

TECHNICAL GUIDANCE MATERIAL FOR DEMONSTRATION AND SPECIAL DEMONSTRATION FLIGHTS

SUBJECT: TECHNICAL GUIDANCE MATERIAL FOR DEMONSTRATION AND SPECIAL DEMONSTRATION FLIGHTS

EFFECTIVE DATE: 07 January 2022

APPLICABILITY

This Technical Guidance Material “TGM” is applicable to prospective Air Operator Certificate “AOC” holders and holders of South African Civil Aviation “SACAA” AOC approval.

PURPOSE:

The South African Civil Aviation Regulations “SA-CAR” of 2011, as amended stipulates that the applicant shall demonstrate the ability to conduct commercial air transport service in a safe and proper manner and in full compliance with all applicable rules and regulations.

This Guidance Material contains guidance for the preparation of an acceptable Demonstration Flight Plan in compliance with requirements of SA-CAR Part 121.06.9 and 135.06.9

***Note:** The term, “applicant,” as used in this TGM, means either a prospective AOC approval holder applying for an initial AOC, or an AOC holder requesting additional operating authority.*

REQUIREMENTS

Part 121 and 135 of the SA-CAR 2011, as amended.

1. REFERENCE:

- i. SA-CAR Part 121.06.2(2)(b)
- ii. SA-CAR Part 135.06.2(2)(b)
- iii. SA-CAR Part 121.06.9
- iv. SA-CAR Part 135.06.9
- v. SA-CATS 121.06.9
- vi. SA-CATS 135.06.9

2. TERMS AND ABBREVIATIONS:

TERM	DEFINITION
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none

ABBREVIATION	DESCRIPTION
AOC	Air Operator Certificate
CAR	Civil Aviation Regulations
CAT II	Category II
CAT III	Category III
CDL	Configuration Deviation List
CMR	Certification Maintenance Requirements
EDTO	Extended Diversion Time Operations
MCM	Maintenance Control Manual
MEL	Minimum Equipment List
NAT/MNPS	North Atlantic Minimum Navigation Specifications
OM	Operations Manual
OpSpecs	Operations Specifications
RVSM	Reduced Vertical Separation Minima
SACAA	South African Civil Aviation Authority
SACAR	South African Civil Aviation Regulations
SACATS	Civil Aviation Technical Standard
TGM	Technical Guidance Material

3. BACKGROUND

3.1 General

- 3.1.1 The SA-CAR 2011, as amend stipulates that “No person may operate an aircraft type in commercial air transport unless he or she first conducts satisfactory demonstration flights as required by the DCA in that aircraft type.”
- 3.1.2 The SACAA conducts its evaluation by observing the applicant’s performance of demonstration flights in accordance with SA-CAR Part 121.06.9 and 135.06.9. It must consider the applicant’s demonstration flights to be satisfactory before the issuance of the AOC approval or Operations Specifications to an applicant.
- 3.1.3 The SA-CAR also requires the SACAA to determine that the applicant is capable of conducting commercial air transport service in a safe and proper manner and in full compliance with all applicable rules and regulations.
- 3.1.4 The SACAA uses “Demonstration Flights” and “Special-demonstration Flights” as part of structured methods to determine the applicant’s capabilities.

3.2 Requirements

- 3.2.1 The requirements for conducting Demonstration Flights are stipulated in SA-CAR Part 121.06.6 and 135.06.9 respectively.
- 3.2.2 Based on the condition stipulated on technical standard on 3.2.1 above, the applicant’s Demonstration Flights will form part of the prospective/AOC approval holders certification process. The applicant will be required to submit the Demonstration Flight Plan with all the certification documentation during the Formal Application Phase.
- 3.2.3 The SACAA will evaluate the applicants Demonstration Flight Plan during Document Evaluation Phase of the certification process.
- 3.2.4 All the Demonstration Flights will be conducted during the Inspection and Demonstration Phase of the certification phase using the methods and procedures proposed by the applicant in the formal application package and approved during document evaluation phase.

3.2.5 Demonstration Flights are non-revenue flights.

3.3 Demonstration Flights

3.3.1 The applicant seeking authorisation to operate certain types of aircraft in commercial air transport service is required to satisfactorily demonstrate its capability to the SACAA before being granted operational approval. The applicant must conduct demonstration flights in compliance with Air Transport Operation Subpart 6 of the SA-CAR which stipulates that;

- a. No person may operate an aircraft type in commercial air transport unless he or she first conducts satisfactory demonstration flights as required by the Director in that aircraft type.

3.3.2 Demonstration Flights will be required to demonstrate the readiness of the applicant to conduct operations using the equipment, facilities, services and personnel identified in the applicants plan and associated documents in accordance with the procedures spelt out in the Operations Manual.

3.3.3 Demonstration flights consist of a demonstration of the applicant's ability to operate and maintain a new aircraft to the operator's fleet or the applicant's ability to conduct a particular kind of operation, such as scheduled or non-scheduled, passenger carrying or cargo operations or Air Ambulance Operations. The applicant is required to operate and maintain the aircraft to the same standards required of the AOC approval holder that is fully certificated and that holds the necessary authorisations.

3.4 Special Demonstrations Flights

3.4.1 Air Transport Operation Subpart 6 of the SA-CAR requires an applicant to demonstrate the capability to conduct proposed operations in designated special areas, or when using specialised navigation before being granted operational approval to conduct these operations. This in compliance with the requirements of Air Transport Operation Subpart 6 of the SA-CAR which stipulates that;

- a. No person may operate an aircraft in a designated special area, or use a specialised navigation system, unless he or she conducts a satisfactory demonstration flight as required by the Director.

3.4.2 The SACAA requires the applicant to successfully complete special-demonstration flights in the following circumstances:

- a. before being issued with an Operations Specifications endorsing an area of operation outside the territory of the certifying state. and,
- b. before being issued with an Operations Specifications endorsing any specific approvals which will be associated with the AOC approval when issued.
- c. Though demonstration and special-demonstration flights satisfy different requirements, both tests may be conducted simultaneously when appropriate.

Demonstration and Special Demonstration Flight Comparison Table

TYPE OF DEMONSTRATION	DEFINITION	SACAR	WHEN REQUIRED	NUMBER OF FLIGHTS REQUIRED
Demonstration Flights	A demonstration flight is a demonstration and test of proposed operations.	121.06.9(1) 135.06.9(1)	<ul style="list-style-type: none"> ▪ During initial AOC certification. ▪ When a new type of aircraft is added 	1 or more 1 or more

	It tests the operator's ability to conduct all operation functions with a specific aircraft.		to the fleet. <ul style="list-style-type: none"> ▪ For each kind* of operation the operator proposed to conduct. 	1 or more
Special Demonstration Flights	A special demonstration flight is a test of a specific operation that an operator seeks operational authorisation.	121.06.9(2) 135.06.9(2)	<ul style="list-style-type: none"> ▪ For each designated special area ▪ For each specialised navigation system. 	May consist of a single flight operation, or a series of flight operations. Total hours of tests must be tailored to the situation.
*A kind of operation is a scheduled operation; non-scheduled operation, passenger carrying and/or cargo, domestic operations, international operations, etc.				

3.5 Testing Methods Acceptable to the SACAA

- 3.5.1 Applicants must demonstrate to the SACAA 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 AOC approval holder approved by the SACAA to operate locally; but is requesting approval to expand operations outside South Africa. The AOC approval holder may only have to demonstrate that it has the proper documentation to conduct the expanded operations.
- 3.5.2 For more complex operations, such as CAT II/CAT III landing minima, RVSM and EDTO, acceptable means that applicants may use to demonstrate compliance have been published in applicable SACAA TGM.
- 3.5.3 The applicant may use methods other than those specified in TGM, 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.
- 3.5.4 Paragraph 3.5.3 is not applicable to an initial AOC certification process.

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

4. THE DEMONSTRATION AND SPECIAL DEMONSTRATION FLIGHT PROCESS

Note: The demonstration and special-demonstration flight process follows the general outline of the five-phase certification process. For more details on the certification process the refer to Certification Process TGM CA AOC 001.

4.1 Pre-Application (Phase 1)

- 4.1.1 Phase one of the demonstrations and special-demonstration flight process begins when an applicant requests authorisation from the SACAA to conduct an operation for which demonstration or special demonstration is required.

- 4.1.2 The SACAA will allocate a certification team responsible for the applicant's application. This team will be led by a certification project manager
- 4.1.3 The SACAA certification team and the applicant must reach a common understanding of what the applicant must do, what role the SACAA will play, and what documents must be prepared for the Demonstration Flight Plan.

4.2 Formal Application (Phase 2)

- 4.2.1 The certification project manager will prepare an initial draft OpSpecs and discuss the draft with the certification team. Both the certification project manager and the applicant should agree on the contents of the draft OpSpecs. The OpSpecs (should be clearly marked draft) will be used during the demonstration flights.
- 4.2.2 The applicant must develop and submit a Demonstration Flight Plan. The plan and test objectives must be specifically tailored to meet the requirements of the proposed draft OpSpecs.
- 4.2.3 Phase two is initiated when the applicant submits the Demonstration Flight Plan to the certification team for evaluation. Furthermore, the certification project manager and the applicant agree that the contents of the draft OpSpecs are in accordance with the applicant's proposed operations. During this phase, the certification project manager must ensure that the plan is complete and in an acceptable format before a thorough review and analysis can be conducted.

4.3 Document Evaluation (Phase 3)

- 4.3.1 Phase three is initiated when the team starts an in-depth review and analysis of the applicant's Demonstration Flight 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).

4.4 Demonstration and Inspection (Phase 4)

- 4.4.1 Phase four is the major phase of the demonstration flight 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 SACAA observation purposes.
- 4.4.2 Phase four is concluded when the certification team is satisfied that all test objectives have been achieved or that the applicant is unable to complete them satisfactorily.

4.5 Certification (Phase 5)

- 4.5.1 Phase five is accomplished after the successful completion of the demonstration or special-demonstration flights.
- 4.5.2 Upon successful completion of the demonstration flights, the certification team will evaluate the OpSpecs and review the Statement of Compliance to ensure all requirements have been satisfied for the approval of OpSpecs and granting of an Air Operator Certificate.

5. DEMONSTRATION FLIGHT TEST REQUIREMENTS

5.1 General

- 5.1.1 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 SA-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.
- 5.1.2 Types of Flights. The only types of flights that can be credited towards demonstration flight

requirements are described in the following subparagraphs.

- a. non-en route
- b. en-route segments.

5.1.3 Non-En route Segment. Non-en route segments consist of training or ferry flights credited towards the demonstration flight requirements. The operator may receive credit for ferry flights and training flights conducted during the non-en route segments of the demonstration phase. The credit shall not exceed a maximum of 50% of the total hours approved on demonstration flight plan. All non-en route must be conducted in accordance with the criteria specified in the applicant approved operations manual in order to be credited as demonstration flight. Cabin Crew are not required to participate in the non-en route segment.

- c. The certification team members function primarily as observers during the non-en route segment demonstration flight.
- d. The simulated in-flight scenarios are not required during the non-en route segment demonstration flight, as this would disrupt flight crew training or delay the ferry flight.
- e. The SACAA certification team will use this segment to inspect the applicant's training, maintenance, or other programs. During this segment the operator will be training its initial check pilots, instructors, and line crew members. Crew members Also gain initial operating experience, so that the revenue operations may begin with minimum delay after certification.
- f. The SACAA certification team is not required to observe ferry flights which will be credited to demonstration flight test however, the certification project manager should make every effort to observe these flights as practically possible.
- g. All training flights which are to be credited towards demonstration flight test requirements, must be observed by the SACAA certification team.

5.1.4 En-route segment. The en-route segments consist of simulated revenue flight conducted by the applicant into representative areas and en-route airports. The en-route segment (representative en-route) simulates routine line operations which the applicant proposes to conduct.

- a. The SACAA certification team shall observe all flights in the en-route segment and evaluate both in-flight and at ground facilities.
- b. The en-route segment must be observed by SACAA inspectors onboard the aircraft. The onboard team will consist of certification team allocated to the project and the flight operations inspector to observe demonstration flight test.
- c. The applicant will be to perform simulated in-flight scenarios during the en-route segment. This scenarios will be given and observed by the certification team onboard the aircraft.
- d. The majority of the flight in the en-route segment should also be observed by maintenance and avionics inspectors onboard the aircraft. In addition to the in-flight activities, operations and airworthiness inspectors must also observe flight initiation, servicing, unscheduled maintenance and flight termination activities.
- e. As the in-flight en-route segment are being observed other inspectors will observe the operator's activities at appropriate ground facilities, such as flight or/and maintenance control centre.
- f. The en-route segments is a non-revenue flight conducted by the applicant into representative areas and en-route airports.

5.1.5 Additional Requirements. To credit ferry hours, hours flown in provisionally certificated aircraft, or training flight hours towards demonstration test requirements, the review of applicant's demonstration flight plan in Phase 3 (Documentation Phase) must have been completed by the certification team. Also, the applicable manuals must be in a state of completion that is acceptable to the certification. The applicant must have received a written communication from the certification project manager indicating the completion and acceptance of the manuals.

- 5.1.6 Flights must be conducted in accordance with the following reviewed and completed manuals (reviewed and completed in Document Evaluation Phase of the certification process)
- a. Operations Manual
 - b. Maintenance Control Manual
 - c. Aircraft Maintenance subcontracting contract requirements
 - d. Aircraft Maintenance Programme
 - e. Minimum Equipment List (MEL) and Configuration Deviation List (CDL)
 - f. Operations control requirements, operations supervision and monitoring (dispatch and monitoring or flight following)
 - g. Operations and maintenance record-keeping requirements

5.2 Representative Number of Flights into En-Route Aerodromes

- 5.2.1 The SA-CARs requires the 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.
- 5.2.2 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 demonstration flight should be based on the applicant's draft OpSpecs submitted during Phase 2 (Formal Application Phase) of the certification process.

5.3 Carriage of Passengers and Cargo

- 5.3.1 Revenue passengers or revenue cargo must not be carried during demonstration flights.
- 5.3.2 The applicant will be required to carry non-revenue passengers that could be company staff or invited guests to simulate a normal passenger load.
- 5.3.3 Non-revenue company cargo or equipment may also be carried during demonstration flights.

5.4 Crew Qualifications for Demonstration Flights

- 5.4.1 Training flights may be credited towards demonstration flight requirements, provided crew
- 5.4.2 members are undergoing training according to the applicant's initially approved flight training curriculum.
- 5.4.3 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.
- 5.4.4 Line checks and operating experience (OE) may be accomplished on demonstration flights.

6. DEMONSTRATION FLIGHTS: THE DEMONSTRATION PHASE

6.1 General

- 6.1.1 The demonstration phase consists of the observation and evaluation of the applicant by the SACAA 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.

6.2 Conduct of En-route Flights

- 6.2.1 En-route flights (representative en-route/en-route segment) 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 and/or at ground facilities.
- 6.2.2 Applicant Pre-Demonstration flight Test Briefing. The certification team will brief with the applicant on what should be accomplish during each demonstration flight test. Briefings shall include at least the following items:
- a. The purpose of the demonstration flight test;

- b. Inspectors who will be conducting the demonstration flight test
 - c. Inspectors who are on the on-job-training
 - d. How simulated scenarios will be initiated, and what action is expected from the applicant;
 - e. How to react to an actual emergency during the demonstration flight test;
 - f. Copies of flight plans, load manifests, and other documents that are expected and that should be provided;
 - g. How maintenance discrepancies will be treated or terminated;
 - h. Debriefing at the conclusion of the demonstration flight.
- 6.2.3 Determining Applicant Competency. The inspection and evaluation of the applicant's competency during the en-route segment will 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
 - c. Aerodrome/station facilities
 - d. Operational control
 - e. Company procedures
- 6.2.4 Flight crew members. Examples of areas to be inspected and evaluated by the certification team to determine the applicant competency and ability of the flight crew throughout the en-route segment.
- a. Flight crew 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. Company manuals and procedures
 - i. Crew discipline, situational awareness, and crew management
 - j. Crew 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 company and also with air traffic control (ATC)
 - o. Check Pilot performance and effectiveness.
 - p. Adequacy of aircraft training program as demonstrated by the flight crew
 - q. Cabin crew and passenger briefings.
- 6.2.5 Cabin Crew Members. Examples of areas to be inspected and evaluated by the certification team to determine the applicant competency and ability of the cabin crew member during the en-route segment.

- a. Competency in all normal procedures associated with their assigned positions.
 - b. Knowledge of emergency procedures (including evacuation, firefighting, pressurisation 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 crewmember is incapacitated.
 - e. Knowledge of verbal and non-verbal communication procedures between the cabin and cockpit.
 - f. Training program effectiveness.
 - g. Cockpit co-ordination.
- 6.2.6 Aerodrome/Station Facilities. The certification team will 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. Pre-flight walk around;
 - h. Ground personnel qualifications and training (if applicable);
 - i. Passenger handling procedures;
 - j. Baggage and cargo loading;
 - k. Aircraft fuelling and servicing;
 - l. Gate arrival and departure procedures and equipment.
- 6.2.7 Dispatch and Monitoring or Flight Following Centre. 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 company, 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 take-off)
 - i. Scheduling
 - j. Flight crew duty time
 - k. Manuals
 - l. High minimums captains
 - m. Maintenance control (procedures and records)
 - n. Flight crew briefings
- 6.2.8 Company Procedures. Examples of company procedures and programs 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 programs
 - 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

7. PLANNING THE DEMONSTRATION FLIGHT

7.1 Applicant's Plan for Demonstration Flights

- 7.1.1 The applicant must submit a demonstration flight plan during the formal application phase (Phase 2) of the certification process. The plan should include training or ferry flights that the applicant desires to have credited toward the demonstration flight test requirements. The plan must contain at least the following information:
- 7.1.2 Identification of the applicant's representative who will serve as the primary demonstration flight spokesperson.
- 7.1.3 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: SACAA 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.

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

7.2 Initial Review

- 7.2.1 The certification team will initially review the applicant's plan to determine if the appropriate documentation has been submitted. The plan must contain a realistic proposal that will permit the SACAA certification team to adequately observe and evaluate the applicant's overall abilities. Based on the outcomes of the initial review, one of the following actions must be taken:
- a. Accept the Plan. If the plan is feasible and satisfies regulatory requirements, the certification project manager will notify the applicant. Any changes should be negotiated and mutually agreed upon at this time.
 - b. Return the Plan with Explanation. If the plan lacks appropriate documentation or does not satisfy requirements, it will be returned to the applicant as soon as possible. The certification project manager will forward a letter briefly describing the principal reasons for the plan's rejection.

7.3 Demonstration Flight Participants

- 7.3.1 Demonstration Flight Participants are limit to the SACAA certification team and individuals who are designated by the applicant to participate in the in-flight portion of the demonstration flights.
- 7.3.2
- a. SACAA Participants. SACAA participants will be limited to inspectors who have specific tasks to perform during the demonstration flight and inspectors accomplishing on the job training.
 - b. 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 may include the following personnel:
 - i. Initial cadre check pilot.
 - ii. Nominated postholders for operations and maintenance (if applicable).
 - iii. Those supervisory personnel needed to act on behalf of the company if actions are required to resolve discrepancies.

- iv. Other personnel, such as representatives of engine and aircraft manufacturers, may be authorized to participate if their presence materially enhances the process.

7.4 Coordination

- 7.4.1 The certification project manager will coordinate with the applicant's representative and is responsible for coordinating all parts of the demonstration flight plan proposed tests. The applicant's representatives, crewmembers and SACAA participants, must understand and agree on which tasks must be accomplished to show compliance with regulatory requirements.

7.5 Applicant's Capabilities Evaluation

- 7.5.1 During the Demonstration flight the applicant will be subjected to simulated operational scenarios to evaluate the applicant's overall and specific abilities.
 - a. 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.
 - b. During the demonstration flight test, the certification will take into account that the applicant is not encumbered with so many simulated scenarios that a proper evaluation of its proposed routine operation is inhibited.
 - c. The scenarios may be the following;
 - i. In-flight and Ground Scenario
 - ii. Emergency Scenarios
 - d. Other aircraft simulated emergencies may include
 - i. Simulated incapacitated passengers in need of immediate medical assistance
 - ii. Simulated lavatory fire
 - iii. Simulated loss of pressurization
 - iv. Simulated landing gear extension or retraction problems
 - e. Maintenance scenarios
 - i. Diversion to alternate aerodromes for reasons such as weather or maintenance
 - ii. Minimum equipment list (MEL) or configuration deviation list (CDL) situation
 - iii. 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)
 - iv. Security and dangerous goods situations
 - v. Situations that exercise dispatch and monitoring or flight following centres
 - vi. 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)

Note: Hijack scenarios are prohibited during demonstration flights. Inspectors or security inspectors will examine flight crew knowledge and company procedures through other methods. The company's antihijack program will not be exercised during demonstration flights.

8. DEVIATIONS FROM THE DEMONSTRATION FLIGHT PLAN

8.1 General

- 8.1.1 Any subsequent change to the Demonstration Flight Plan must be co-ordinated with the certification team.
- 8.1.2 SA-CAR Part 121.06.9(4) and 135.06.9(3) provides the applicant with an opportunity to apply for a deviation from the Demonstration Flight Plan that was reviewed and approved during Phase 3 (Document Evaluation) of the certification process. This is the Demonstration Flight Plan submitted by the applicant during Formal Application (Phase 2) of the certification process.
- 8.1.3 The requirements of SA-CAR Part 121.06.9(4) and 135.06.9(3) should not be construed with exemption process as prescribed in the Part 11 of the regulations. If the applicant requires to be exempted from complying with the requirements of Demonstration Flight as stipulated in SA-CAR Part 121.06.9 and 135.06.9 the applicant shall comply with the requirements of SA-CAR Part 11 Subpart 4

8.2 Application.

- 8.2.1 The applicant seeking deviation from specific part/s of demonstration flight plan, must submit a written request (i.e., letter) to the certification project manager responsible for the applicant's certification process.
- a. The applicant must include specific parts of the demonstration flight plan they require to deviate from.
 - b. The applicant must include justification information to support the deviation request. The request must explain how the applicant intends to demonstrate regulatory compliance with the requested deviation. The deviation will be thoroughly evaluated using the points below to determine whether the justification information provided by the applicant is sufficient to grant the deviation.
- 8.2.2 Total Hours of Operation. The deviation must include the total number of hours that the applicant proposes to fly.
- 8.2.3 Flight Experience Resume. The deviation 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:
- a. Licenses
 - b. Total flight time
 - c. Any previous experience with the proposed aircraft
 - d. Years of experience with the applicant and any other AOC holder
 - e. Other transport experience, such as military
- 8.2.4 Justification Statement. The statement must contain, but is not limited to, the following:
- a. Company experience with operations as an AOC holder
 - b. Company experience with aircraft of the same group or type
 - c. Company experience with the aerodromes and areas of en-route operation into which the proposed aircraft will be operating
- 8.2.5 Other information. The deviation must include any other information requested by either the assigned inspectors or the certification project manager if applicable, or any information that the applicant believes will be useful in justifying the deviation.
- a. The applicant must submit the letter to certification project manager at least 60 days before the proposed demonstration flight date.

8.3 Letter of Approval/Denial of Deviation

- 8.3.1 If the request for a deviation is approved, the certification project manager will issue a letter of deviation approval which will grant relief from specified sections of the demonstration plan as requested by the applicant. If the request is denied, the applicant will be informed of the decision by a letter that explains the reasons for denial.

8.4 Conditions of Approval

- 8.4.1 If the deviation is approved, the deviation will specify the minimum number of demonstration flight hours that the applicant must plan. The deviation approval letter will contain a disclaimer that additional demonstration flights may be required, should the applicant fail to demonstrate the ability to comply with all applicable regulations.

9. SPECIAL DEMONSTRATION REQUIREMENTS

9.1 General

- 9.1.1 SA-CAR Part 121.06.9(2) and 135.06.9(2) require applicants proposing to operate in designated special areas or using specialized navigation systems to demonstrate to the satisfaction of the Director the operator's ability to conduct such operations safely and in compliance with regulatory requirements. The process by which an applicant demonstrates this capability to the SACAA is known as the special-demonstration flights.
- 9.1.2 Special Demonstration Flights. The most common method used by the SACAA to validate an applicant's capability is to observe the applicant conduct flight operations;
- 9.1.3 Situations Requiring Special-Demonstration Flight. The applicant is required to demonstrate capability to conduct specific approval (special operational approvals) for the specific aircraft type the applicant intends to use.
- 9.1.4 The SACAA may conduct special-demonstration testing with or without an actual flight, however an in-depth review will be conducted on all applicable portions of the applicant's proposed procedures (especially flight following), training programmes, manuals, facilities, and maintenance programmes.
- 9.1.5 Paragraph 9.1.3 is not applicable to initial an AOC certification process.

9.2 Combined Demonstration and Special-Demonstration Flights.

- 9.2.1 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.
- 9.2.2 Demonstration and Special-Demonstration Flights satisfy different regulatory requirements, it is acceptable for applicants to conduct both tests simultaneously.

9.3 Planning the Special-Demonstration Flights

- 9.3.1 The 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.
- a. **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;
 - b. **Determining Number of Flight Hours.** A required number of flight hours for a special-demonstration flight should be based on the adequacy of the specified flight hours to allow the applicant to demonstrate the requested approval.
 - c. **Revisions to Applicant Documents and Training Programme.** Most special approval require revisions to the applicant's manual, 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 to the certification team to review and approval or acceptance, as appropriate;

- d. Amendment to Operation Specifications. All special approvals require an amendment to the OpSpecs; the applicant should apply for the amendment at the same time the special-demonstration plan is submitted.

9.4 Areas Evaluated on Special-Demonstration Flights

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

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

- a. Flight crew training (and cabin crew member 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.

9.5 Carriage of Revenue Passengers on Special-Demonstration Flights




9.5.1 The certification 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.

9.5.2 Non-permissible Situations. The carriage of revenue passengers will not be permitted during special-demonstration flights in the following situations:

- a. When the applicant is seeking an initial AOC approval.
- b. When the applicant has not previously operated a specific aircraft type in operations that require a special operational approval.

9.5.3 Exceptions to paragraph 9.5.1. The demonstration teams may consider permitting the carriage of revenue passengers if the applicant meets the following conditions:

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

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