CHAPTER 14

Emergency Evacuation and Ditching Demonstrations

1.0 PURPOSE

This Chapter provides direction and guidance to inspectors for planning, observing, and evaluating emergency evacuation and ditching demonstrations. Effective emergency evacuation procedures have significantly reduced the number of casualties in survivable aircraft accidents. The Authority considers an operator's ability to perform these procedures an extremely important factor of aviation safety.

2.0 REFERENCE

2.1 Regulation 9.2.3.5 of the Nigeria Civil Aviation Regulations.

2.2 FORM:O-OPS014

3.0 GENERAL

2.1 The Authority requires that air operators engaged in passenger-carrying operations must conduct a full capacity or a partial aborted takeoff evacuation demonstration for any aeroplane with a seating configuration of more than 44 passenger seats.

2.2 The emergency evacuation and ditching demonstrations may be conducted during the certification process or as a separate event as prescribed in this Order. During the certification process the emergency evacuation and ditching demonstrations evaluation will be conducted by the Certification Team under the Certification Project Manager (CPM). In the case of a separate event the evaluation will be conducted by the Demonstration Team Members under the Demonstration Team Leader (DTL).

2.2 Air operators engaged in passenger-carrying operations must conduct a full capacity or partial ditching evacuation demonstration for any land aeroplane intended for extended over water operations. The need to conduct full-capacity or partial demonstrations depends on whether another air operator engaged in passenger-carrying operations, or the aeroplane manufacturer, had previously accomplished a full-capacity demonstration. These demonstrations specifically test the following areas:

2.2.1 The operator's emergency training program and crewmember competency;

2.2.2 The operator's emergency evacuation and ditching procedures;

2.2.3 The reliability and capability of the emergency equipment on the aeroplane.

2.3 A transport category aeroplane manufacturer must conduct emergency evacuation demonstrations. The demonstrations must be conducted in accordance with regulations applicable to the type certification and the State of aircraft design. Observation and evaluation of this demonstration is the responsibility of the Authority. This demonstration tests the following:

2.3.1 The basic aeroplane design and the efficiency with which passengers can be safely evacuated from it;

2.3.2 The emergency evacuation systems on the aeroplane;

2.3.3 The manufacturer's/operator's Authority approved emergency evacuation procedures.

3.0 REGULATORY REQUIREMENTS

3.1 Regulation 9.2.3.5 of the Nigeria Civil Aviation Regulations specifies the requirements for conducting these demonstrations. The regulation cites when they must be performed, how they are to be conducted and the specific criteria that must be met by the operator or manufacturer.

3.2 Full-Capacity Aborted Takeoff.

3.2.1 Regulation 9.2.3.5(a) of the Nigeria Civil Aviation Regulations requires an AOC holder engaged in passenger carrying operations to conduct a full-capacity emergency evacuation demonstration for the aircraft configuration in 90 seconds or less. It is a policy that this Regulation is applicable to each type and model aeroplane with a configuration of more than 44 passenger seats that is used in passenger carrying operations. A full-capacity emergency evacuation demonstration simulates an aborted takeoff. Before initiation of the demonstration, a passenger participant must occupy each installed passenger seat;

3.2.2 After the initiation signal, all passenger participants and crew members must be evacuated using the aeroplane's emergency evacuation equipment and not more than 50 percent of the emergency exits and slides. The demonstration must show that the aeroplane and its emergency equipment, using the operator's emergency procedures, allows for the evacuation of its full seating capacity, including crew members in 90 seconds or less. Additionally, if an operator proposes to use a type and model aeroplane with a seating configuration greater than has ever been previously demonstrated for that particular type and model, the operator must conduct a full-capacity demonstration with that type and model of aeroplane.

3.3 Partial Aborted Takeoff: Regulation 9.2.3.5 (2) of the Nigeria Civil Aviation Regulations specifies conditions under which an air operator may not be required to demonstrate a full capacity demonstration. If an air operator's written petition for an exemption from the requirements of regulation 9.2.3.5 (a) of the Nigeria Civil Aviation Regulations satisfies, the operator may be permitted to conduct a partial emergency evacuation demonstration in accordance with regulation 9.2.3.5 (3) of the Nigeria Civil Aviation Regulations. No passenger participants are used in a partial demonstration. A partial emergency evacuation demonstration simulates an aborted takeoff

and requires that, before initiation of the demonstration, the cabin crews occupy their normal takeoff positions. After the initiation signal, the aircraft's emergency evacuation equipment and 50 percent of the required emergency exits and slides must be ready for use in 15 seconds or less. A partial emergency evacuation demonstration must be conducted in the following situations:

3.3.1 When an operator intends to place in service a type and model of aeroplane that is new to the operator but which has previously had a full-capacity emergency evacuation demonstration conducted in accordance with Part 9 of the Nigeria Civil Aviation Regulations and Part 5 of the Nigeria Civil Aviation Regulations;

3.3.2 When an operator "significantly changes" the number of cabin crew members, their seating location, their evacuation duties, or emergency procedures:

a) "Significant change," as used in the preceding subparagraph 3.2.2 above, is a determination made by the Flight Operations Inspector when an operator proposes to change the number of cabin crew members, their seating location, their evacuation duties, or emergency procedures:

(i) Number. When a change in seating configuration of the aircraft in service requires the addition of a cabin crew, Regulation 9.3.1.7 of the Nigeria Civil Aviation Regulations, a partial demonstration is required if that operator has not previously demonstrated the higher seating capacity and larger complement of cabin crews. A change in seating capacity, which does not result in the addition of a required cabin crew or results in a fewer number of required cabin crews, usually does not constitute a "significant change" and a partial demonstration usually is not required. In some cases, however, depending on changes in cabin crew duties and/or procedures, a change in seating capacity that does not result in the addition of a cabin crew or results in fewer cabin crew members may require a partial demonstration;

(ii) Location. When an operator changes a cabin crew seating assignment, for any reason, the Flight Operations Inspector must consider if that action significantly changes the cabin crew's duties or responsibilities. For example, changing a cabin crew‘s seating assignment from one floor level exit to an adjacent floor level exit may not constitute a "significant change" in cabin crew duties. However, if an operator changes the seating location because of a new procedure, which requires, for the first time, cabin crews to open over wing window exits, that action would constitute a "significant change" and would require a partial demonstration;

(iii) Duties and procedures. When an operator changes emergency evacuation duties or procedures, the Flight Operations Inspector must consider the scope and character of the change in determining the requirement for a partial evacuation. For example, if the degree of change requires cabin crew member actions or knowledge, which has never been previously required or demonstrated a partial demonstration is required. If the change in duties or procedures is minor or can adequately be dealt with through the operator's training program, a demonstration may not be required.

b) Whenever an operator proposes to make one of the changes previously discussed, the Flight Operations Inspector, in determining the degree and significance of the change, must consider cabin crew knowledge, experience and the operator's training program, and the

increase in complexity of the duties for each cabin crew member in terms of additional exits, seats, or briefing responsibilities.

3.4 When an operator changes the number, location, type of emergency exits, or the type of opening mechanisms on the emergency exits used for aircraft evacuation, a demonstration may be required by the Authority. Any such proposal made by an operator must be immediately forwarded to the Person responsible for Safety Oversight for consideration and determination of whether a full capacity, a partial, or no demonstration is required.

3.5 IS 9.9.2.3.5(d) of the Nigeria Civil Aviation Regulations specifies the criteria used for evaluating a partial evacuation demonstration. The operator must demonstrate the effectiveness of its crew member emergency training and evacuation procedures by accomplishing the following:

3.5.1 Conducting a demonstration without passenger participants using the operator's line operating procedures;

3.5.2 Opening the exits and deploying the slides as selected by the Authority and "Prepare for use" of those exits and slides within 15 seconds;

NOTE: *"Prepare for use" is defined as the emergency exits being fully opened and, if applicable, the emergency exit slides being completely deployed or inflated and properly positioned on the ground in a manner which would not impede passenger or crew member egress.*

a) Using operator cabin crew members who have completed the approved training program for the type and model of aeroplane being demonstrated and who have passed a knowledge or practical test on emergency equipment and procedures;

b) Opening 50 percent of the total emergency exits and deploying 50 percent of the exit slides.

NOTE: *If the operator-developed emergency evacuation procedures require cabin crew members to open required nonfloor-level emergency exits, 50 percent of those exits must also be opened during the demonstration.*

(4) **Ditching.** Regulation 9.2.3.5(d) of the Nigeria Civil Aviation Regulations requires an operator who intends to operate a land plane in extended over water operations to conduct a ditching demonstration. IS.9.2.3.5(e) of the Nigeria Civil Aviation Regulations, prescribe the conditions applicable to the conduct of the ditching evacuation demonstration.

4.0 THE ABORTED TAKE-OFF DEMONSTRATION: PHASE ONE

4.1 The regulatory requirements previously outlined in this Order identify the three occasions when an air operator engaged in passenger carrying operations must conduct an emergency evacuation demonstration. An emergency evacuation demonstration is required when the operator proposes to operate a specific aeroplane type and model:

4.1.1 For the first time either a new, as with initial certification, or existing operator;

4.1.2 When there is a "significant change" in the number of cabin crew members, their seating location, their evacuation duties, or emergency procedures (as determined by the Authority);

4.1.3 When there is a change in the number, location, type of emergency exits, or type of opening mechanism on the emergency exits used for aircraft evacuation (as determined by the Authority)

4.2 When an operator's situation meets one or more of these conditions, the Authority must determine the requirement for either a full capacity or a partial aborted takeoff evacuation demonstration.

4.2.1 A full-capacity demonstration is required in the following situations:

a) When the aeroplane type and model and its proposed full passenger seating capacity has not been previously demonstrated by another State air operator or by a domestic or foreign manufacturer in accordance with airworthiness regulations applicable to the state of design;

b) When an aeroplane has undergone a change in its exit configuration and/or design (as determined by the Authority).

4.2.2 A partial demonstration is required in the following situations:

a) When an aeroplane (new to an operator) has previously had a full-capacity demonstration, conducted by an air operator or manufacturer, for the maximum seating configuration to be used by the operator acquiring the aeroplane;

b) When the operator is undergoing original or initial certification;

c) If the Authority determines a "significant change" has occurred in the number of cabin crew members, their location, or their duties and emergency procedures;

d) If the Authority determines a change has occurred in seating configuration, exits, or some other material alteration of the aeroplanes original design that would require a partial demonstration.

4.2.3 The most commonly performed demonstration is the partial aborted takeoff emergency evacuation demonstration. The general criteria (with the exception of the 15 seconds time limit and passenger participants) are similar to the full-capacity aborted takeoff demonstration. For the purposes of this Order, the requirements of the partial and full-capacity evacuation demonstration process is combined into one section. Additional requirements, exclusively imposed by the full-capacity evacuation demonstration, are shown in an appropriately titled box.

4.3 Briefing the Operator on Demonstration Requirements

4.3.1 After the Authority demonstration team leader determines whether a partial or full-capacity demonstration is required, the operator must develop a plan outlining the manner in which the demonstration is to be conducted. The inspectors must meet with the operator as often as

necessary to ensure the operator clearly understands which documents and information are required for the plan to be accepted for evaluation.

4.3.2 The operator may not practice, rehearse, or describe the demonstration for the passengers (when passengers' actions are required by the operator's procedures) nor may any participant have taken part in this type of demonstration within the preceding six months;

4.3.3 Management personnel from operations and maintenance must be available at the site for either a full-capacity or partial demonstration. These individuals must have authority to direct modifications to the emergency evacuation demonstration plan at the time of the demonstration. Additionally, they must be able to respond to the Authority requirements for specific corrective actions due to deficiencies that may occur during the demonstration. Other operator personnel present at the demonstration site should have a direct role in conducting the demonstration. The operator should be informed that, although other operator personnel may observe the demonstration, it is the operator's responsibility to ensure that these persons do not pose a distraction or affect the demonstration's outcome;

4.3.4 Other persons, who are not employees of the operator or personnel of the Authority, must have specific reasons to observe the emergency evacuation demonstration. Usually, these individuals will be representatives of the aircraft manufacturer, manufacturers of other items of equipment used during the demonstration, or other such organisations that have a direct interest in aviation safety;

4.3.5 The cabin crew member complement must consist of the minimum number of cabin crew members that the operator proposes to use on the aeroplane in commercial air transport passenger-carrying operations, and in no case shall the minimum number be less than that specified in Regulation 3.1.7(b) of Part 9 of the Nigeria Civil Aviation Regulations.

4.3.6 The aeroplane must be positioned in a normal ground attitude and configured for takeoff. Each passenger compartment door or curtain must be positioned, as it would be for a normal takeoff.

4.4 The Operator's Plan

4.4.1 The operator shall obtain approval by the Authority before conducting the emergency evacuation demonstration (full-capacity or partial). The operator should submit the plan as far in advance as possible. The Authority requires that the plan be submitted at least 30 working days before the intended date of a demonstration. The operator's plan shall contain the following information:

4.4.2 A letter of request which states the following:

a) The applicable regulation, [Regulation 9.2.3.5 of the Nigeria Civil Aviation Regulations], that requires a full-capacity or partial emergency evacuation demonstration be conducted;

b) The aeroplane type and model and full seating capacity (including crew members) to be demonstrated;

c) The number of cabin crew members and their duty assignment positions to be used during the demonstration;

d) The proposed date, time, and location of the evacuation demonstration;

e) The name and telephone number of the operator's evacuation demonstration co-ordinator (spokesperson);

f) A clear description of how the operator proposes to initiate the demonstration, the signal to be used for the purpose of timing. The operator must understand that the signal has to be given to both cabin and ground personnel simultaneously to initiate the demonstration. It should be emphasised that the Authority is responsible for developing the initiation procedure and the method for blocking exits. The Demonstration Team Leader (DTL) will thoroughly review this procedure for adequacy.

4.4.3 A diagram, representative of the aeroplane to be demonstrated, which includes the following:

a) The location and designation of all exits by type and the designated exit pairs;

b) The assigned seating location of each required crew member during takeoff;

c) The interior cabin configuration showing the location of each passenger seat, the galleys, aisles, lavatories, and passenger compartment partitions and bulkheads;

d) The location and type of emergency equipment on the aircraft including:
(i) Fire extinguishers;
(ii) Portable oxygen bottles/masks;
(iii) Megaphones;
(iv) Crash axes;
(v) Emergency ropes/tapes;
(vi) Life rafts/slide rafts;
(vii) Individual floatation devices or life preservers;
(viii) First aid and medical kits.

4.4.4 Copies of the appropriate crew member manual pages describing emergency evacuation duties and responsibilities.

4.4.5 A copy of the passenger information card which will be used on the aircraft during revenue operations.

4.4.6 A description of the emergency equipment installed on the aircraft including at least the type and model of each item of equipment, as applicable.

4.4.7 A list of flight and cabin crew members who are or will be qualified to participate in the demonstration must be in the operator's plan. The flight crew members must be qualified in the aircraft to be used. Cabin crew members, in accordance with IS 9.2.3.5(c) of the Nigeria Civil Aviation Regulations, must have completed an Authority approved training program and passed drills and competence check on the type aircraft, emergency equipment, and procedures. Cabin

crew members designated by the Authority to participate in the demonstration shall not be provided emergency training or aircraft emergency equipment familiarisation more than that specified in the operator's approved training program before the demonstration.

NOTE: *The flight crew members must take no active role in assisting others inside the cabin during the demonstration.*

4.4.8 A description must be in the plan of how the operator will ensure the demonstration is conducted in the "dark of the night," or in conditions which simulate the "dark of the night." The regulations do not define "dark of the night." For the purpose of emergency evacuation demonstrations, "dark of the night" shall mean a level of illumination that approximates the natural illumination that occurs 90 minutes after official sunset under clear sky conditions. This lower level of illumination is needed to properly evaluate the aeroplane's emergency lighting system and passenger and crewmember performance in darkened conditions. Levels of illumination significantly darker can interfere with a proper evaluation of the demonstration. Therefore, this approximate level of illumination should be maintained by natural or artificial means. The most effective way of controlling the level of illumination is to conduct the demonstration in a darkened hangar.

4.4.9 A description of how the operator plans to ensure that the aeroplane is positioned in a location, either indoors or outdoors, which will allow the unobstructed deployment of all emergency evacuation slides or slide rafts, as applicable

5.0 THE ABORTED TAKEOFF DEMONSTRATION: PHASE TWO

5.1 When the operator's emergency evacuation demonstration plan is submitted, the Authority shall in phase two, make a cursory review of the submission to ensure all the required information and documents required in phase one are included.

5.2 While a thorough analysis of the submission is conducted during phase three, in phase two the Authority should respond to the operator's plan in a timely manner. Minor omissions or deficiencies can often be resolved by contacting the operator's evacuation demonstration coordinator. If discrepancies can be resolved quickly, the process moves to phase three.

5.3 If the operator's plan has a significant number of required items or documents missing or is obviously incomplete, the entire submission must be returned to the operator with a written explanation of why it is unacceptable. The operator shall be advised that the Authority will take no further action until an acceptable plan is submitted.

6.0 THE ABORTED TAKEOFF DEMONSTRATION: PHASE THREE

6.1 During phase three the Authority shall conduct a thorough analysis and evaluation of the operator's plan.

6.2 The inspectors must ensure that the information in or attached to the operator's letter of request is acceptable and consistent with the proposed type of demonstration. During this analysis and review the Flight Operations Inspectors shall ensure the following:

6.2.1 The operator's emergency training program has been approved by the Authority;

6.2.2 Evacuation procedures in the operator's manuals, including individual crew member assignments, are realistic, can be practically accomplished;

6.2.3 The passenger information card is understandable and consistent with the type and model of aeroplane to be demonstrated;

6.2.4 The emergency equipment is acceptable for the type of operation proposed.

6.3 Certain items in the proposal may require on site evaluations. For example, the hangar or ramp area the operator intends to use for the demonstration should be inspected for its adequacy. The inspector should determine that the operator has, or is making provisions for participant safety during the demonstration including the use of safety observers, stands, padding, mats, and any other appropriate safety measures.

6.4 Deficiencies noted during this analysis and review must be resolved with the operator's evacuation demonstration co-ordinator. If major discrepancies surface during the Authority evaluation or if the Authority and the operator are unable to resolve significant issues, the operator's plan must be returned with a letter explaining why it is being returned. The operator shall be informed that the discrepancies outlined in the letter must be corrected and a plan resubmitted before the Authority takes further action. If, after a detailed evaluation, the submission is found acceptable, the operator shall be notified that the Authority has accepted it.

7.0 THE ABORTED TAKEOFF DEMONSTRATION: PHASE FOUR

7.1 During phase four, the Authority plans, observes, and evaluates the operator's aborted takeoff emergency evacuation demonstration. The planning segment of this phase is particularly important and normally requires thorough co-ordination and clear instruction and guidance for both the Authority and operator participants to ensure that the demonstration is conducted and evaluated objectively.

7.2 Specific guidance and instruction for planning and conducting the full capacity and partial aborted takeoff evacuation demonstrations are in paragraph 4.

8.0 THE ABORTED TAKEOFF DEMONSTRATION: PHASE FIVE

8.1 Upon successful completion of an aborted takeoff emergency evacuation demonstration, the operator shall be immediately notified at the site of the demonstration. The results of the demonstration are reported as specified in paragraph 7.

8.2 The aircraft make model and the maximum demonstrated passenger-seating capacity must be listed and approved in the operations specifications.

9.0 ABORTED TAKEOFF DEMONSTRATION PROCEDURES

9.1 The Demonstration Team

9.1.1 A team leader shall head the Authority team responsible for evaluating the emergency evacuation demonstration. For an initial certification, the Certification Project Manager (CPM) serves as the demonstration team leader.

9.1.2 When an existing operator conducts a demonstration, the Authority will normally assign one of the inspectors to serve as the demonstration team leader. The team leader should be assigned as early as possible in the process and no later than the beginning of phase three. The team leader is responsible for planning, conducting, and evaluating the emergency evacuation demonstration. The team leader serves as the focal point and central spokesperson for the Authority on all matters pertaining to the demonstration. Other members of the Authority team should be assigned as needed and consist of operations, maintenance, and avionics inspectors familiar with commercial air transport operations and applicable regulatory requirements.

9.2 Pre-Demonstration Meeting With Operator

9.2.1 After reviewing and thoroughly evaluating the operator's plan (phase three), the team leader should meet with the operator's evacuation demonstration co-ordinator.

9.2.2 During this meeting the team leader should accomplish the following:

a) Review the operator's plan and ensure that the operator is thoroughly familiar with the applicable criteria to be used during the demonstration;

b) Ensure that the operator is aware of his responsibilities regarding participant safety including provisions for safety observers, stands, ramps, padding, and ambulance co-ordination, as applicable;

c) Review the method and signals for initiating the demonstration and timing criteria;

d) In co-ordination with the operator, determine the signal to be used to terminate the demonstration such as an air horn, or some other clear, distinguishable audible signal. (Experience has demonstrated that a whistle blast may not be adequate.) A suitable device should be agreed upon as early as possible in the planning stage, and tested to assure its adequacy;

e) Resolve any unanswered questions or issues the operator may have before conducting the demonstration.

9.3 Authority Team Planning

9.3.1 The DTL or CPM shall conduct a meeting with team members to assure each team member has a specific assignment during the demonstration. This includes timekeeping, position (inside or outside the aeroplane), and inspecting the emergency equipment, the aeroplane, and any applicable documents. The DTL or CPM should distribute an aircraft diagram to each inspector showing his or her assigned locations for the demonstration.

9.3.2 The team must determine which emergency exits shall be opened and the manner in which other exits will be blocked. Typical crew members used in the demonstration must be selected at random from a list provided by the operator of at least two full crew complements. Normally, typical crew members should not include those used in previous demonstrations, emergency procedures instructors, supervisors, check pilots, operator‘s safety officers, or others who may have an above average level of experience or exposure to emergency evacuation requirements.

9.3.3 The DTL or CPM must ensure each team member is aware of the signal to be used to initiate the demonstration and the signal to be used to terminate the demonstration. During the meeting, regulatory requirements and demonstration criteria should be reviewed to assure common understandings.

9.4 Selecting Exits

9.4.1 In aeroplanes having an even number of exits not more than 50 percent of the total number of exits and slides may be opened and deployed. When an aeroplane has an odd number of emergency exits, subtract one (if possible, an unpaired exit). Fifty percent of that number of exits shall be opened and the associated slides (if applicable) deployed. The remaining exits must be blocked.

9.4.2 Any emergency exit assigned to a cabin crew member as part of his/her evacuation duties may be selected for use during the demonstration. These floor level exits (doors) and nonfloor-level exits (windows or plugs) may be used provided they are designated as primary exits to be opened by a cabin crew member in the operator's evacuation procedures. Ventral (stairs) and tail cone exits should not be used unless they are paired with another exit. If there is any doubt as to which exits are paired, consult the State of aircraft design responsible for the type certificate of the aircraft make/model.

9.4.3 The DTL or CPM must carefully review the operator's emergency evacuation procedures. During partial demonstrations, only the cabin crew member's primary exits, as designated by the operator's manual, may be used. When deciding which doors or exits are to be opened during a partial demonstration, the Authority shall not select a door that is not designated as a primary cabin crew member duty to open, or a secondary door or exit that could not possibly be opened and ready for use in 15 seconds. It is recommended that one exit from each exit pair be selected. Exit pairs should be identified by the operator in the interior configuration diagram. After determining which exits will be used, the team should not divulge that information to the operator.

9.5 Blocking Exits

9.5.1 The operator should propose the method for blocking exits. The demonstration team must review the proposal to determine its acceptability.

9.5.2 The following are examples of acceptable methods of blocking exits during an emergency evacuation demonstration:

a) Tape a swatch of red cloth covering each door window and window exit. Secure a line to the covering long enough to reach the ramp or hangar floor. At the initiation signal, designated inspectors will pull the lines to remove the coverings from the door windows or window exits that are to be used and leave the coverings on the windows that are not to be used;

b) Position inspectors inside the aeroplane at each door or window exit before starting the demonstration. When the evacuation is initiated, the inspectors positioned in front of exits to be opened shall move from that position as quickly as possible. Inspectors positioned in front of exits not to be used will block the exits by raising their hands and stating, "this exit is blocked." This is the most effective method for blocking over wing exits;

c) To simulate a fire at the blocked exits, rig red lights (which when illuminated simulate fire) in front of the appropriate door windows or window exits. The lights at the exits to be blocked must be illuminated simultaneously with the initiation signal.

9.5.3 When a method of blocking exits has been determined, the Authority DTL or CPM must notify the operator's project co-ordinator of Authority concurrence with the method and ensure the operator will provide the required maintenance and logistical support to prepare the exit blocking methods.

9.6 Initiation Signal

9.6.1 It is essential that team members be aware of the demonstration initiation signal. The operator should propose a method that provides the same initiation signal for participants inside the aeroplane and Authority team members outside the aeroplane. The preferred method is for a operator employee to interrupt the aeroplane's normal source of power by one of the following actions:

a) Disconnecting, or turning off an external source of power or a ground power unit;

b) Disconnecting or turning off the auxiliary power unit.

9.6.2 This method of initiating the demonstration provides a clear initiation signal in the following ways:

a) Inside the aeroplane, the cabin crew members and team members will observe the normal cabin lighting extinguish and the emergency lighting system illuminate as their signal to commence the evacuation demonstration;

b) Outside the aeroplane, Authority observers (stationed at each exit) and the DTL or CPM (who serves as the timekeeper) will observe the external lights (for example, taxi lights, anti-collision lights, position lights, and logo lights) extinguish. This is the signal to initiate the timing and other necessary observation actions of the team.

9.7 Participants

9.7.1 Due to the complexity involved in conducting an emergency evacuation demonstration, only those individuals who have a genuine need or concern should be present during the demonstration. Interested but unessential personnel may present hazards, interfere, or in other ways affect the outcome of the demonstration.

9.7.2 The operator is responsible for all non- Authority personnel who observe the demonstration. Those not directly involved in the demonstration should be kept at a reasonable distance from the aeroplane by some means such as ropes or lines.

9.7.3 The DTL or CPM is responsible for Authority personnel who observe the demonstration.The Authority observers should be limited to those who are required to evaluate the conduct of the demonstrations or need to be involved for specific reasons such as the following:

a) Authority inspectors whose operators will be acquiring the same or similar type aircraft as the one being demonstrated;

b) Government officials or designees;

c) Authority personnel concerned with technical or engineering components of the aircraft.

9.8 Pre-Demonstration Inspection

9.8.1 Before the demonstration, the Authority team must inspect the aeroplane and emergency equipment. The aeroplane must be configured and equipped for takeoff, in accordance with the operator's manuals and procedures. The aeroplane must be configured in the proposed full passenger-seating configuration with all appropriate emergency equipment installed.

9.8.2 The team shall inspect each of the following items to ensure regulatory compliance:

a) Hand fire extinguishers for crew, passenger, and cargo compartments;
b) Protective breathing equipment;
c) First aid equipment;
d) Crash axe;
e) Megaphones;
f) Interior emergency exit markings;
g) Floatation devices or life preservers;
h) Lighting for interior emergency exit markings;
i) Emergency light operation;
j) Emergency exit operating handles;
k) Emergency exit access;
l) Exterior exit markings;
m) Exterior emergency lighting and escape route;
n) Floor level exits;
o) Additional emergency exits;

p) Ventral or tail cone exits;
q) Portable lights;
r) Seats, safety belts, and shoulder harnesses;
s) Emergency equipment required for extended over water operations;
t) Public address system;
u) Passenger information signs/placards;
v) Aeroplane fire detection and protection system (operational test);
w) Passenger information cards;
x) Cockpit escape system;
y) Slides and slide rafts.

NOTE: *For the purpose of a partial evacuation demonstration only, the slides may be beyond scheduled inspection criteria. However, the operator must request this option in his demonstration plan and state that it accepts full responsibility for any failure of the demonstration due to a malfunction of the slides. The DTL or CPM will have the option to either accept or deny this proposal.*

9.9 Pre-Demonstration Briefings

9.9.1 Before the actual demonstration, three separate briefings should be conducted for the following participants:

a) Crew members involved in the demonstration;

b) Passenger participants (if applicable);

c) The Authority team.

9.9.2 The operator's evacuation demonstration co-ordinator should provide crew members with certain information regarding the demonstration. The DTL CPM must be in attendance at this briefing to resolve any questions to ensure the following information is included:

a) The purpose of the demonstration is to evaluate the following:
   (i) The effectiveness of the operator's training program as reflected by the crew members' actions;
   (ii) The adequacy of the operator's emergency procedures;
   (iii) The effectiveness and reliability of the aeroplane emergency equipment.

b) The initiation signal, which begins the demonstration, must be clearly specified;

c) The significance of the 90 seconds time limit (for full-capacity evacuations) or the 15 seconds time limit (for partial evacuation), as appropriate, should be discussed;

d) The signal to be used by the DTL or CPM for terminating (stopping) the demonstration such as an air horn, or some other clear audible means should be described. Any evacuation activity in progress must immediately cease with a "stop" signal;

e) The importance of safety during the demonstration including crew member responsibilities, safety observer duties, and limitations should be emphasised.

9.9.3 The DTL or CPM shall brief the team as follows:

a) State the objectives of the demonstration;
b) Review the initiation signal;
c) Review observer assignments with regard to exits to be used or blocked;
d) Review the signal that stops the demonstration;
e) Remind the team members not to discuss the results of their observations with persons other than the DTL or CPM.

9.10 Conducting the Demonstration

9.10.1 The DTL or CPM shall ensure all pre-demonstration briefings and inspections are conducted before the actual demonstration. The following sequence of events represents an acceptable means, derived from past experience, for conducting the demonstration.

9.10.2 For both full-capacity and partial demonstrations cabin crew members shall accomplish the following:

(a) Prepare for a normal departure in accordance with the operator's procedures, including closing and securing all exits, galleys, and arming the emergency evacuation system for takeoff;
(b) Conduct a passenger briefing in accordance with Regulation 8.9.1.4 and 8.9.2.17 of the Nigeria Civil Aviation Regulations;
(c) Be seated at their assigned positions with their restraint systems fastened.

9.10.3 The team then ensures each external door and exit, and each internal door or curtain is in position for a normal takeoff.

9.10.4 Before the initiation signal, the flight crew shall accomplish all tasks on appropriate checklists and configure the aeroplane for a normal takeoff. The flight crew must be seated in their normal positions with their restraint systems fastened.

9.10.5 After completing all required pre-takeoff actions, the captain shall inform the DTL or CPM (who is positioned forward of the nose of the aircraft), by ground interphone, that he/she is ready for takeoff.

9.10.6 Once the DTL or CPM has been told that the crew is ready, he/she must make certain all team members and operator safety observers (if used) are ready and in position. The DTL or CPM will then issue a warning signal (air horn or whistle blast), which should precede the initiation signal by approximately 30 seconds. Depending upon the method approved by the Authority (as in the operator's plan) the DTL or CPM shall inform the operator evacuation demonstration co-ordinator to initiate the demonstration.

9.10.7 The DTL or CPM will begin timing with two stopwatches (a primary and a back up) when the external aeroplane lights extinguish. At the end of the appropriate time period (90 or 15 seconds, as

appropriate) the DTL or CPM shall issue a clear, audible signal terminating (stopping) the demonstration.

9.10.8 For a partial demonstration, each Authority observer assigned to exits which are to be used, shall be responsible for determining that his/her assigned exit was opened and each slide or slide raft (as applicable) was prepared for use before the DTL or CPM's termination signal. Any exit, slide, or slide raft that was not prepared for use before the termination signal constitutes an unsatisfactory demonstration.

9.10.9 The team members assigned to the cabin shall ensure that all required equipment worked properly (for example, floor proximity lighting, emergency exit lights).

9.10.10 It is important that team members do not discuss the results of their observations with operator personnel or passenger participants. After the demonstration has been terminated, the team shall confer immediately on the observation of each team member and the overall conduct of the demonstration before advising the operator of the demonstration results.

10.0 DITCHING DEMONSTRATIONS

10.1 General

10.1.1 An applicant or certificate holder who proposes to operate a landplane (passenger or all cargo) in extended over water operations must conduct a ditching demonstration. This demonstration is conducted in accordance with the requirements specified in IS 9.2.3.5 (e) of the Nigeria Civil Aviation Regulations and the direction and guidance provided in this Order.

10.1.2 The purpose of the demonstration is to evaluate the operator's ability to safely prepare the passengers, aeroplane, and ditching equipment for a planned water landing. During the demonstration the following four areas are evaluated:

a) Emergency training program;

b) Ditching procedures;

c) Crew member competency;

d) Equipment reliability and capability.

10.2 Regulatory Requirements

10.2.1 Ditching Demonstration. IS 9.2.3.5 (e) of the Nigeria Civil Aviation Regulations requires an operator to conduct a ditching demonstration if the proposed type and model of land plane is to be used in extended over water operations.

10.2.2 IS 9.2.3.5 (e) of the Nigeria Civil Aviation Regulations provides requirements for a partial ditching evacuation demonstration. During a partial demonstration the air operator's assigned cabin crew members shall:

a) Prepare the cabin for ditching within 6 minutes after the intention to ditch is announced;
b) Remove each life raft from storage (one life raft or slide raft selected by the Authority, shall be inflated and properly launched); and;
c) Cabin crew members shall enter the raft and completely set it up for extended occupancy;
d) The raft shall include all required emergency equipment;
e) Cabin crew members shall demonstrate their knowledge and use of each item of required emergency equipment.

10.3 The Ditching Demonstration Plan

10.3.1 Ditching demonstrations are normally conducted during daylight hours or in a lighted hangar after the satisfactory completion of the aborted takeoff emergency evacuation demonstration.

10.3.2 In these situations, the same DTL or CPM and team members should conduct and observe the ditching demonstration. However, if an operator plans to initiate flights into extended over water areas for the first time, with an aeroplane that it previously operated over land areas, the operator must conduct a ditching demonstration.

10.3.3 If the operator plans to conduct the ditching demonstration in conjunction with the emergency evacuation aborted takeoff demonstration, the operator's aborted takeoff demonstration plan must include information applicable to the ditching demonstration such as the following:

a) Type of ditching demonstration;
b) Copies of the operator's manual relating to crew members ditching duties and responsibilities;

c) A description of applicable emergency equipment used for ditching (such as life rafts, survival gear) including the type and model of the emergency equipment.

10.3.4 If the operator must conduct a ditching demonstration that is not in conjunction with an emergency evacuation aborted takeoff demonstration, the operator's demonstration plan must be submitted at least 30 working days before the date of the actual demonstration and include the following additional information:

a) The aeroplane type and model which will be used;

b) The proposed date, time, and location of the ditching demonstration;

c) The name and telephone number of the operator's ditching demonstration co-ordinator;

d) A representative diagram of the aircraft which includes the following:
   (i) Location and designation of each exit;

   (ii) Location of each item of emergency ditch equipment including:

aa) Life rafts/slide rafts;
bb) Survival radios;
cc) Pyrotechnic signalling devices;
dd) Passenger/crew member life preservers or individual floatation devices.

e) A list of all crew members who will participate in the demonstration.

10.4 Review of the Ditching Demonstration Plan

10.4.1 When the ditching demonstration plan has been submitted, the Authority inspectors must review the proposal to ensure that

(a) The proposed demonstration will meet the criteria in IS 9.2.3.5 (e) of the Nigeria Civil Aviation Regulations; and
(b) That the emergency training program and ditching procedures in the operator's manual must have been approved and accepted and provide for safe operating practices.

10.4.2 The team must plan for the observation and evaluation of the ditching demonstration. Normally, the demonstration is conducted after the completion of a successful aborted takeoff emergency evacuation demonstration. If an aborted takeoff emergency evacuation demonstration is not conducted, the person responsible for safety oversight shall appoint an Authority ditching demonstration team and a DTL or CPM in the same manner as was accomplished for the aborted takeoff demonstration.

10.5 Conduct of the Ditching Demonstration

10.5.1 The ditching demonstration shall be conducted in the following manner:
a) Before the ditching demonstration the team shall inspect each item of emergency ditching equipment for compliance with appropriate airworthiness and other relevant directives;

b) The DTL or CPM ensures inspectors and crew members are at their assigned positions and then advises the pilot in command to commence the demonstration;

c) The pilot in command initiates the demonstration by ordering (according to the operator's procedures) the crew members to prepare for ditching.

NOTE: *It is imperative that emergency equipment, crew member competency, and emergency procedures provide for rapid evacuation since during an actual ditching situation, the aeroplane may remain afloat for only a short time. During the demonstration, emphasis is on crew member ability and efficiency in the time period between the decision to ditch and the actual water landing. Six minutes is considered the maximum time acceptable for ditching preparation beginning with the ditching announcement to the simulated water landing. This preparation means participating crew members must correctly put on life preservers, brief passenger participants (if applicable), secure the cabin, and complete all required checklists and procedures within 6 minutes of the ditching announcement. Failure to be prepared at the end of 6 minutes constitutes an unsatisfactory demonstration.*

d) The DTL or CPM begins timing when the pilot in command issues the prepare for ditching order. At the end of the 6-minute "planned ditching" period the crew must be prepared for a simulated water landing. After the simulated water landing, all life rafts must be removed from stowage. This action is not specifically timed, however the crew members must demonstrate competency in removing the rafts from stowage and the raft must be capable of being removed from the aeroplane for deployment in a reasonable period of time. For full-capacity demonstrations all life rafts and slide rafts will be launched and inflated. During a partial ditching demonstration one life raft (or slide raft), designated by the DTL or CPM, is launched and inflated. For the purpose of this demonstration "launching" a life raft means to remove it from stowage, manipulate it out of the aeroplane (via stands or ramps), and position it on the ground before inflation. "Launching" a slide raft means to inflate it in a normal manner and then lower it to the ground;

NOTE: *For ditching demonstrations on aircraft configured with slide rafts, it is not necessary to detach each slide raft from its respective door mounting. However, each slide raft must be inspected for its airworthiness. Any life rafts stowed inside the aeroplane must be removed from stowage and placed on the cabin floor for inspection.*

e) Crew members assigned to any inflated raft shall be questioned about actual launch procedures then enter the raft and locate and describe the use of each item of emergency equipment within the raft.

11.0 EVALUATING EVACUATION AND DITCHING DEMONSTRATIONS

11.1 Areas to be Evaluated

11.1.1 During phase four of the aborted takeoff, emergency evacuation demonstration, or the ditching demonstration, the Authority team must evaluate the following areas:

a) Crew member compliance and effectiveness in performing assigned duties and responsibilities. For example, a cabin crew member's effectiveness in assessing outside conditions, opening exits, and passenger evacuation commands. Another example is passengers assisting in launching life rafts during a ditching demonstration. The cabin crew member's instructions to the passengers must conform to the information provided in the operator's manual;

b) The flight crew members effectiveness in exercising command responsibilities and the co-ordination and communication between the flight crew and cabin crew members;

c) The capability of each item of emergency equipment (whether it performed its intended functions). Did the emergency equipment cause any deficiencies or delays?

d) All designated exits and slides were opened, deployed, and "prepared for use" within the appropriate time criteria. For a full-capacity evacuation demonstration, that all designated exits and slides were properly operated and all passengers and crew members were

properly evacuated within 90 seconds. For a partial evacuation demonstration, that all designated exits were opened and slides were "prepared for use" within 15 seconds;

e) For ditching demonstrations, that the cabin, passenger and cabin crew members were made ready for a water landing within 6 minutes. The life rafts were efficiently removed from storage, and all designated life vests, life rafts, and or slide rafts were properly inflated.

11.2 Determining Results of Demonstrations

11.2.1 Failing to meet a specified time limit is automatic grounds for an unsatisfactory demonstration. Deficiencies in other areas such as crew member effectiveness or equipment malfunctions that occur even when timing criteria is met may be grounds for determining the demonstration unsatisfactory.

11.2.2 The severity of the deficiency and the basic cause must be carefully considered. If the cause of a relatively severe deficiency was due to improper operator training, procedures or maintenance, the demonstration should be judged as unsatisfactory. For example, if all emergency lighting failed to illuminate due to a maintenance problem, there is sufficient grounds for determining the demonstration unsatisfactory.

11.2.3 Minor deficiencies can usually be resolved with responsible operator personnel without having to declare the demonstration unsatisfactory.

12.0 REPORTING EVACUATION DEMONSTRATIONS

12.1 General

12.1.1 The DTL/CPM is responsible for preparing and distributing the emergency evacuation or ditching demonstration report.

12.1.2 The report shall include at least the following:

a) Emergency Evacuation/Ditching Demonstration Report (figure 001), is required for each demonstration attempt. For example, if two demonstrations are unsuccessful and a third is satisfactory, three forms shall be completed and submitted as part of the demonstration report package;

b) The passenger information-briefing card required by Regulations 8.9.1.4 and 8.9.2.7 of the Nigeria Civil Aviation Regulations shall be attached to the report;

c) A diagram of the aircraft is required, including emergency equipment, exits, exits used, the number of approved passenger seats, and the location of seats which were used by cabin crew members;

d) A list of names and speciality of each member of the Authority team.