



GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
TECHNICAL CENTRE, OPP. SAFDARJUNG AIRPORT, NEW DELHI-110 003

CIVIL AVIATION REQUIREMENTS
SECTION 3 – AIR TRANSPORT
SERIES ‘C’ PART IX
17th June 2008

EFFECTIVE: FORTHWITH

Subject: **Operational And Airworthiness Requirements For Seaplane Operation.**

1. INTRODUCTION

Rule 4 of the Aircraft Rules, 1937 stipulates that no person shall use or operate or assist in using or operating an aircraft save in accordance with the rules. Further, CAR Section 2 Series ‘O’ Part II on Operation Of Commercial Air Transport – Aeroplanes lays down the additional equipment required to be fitted on seaplanes in addition to the preflight inspection of seaplanes, oral briefings for seaplane passengers, use of safety belts and shoulder harnesses in seaplanes, escape/egress in water after capsizing, water survival, and flotation gear required for seaplane occupants.

Government has recently recognized seaplane services as part of the civil aviation sector and has accordingly amplified the Foreign Direct Investment (FDI) to allow 100% foreign participation for seaplane services. This part of the Civil Aviation Requirements provides information and guidance on the operational and airworthiness requirements for the operation of seaplanes and is issued under Rule 133(B) of the Aircraft Rules, 1937.

2. DEFINITIONS

Channel is a defined rectangular area on a water aerodrome, intended for the landing and take-off run of aircraft along its length.

Floating Platform is a defined platform anchored inside protected waters for the purpose of embarkation and disembarkation of passengers or cargo by seaplane.

Nature Reserved Designated Area: These are marine areas that are environmentally protected and preserved as reserves.

Protected Areas: These areas are usually located on the atoll wardside near islands, which is protected from large wave by the surrounding reef or lagoon.

Resort Agent is a person employed by the Aerodrome operator who will be responsible for handling passengers at the aerodrome and to prepare the load sheet. The resort agent shall have undergone some in house training to take such responsibilities and shall be trained for fire fighting and other safety matters.

Response Time is the time between the initial call to the Rescue and Firefighting services (RFFS) and the first effective intervention at the accident site by a rescue and firefighting vehicle.

Seaplane means an aeroplane capable normally of taking off from and alighting solely on water.

Turn Around: An aircraft while operating a scheduled or charter flight after having reached its destination and having discharged its passengers, cargo etc. returns to its station from which the flight had earlier originated.

Water Aerodrome is a defined area on land or water (including any buildings installations and equipments) intended to be used either wholly or in part for the arrival, departure and movement of aircraft.

3. GENERAL REQUIREMENTS

- 3.1 The prospective seaplane operator shall comply with the requirements of CAR Section 3 Series 'C' Part III or Part V for obtaining Non-Scheduled Operators' Permit (Passenger) or a non-scheduled operators permit to undertake charter operations.
- 3.2 The operator shall lay down their own requirements, which shall not be lower than the requirements contained in this CAR, keeping in view the nature and area of their operations. The company requirements for such operations shall be specified in the company Operations Manual.

4. Airworthiness Requirements:

- 4.1 Accepted Airworthiness Standards: Each seaplane, either manufactured in India or imported into India for which a Certificate of Airworthiness is to be issued or validated, shall conform to the design standards and be in a condition for safe operation. To be eligible for issuance of Certificate of Airworthiness, an aircraft must be type certificated by DGCA in accordance with Rule 49 or 49A. The design standards specified in CS/ JAR 23 and CS / JAR 25 of Europe and FAR

23 and FAR 25 of Federal Aviation Administration (FAA) of USA for seaplane operations are generally acceptable for light and transport category aircraft.

- 4.2 The aircraft shall be certified for seaplane operations and equipped with equipment required for over water operations in accordance with relevant CAR Section 2 Series 'O' Part II.
- 4.3 Maintenance of seaplanes and the engine shall be carried out by DGCA approved organisation(s).
- 4.4 The maintenance programme shall be strictly in accordance with that given by the manufacturer and approved by the DGCA. The approved organisation carrying out the maintenance of the aeroplane shall reflect the maintenance program in the Quality manual.
- 4.5 Special attention shall be given to the maintenance of floats/ hulls, emergency equipment and the Personal Flotation Devices (PFD) used for the safety of passengers.

5. PILOT QUALIFICATION & EXPERIENCE REQUIREMENTS

- 5.1 The pilot shall have valid endorsement/ rating on his/her licence of the type of seaplane to be flown in accordance with CAR Section 7 Series 'B' Part XVI on seaplane rating – for pilots.

- 5.2 The pilot shall have a minimum of:

- a) Total flying experience - 250 hours
- b) Total PIC flying experience - 125 hours
- c) Total flying experience on type - 50 hours.
- d) Total PIC flying experience on type (under supervision) - 25 hours
- e) PIC flying experience in the last six months on type - 10 hours./ 20 hours (under supervision)

- 5.3 Initial and Recurrent Pilot Training

Details of checks and training requirements for such operations about pilot competency, specifically in respect of, "engine inoperative or malfunctioning" during take-off, climb, cruise, descent, approach, landing and significant malfunctioning of other system, shall be specified in the company Operations Manual. An appropriate entry in the pilot logbook shall be made to confirm the compliance of this requirement.

6. Operational Requirements:

6.1 All flights shall be operated in accordance with the company Operations Manual.

6.2 Night Operations and operations under IFR conditions is NOT permitted to water aerodromes.

6.3 Seaplane Preflight.

6.3.1 The Pilot-in-command shall be responsible for taking preflight action, which shall include a thorough preflight inspection of the aircraft for determining that the aircraft is in a condition for safe flight. With some exceptions, the preflight inspection of a seaplane is similar to that for a landplane except for a major difference in checking the floats or hull in accordance with the procedures contained in the airplane flight manual (AFM), pilot's operating handbook (POH), or manufacturer's recommendations.

6.3.2 The preflight inspection may include all items of inspection recommended by the manufacturer. In general, it should contain inspection of the stern of the floats or hull for obvious or apparent defects or damage, such as dents, cracks, deep scratches, loose rivets, corrosion, separation of seams, punctures, and general condition of the skin for signs of incorrect loading of the seaplane or indication of leak in a float compartment or in the hull. It is important that all plugs and plates removed for inspection are reinstalled systematically before a water takeoff.

6.4 Passenger Briefings.

6.4.1 Due to the lack of time of preparation for evacuation and the likelihood of major cabin structural damage from impact with the water, passenger survival in seaplanes accidents is most critical. During such a crisis, the pilot may be too busy coping with the problem to give instructions to evacuate. Furthermore, if the pilot becomes incapacitated in an emergency, it is important for the passengers to know what to do and how to do it without additional prompting from the pilot. Since seaplanes tend to come to rest inverted in water accidents or incidents but can remain afloat for long periods if the floats are not breached, enough stress on the importance of a thorough preflight passenger briefing is required to be given. The pilot would need to follow the POH or AFM for any special evacuation procedures.

6.4.2 The Pre-takeoff oral briefing shall preferably be done before engine start so passengers can easily hear it and easily see the actual or simulated demonstrations. Clear and distinct instructions with physically pointing out the location and operation of both normal and emergency exits and safety equipment on board shall be demonstrated. When a demonstration is impractical, such as demonstrating the actual inflation of flotation gear, the pilot should simulate the actions involved as closely as possible. In addition to the pre-takeoff briefing,

briefing for passengers needing assistance and prelanding briefing shall also be carried out. The briefings required have been detailed at Appendix 'A' to this CAR.

- 6.5 In addition to the above, the operator shall set-up a passenger briefing room for audio-visual briefing of passengers.

7. Use of seatbelts and shoulder harnesses in seaplanes.

It shall be ensured that seatbelt are fastened during takeoff, landing, and while en route when at the crewmember station unless an absence is necessary to perform duties in connection with the operation of the aircraft. Crew members are required to keep their shoulder harness fastened during takeoff and landing. Takeoff and landing are the phases of flight where improper pilot technique or water or wind conditions could result in a capsized seaplane.

8. Minimum Safety Requirements for Seaplane Take-off and Landing Areas.

- 8.1 The aerodrome operator shall be the owner of the water aerodrome or be in possession of a no objection letter from the landlord of the proposed locality to use the intended lagoon/reef or protected water as a water aerodrome.

- 8.2 The aerodrome operator shall ensure installation of floating platform, obtain safety equipment and ensure training of personnel before the water aerodrome is used.

8.3 General Requirements for Floating Platform

8.3.1 Site Selection

When selecting a site for water aerodrome and installation of floating platform, the following will be considered:

- a) if the location of the proposed water aerodrome is inside protected waters
- b) depth of sea bed on the proposed water runway and the size of aircraft intended to operation.
- c) distance of water aerodrome from the servicing resorts and islands.
- d) maritime movements in the location,
- e) navigable airspace,
- f) effect on the surrounding community

- g) available length of clear and safe water runway strip with respect to the size and type of aircraft intended for use.
- h) Unobstructed approach and departure paths for the type of seaplanes to be accommodated
- i) Current flow, water level, wave heights and floating debris
- j) Bird hazards

Note: Location shall be such that cross wind operations are kept to a minimum and down wind operations shall be avoided. In other words the landing and take-off areas should be oriented to permit operations into the wind. Nature Reserved designated marine areas and Fishing Grounds shall not be used for water aerodromes. The strip of water shall be free from large obstructing corals rubles to a definite depth and located inside protected waters which is safe to use of landing/take-off of a definite seaplane.

8.3.2 Floating Platform

- a) The dimensions of a floating platform shall be dependent on the size of the aircraft that will be used for the seaplane operation. Floating platform shall provide adequate support and buoyancy for the loads imposed by embarking/disembarking passengers and their luggage.
- b) The floating platform shall be inspected at regular intervals to check the structural conditions of platform and other safety equipment. Records of such inspections shall be kept.
- c) Each floating platform shall be equipped with the following minimum equipment in the interest of passenger safety and all the equipment except for the life buoy shall be contained in a red box which is fastened to the floating platform. The life buoys shall be easily accessible for use in case of an emergency.

- 01 Axe
- 30 m Life line - rope
- 01 Crow Bar
- 01 Fire Extinguisher (at least 5 Litres, A,B,C)
- 01 Bucket
- 01 Bolt Cutter
- 01 Tin Sniper
- 01 Harness Cutting Tool
- 01 Pair of Gloves (fire resistant)
- 01 First Aid Kit

02 Life buoy

01 Beacon flashing alternate white/ yellow flashes at the rate of 22 to 30 flashes per minute shall be installed on all platforms located outside the lagoon and in open sea.

- d) The flashing beacon shall be installed on the floating platform and its height shall be 1 metre from the level of the platform. The beacon and its fixing struck shall be made out of frangible material. The beacon shall be ON from dusk to dawn.

8.3.3 Size of Water Runway

The dimensions of the water runway shall depend on;

- a) The size of the aircraft intended for operation.
- b) The performance characteristics of the aircraft
- c) Potential obstructions in the approach, departure and surrounding area.
- d) Water currents and wave action

Any obstacle in or out of water, on the water runway or taxi way, that may endanger safety shall be marked with a floating buoy.

8.4 Approach and departure paths requirements

- a) The approach and departure paths should be clear of established shipping or boating lanes; and
- b) The approach and departure paths should be clear of hazards.
- c) An over water approach is preferable to an approach – departure path over populated areas, beaches and shore developments.

8.5 Transfer of passengers

- 8.5.1 A boat used for the purpose of transferring passengers to and from the floating platforms shall be maintained at least 200 m away from the floating platform and water runway when the aircraft is ready to land or at take-off and shall not obstruct the water runway.
- 8.5.2 Instructions shall be given to the boat captain about the direction of water runway, and the movements of the aircraft for taxi and the specific time of its arrivals.

8.6 Visual Aids

A Wind Direction Indicator shall be fixed on land at a point that is in the nearest vicinity to the water runway and floating platform to enable the pilot to find the wind direction and have an indication of wind velocity. For this purpose a Wind Sock of sufficient size shall be installed to be visible from an aeroplane flying at a height of 200 meters.

8.7 Fire Fighting

The Resort Agent shall be trained for fire fighting and rescue operations and shall be familiar with the aircraft. The Resort Agent shall be made available on the transfer boat during take off and landing.

8.8 Response Time

The recommended operational objectives of the fire fighting service in case of aircraft is to achieve a response time not exceeding 2 minutes in optimum conditions of visibility of surface conditions.

8.9 Manning Level

Manning levels will take into accounts the type and number of appliances in use at the floating platform, the method of operation of appliances and equipment and any other relevant details.

8.10 Training

All personnel involved in rescue and fire fighting duties must receive appropriate regular training in the use of equipment provided. This should include an operational exercise at least once per quarter and records of such training shall be maintained.

8.11 First Aid Kit

The medical equipment commensurate with the category of aircraft operated must be readily available at the floating platform and arrangement shall be made to transfer to incident scene as quickly as possible.

9. Right-of-way rules: Water operations.

- (a) *General.* Each person operating an aircraft on the water shall, insofar as possible, keep clear of all vessels and avoid impeding their navigation, and shall give way to any vessel or other aircraft that is given the right-of-way by any rule of this section.

- (b) *Crossing*. When aircraft, or an aircraft and a vessel, are on crossing courses, the aircraft or vessel to the other's right has the right-of-way.
- (c) *Approaching head-on*. When aircraft, or an aircraft and a vessel, are approaching head-on, or nearly so, each shall alter its course to the right to keep well clear.
- (d) *Overtaking*. Each aircraft or vessel that is being overtaken has the right-of-way, and the one overtaking shall alter course to keep well clear.
- (e) *Special circumstances*. When aircraft, or an aircraft and a vessel, approach so as to involve risk of collision, each aircraft or vessel shall proceed with careful regard to existing circumstances, including the limitations of the respective craft.

Note: In addition to the above, CAR Section 4 Series 'E' Part I – Rules of the Air may be referred for operations from/to water.

10. PERMIT FOR SEAPLANE OPERATIONS

The DGCA, on satisfactory compliance by the operator with these requirements, will grant specific operation permission to the operator for carrying out passenger charter (seaplane) operations with specific airplanes. If at any time during the approval of such operations it comes to the notice of the DGCA that there exist unsafe conditions or these operations are carried out jeopardizing the safety, the DGCA may alter, suspend, revoke or cancel the permission for specific operation.



(Kanu Gohain)
Director General of Civil Aviation

PASSENGER BRIEFINGS

(A) **Pre-takeoff Briefing** shall include:

- (1) When, where, and under what conditions passengers may smoke and when smoking materials must be extinguished.
- (2) How to fasten, tighten, and unfasten the safety belt and shoulder harness (if installed) without looking at the mechanism, and how to stow the loose end of the seatbelt so that the loose end does not hinder opening the seatbelt in the event of capsizing.
- (3) How to recognize, by feel, seatbelt rollover and that the buckle, in this condition, must be righted so it can be opened.
- (4) How to operate seats, forward and backward, to enhance egress.
- (5) That the seat back should be upright for takeoff and landing.
- (6) The location of each normal and emergency exit.
- (7) The operation of each normal and emergency exit by explanation and demonstration, if practical.
- (8) To leave carry-on items behind in the event of an evacuation in the water.
- (9) To establish "situational awareness." During the preflight briefing, the pilot should help passengers establish a definite frame of reference, such as left hand on the left knee or left armrest or right hand toward the direction of the exit. Once they have established situational awareness, passengers can use a "hand-over-hand" technique to make their way to an exit when the pilot gives the evacuation order; e.g., "Exit through the left rear door," or "Exit right side." Using positional and situational awareness and the "hand-over-hand" technique decreases the possibility of becoming disoriented. The pilot should stress the point that whether a passenger is upright or inverted, left and right are still the same; i.e., if the exit is on the passenger's right while upright, it will still be on the passenger's right if inverted. The pilot should also be sure to make all directional references to the passenger's right or left, **not** the pilot's. Pilots should advise passengers if the door handle on the inside of the airplane will work in reverse when they are upside down and that, when the door is closed and locked as in flight, the door may not be able to be opened from the outside.

- (10) The following various aspects of flotation gear:
- (a) If using flotation cushions, the pilot should brief on the type, location, and how to use in the water, including a physical demonstration, if possible; e.g., how to insert arms through the straps and rest the torso on the cushion once in the water and **not** to wear the cushion on one's back.
 - (b) If using some form of Personal Flotation Device (PFD), the pilot should brief on the type, location, and use of the available PFD, including a demonstration of how to don the device and a simulated demonstration of how to inflate an inflatable device either by carbon dioxide (CO₂) or by oral or manual methods **after** entering the water. *It shall be emphasized that an inflatable PFD should NOT be inflated until clear of the wreckage after exiting the aircraft since these devices can easily get hung up on wreckage, block an exit, or prevent a passenger from exiting an inverted seaplane. A policy shall be established by the operator requiring all occupants to wear an inflatable PFD anytime the seaplane operates on or near the water.*
- (11) The use and operation of any fire extinguishers on board, location of survival gear--including the Emergency Locator Transmitter (ELT) and pyrotechnic signaling device (flares)--an appropriate brace position, and the proper location for carry-on items.
- (12) Seaplanes are dangerous at both ends. Exercise extreme caution when around the propeller and the elevator. Serious injuries, amputations, and death have resulted from propeller strikes and the horizontal stabilizer when unwary passengers attempt to help in the launching or docking of a seaplane. The elevator balance weight on many seaplanes is an effective finger guillotine. In the preflight briefing ***pilots should instruct passengers not to assist unless specifically requested to do so by the pilot.*** If the pilot anticipates needing passenger assistance, the pilot should provide specific instructions on the passenger's duties, including a precaution about avoiding the spinning propeller, and how to properly handle the horizontal stabilizer.
- (B) **Passengers Needing Assistance.** The pilot should individually brief a passenger who may need assistance in exiting. The briefing should include all of the above information and who will be assisting the passenger to exit. If the passenger is accompanied by an attendant, the pilot should brief both the passenger and the attendant on the above information, including the most

appropriate route to an exit, when to move toward the exit, and the most appropriate manner of assisting the passenger.

- (C) **Prelanding Briefing.** At a minimum before each landing, the pilot should ensure that all passengers have been briefed to fasten seatbelts and shoulder harnesses (if installed), place seat backs in the upright position, and stow carry-on items.

* * *