant conducting flight operations.
  2. Special-Demonstration Testing. The NAM-CARs 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 NCAA 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, NCAA Executive Director shall concur with team recommendations before teams deviate from the guidelines of this section.
  3. Areas of Emphasis. When the NCAA 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 programs, manuals, facilities, and maintenance programs).
- B. 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, 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.



## **II. SITUATIONS REQUIRING SPECIAL-DEMONSTRATION FLIGHTS OR TESTS.**

This paragraph contains guidance for inspectors and test team leaders concerning those situations where special-demonstration flights or tests are required for compliance with NAM-CAR 121.06.6.

Definitions:

**Class I Navigation.** Class I navigation is any enroute 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 enroute flight operations over routes designated with an "MEA GAP" (or ICAO equivalent).

**Class II Navigation.** Class II navigation is any enroute flight operation, which is not, defined as class I navigation. Class II navigation is any enroute flight operation or portion of an enroute 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).

- A. **Operations Outside Namibian Airspace.** When an applicant plans to operate to a destination outside of Namibia airspace, the test team must verify that the applicant has the required economic authority, knowledge of applicable State operating rules, and has completed adequate planning for the proposed operation. Normally, special-demonstration testing for this purpose alone does not require a flight.
- B. **Class II Navigation Authorisations.** There are four situations in which special-demonstration testing is required in association with approval of Class II navigation:
  - 1. Initial approval
  - 2. Approval of the addition of a long range navigation system or a flight navigator
  - 3. Operations into new areas
  - 4. The addition of special or unique navigation procedures
- C. **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:
  - 1. Character of the terrain (or extended overwater areas).
  - 2. Type of operation.
  - 3. Performance of the aircraft.
- D. **Special Operational Authorisations.** Special-demonstration flights are required when an applicant proposes to conduct in-flight or ground manoeuvres that require special operational authorisations



### **III. CLASS II NAVIGATION AUTHORISATIONS.**

Before adding a geographic area to the OPSPECS, in which Class II navigation is required, test teams must validate the applicant's capability to safely conduct these operations.

A. 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 the OPSPECS paragraphs or add appropriate geographic areas to the OPSPECS. These areas include the following:

1. Remote and extensive land areas not served by reliable ICAO surface based navigational aids (NAVAID).
2. Extensive overwater areas beyond the range of surface based navigation facilities.

B. Authorisation for Long Range Navigation Systems or a Flight Navigator. Special-demonstration flights are required when an applicant that already has Class II navigation authorisation proposes to add authorisation for a new long-range system/aircraft combination, or an authorisation for a flight navigator to the operator's OPSPECSs.

1. Long Range Systems. Long range navigation systems include the following:

- a. Loran-C
- b. Omega
- c. Inertial navigation systems (INS) and inertial reference systems (IRS)
- d. Doppler
- e. Global Navigation Satellite System (GNSS), when approved
- f. Any combination of the preceding systems

2. Special-Demonstration Testing in Lieu of a Special-Demonstration Flights. When special-demonstration testing is conducted to add a new aircraft/navigation system combination to the applicant's OPSPECSs, a special-demonstration is normally conducted by means of a flight. NCAA Executive Director 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 a demonstration flight. When special-demonstration is conducted without a flight, the applicant must show training and qualification of flight crews in accordance with NCAA guidance material and acceptable equipment procedures. Test 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. The following examples are situations where special-demonstration testing may be authorised in lieu of special-demonstration flights:

- a. 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.

3. 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 test team must verify that the applicant has the required economic authority, knowledge of applicable State operating rules, and has completed adequate planning for the proposed operation. Test teams may determine, however, that the specific circumstances require a flight.
- C. Special Areas of Operation. Certain areas of Class II airspace are considered special operating airspace for purposes of validation.
1. 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 OPSPECS authorisation. NCAA Executive Director may approve special-demonstrations by means of testing in lieu of flights when an applicant that already holds OPSPECS 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.
  2. 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 section, 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 OPSPECS 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 OPSPECS, but the applicant is not normally required to conduct those flights through MNPS airspace.

*NOTE: Inspectors should inform operators seeking MNPS approval that they should collect Omega data in North Atlantic airspace, either under or over MNPS airspace.*

3. Central East Pacific (CEPAC) Composite Airspace and North Pacific (NOPAC) Airspace. During special-demonstrations for approval of CEPAC and NOPAC areas, test teams should focus on flight planning, especially for engine out and loss of pressurisation contingencies. An applicant that already holds OPSPECSs

for Class II navigation and has a satisfactory operating history in extended Class II navigation it 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 OPSPECSs, but the applicant is not normally required to conduct those flights through CEPAC or NOPAC airspace.

4. 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, test 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.*

5. 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 NCAA Executive Director for the most current guidance.
6. 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. These procedures include the following:
  - a. Pilotage, including dead reckoning (DR).
  - b. Flight navigator procedures.
  - c. Celestial navigation.
  - d. Pressure pattern and Bellamy drift DR.
  - e. Free gyro or grid procedures.
  - f. Any combination of the preceding procedures.

#### **IV. SPECIAL PERFORMANCE AUTHORISATIONS.**

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 driftdown or specialised contingency procedures
- B. NAM-CAR Part 91 & 121 operations in the North Atlantic Area of Operations (NAT-OPS) when all points on routes are within 60 minutes of an adequate aerodrome.
- C. NAM-CAR Part 91 & 121 extended-range operations with two-engine aeroplanes (ETOPS) over routes containing a point farther than 60 minutes flying time from an adequate aerodrome
- D. High altitude aerodrome operations
- E. Powerback operations (reverse thrust taxi)



- F. Unimproved runway operations
- G. Helicopter or seaplane operations in highly congested urban areas

## **V. SPECIAL OPERATIONAL AUTHORISATIONS.**

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) systems.
- G. Use of RNAV systems for approach and landing operations.

## **VI. PLANNING THE SPECIAL-DEMONSTRATION FLIGHTS.**

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. The NCAA 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. Regulations; Advisory Pamphlets and specific instructions in this Advisory Pamphlet have been developed to assist the applicant and NCAA 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. NCAA Test Team and Applicant Co-ordination. The applicant and test 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 NCAA 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 test team may reduce flight hours to zero.
- E. Revisions to Applicant Documents and Training Program. Most special authorisations require revisions to the applicant's checklists, minimum equipment lists (MEL), general operations manual (GOM), general maintenance manual (GMM), maintenance control manual (MCM) and training program. These revisions should be submitted with the special-demonstration test plan for NCAA review and approval or acceptance, as appropriate.
- F. Amendment to SOP/OPSPECSs. All special authorisations require an amendment to the SOP/OPSPECSs; the applicant should apply for the amendment at the same time the special-demonstration plan is submitted.

#### **VII. AREAS EVALUATED ON SPECIAL-DEMONSTRATION FLIGHTS OR TESTS.**

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

- A. Flight crew training (and cabin attendant training, if applicable)
- B. Operations manual information and crew procedure
- C. Checklists and MELs
- D. Maintenance manual information and maintenance program
- E. Equipment certifications and installation approvals
- F. Reliability and accuracy of applicable operational and maintenance records
- G. Operational flight control and company communication capabilities
- H. Flight crew competency in use of equipment, procedures, and techniques
- I. Co-ordination procedures between the flight crew, maintenance personnel, and other ground personnel

#### **VIII. CARRIAGE OF REVENUE PASSENGERS ON SPECIAL-DEMONSTRATION FLIGHTS.**

The NAM-CAR does not forbid the carriage of revenue passengers on special-demonstration flights. With the concurrence of NCAA President, the test 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.

- A. Non-permissible Situations. The carriage of revenue passengers shall not normally be permitted during special-demonstration flights in the following situations:
  - 1. When the applicant is seeking initial approval to conduct Class II navigation.
  - 2. When the applicant is seeking approval to conduct Class II navigation by a long range navigation system or using a flight navigator when the applicant has not previously been approved for that means of navigation.



3. 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.
  4. When the applicant has not previously operated a specific aircraft type in operations that require a special performance authorisation.
- B. Exceptions to Subparagraph 1. In the preceding situations, test teams may consider permitting the carriage of revenue passengers if the applicant meets the following conditions:
1. 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 (using a flight navigator) or by means of a new procedure, the applicant may use a previously authorised navigation system as an independent means of verifying position.
  2. 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 program, or in an actual aircraft flight test program (nonrevenue) in the specific aircraft.
- C. 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.
- D. Additional Considerations. The following factors should be considered in all cases:
1. The applicant's previous experience with the proposed operation, the specific aircraft, and equipment combinations.
  2. The NCAA's previous experience with the proposed operation, the specific aircraft, and equipment combinations.
  3. The in service history and performance considerations of any new aeroplane, component, appliance, or other piece of equipment.
  4. degree of backup system redundancy and sole dependency of any particular system, appliance, or component.