GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
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CIVIL AVIATION REQUIREMENTS SECTION
3 – AIR TRANSPORT SERIES 'C' PART IX
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Subject: Minimum Safety Requirements for Seaplane Operations.

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 these rules (the Aircraft Rules, 1937). Rule 134 of the Aircraft Rules 1937 stipulates that no person shall operate any scheduled air transport service from/to/in/ or across India except with the permission of the Central Government, granted under and in accordance with and subject to the provisions contained in Schedule XI. Rule134A of the Aircraft Rules, 1937 provides that no air transport service, other than a scheduled air transport service, shall be operated by an Indian air transport undertaking unless it holds a Non-Scheduled Operator's Permit granted by the Central Government.

The requirements for grant of Air Operator Certificate (AOC) for undertaking scheduled air transport service and scheduled commuter air transport service are contained in CAR Section 3 Series C Part II and Part XII respectively. Similarly, the requirements for obtaining Air Operator Permit (AOP/NSOP) for undertaking non-scheduled air transport service are contained in CAR Section 3 Series C Part III. Further, CAR Section 8 Series 'O' Part II on Operation Of Commercial Air Transport – Airplanes 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. The Air Transport Service with a Seaplane can be undertaken under any of the above mentioned categories subject to compliance of the applicable regulatory requirements.

This CAR lays down the minimum safety requirements including operational and airworthiness requirements as well as requirements for take-off and landing Areas for seaplane operations. This CAR is issued under Rule 133 A 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.

Fixed platform – A platform extending from the shore, on water and supported by pillars to hold it in position, intended to align alongside seaplanes for the purposes of embarkation and disembarkation of passengers, loading and unloading of cargo, or refueling or parking of seaplanes

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.

Gangway – A movable walkway where people board and disembark such as platforms and piers.

Mooring – A fixed permanent installation on the water surface used to secure seaplanes. The seaplane may be moored to a floating buoy, a pier, platforms etc.

Mooring buoy – A buoy connected by chain or cable to a permanent unmovable anchor sunk deeply into the bottom of a body of water.

Protected area – An area which is protected from large waves. The structure providing protection can be natural or constructed.

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 is a fixed winged aeroplane which is designed for taking off and landing on water and includes amphibians operating as seaplanes.

Taxi channel – A defined path on a water aerodrome, intended for the use of taxying seaplanes.

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, primarily on water, intended to be used either wholly or in part for the arrival, departure and movement of seaplanes, and any building and equipment on ground or water, this term includes both licensed water aerodromes and any suitable body of water intended for use as a take-off and landing area for seaplanes.

3. GENERAL REQUIREMENTS

3.1 The prospective seaplane operator shall comply with the requirements of CAR Section 3 Series 'C' Part II or Part III or Part XII and other applicable regulations for obtaining AOC/AOP for the proposed category of operations.

3.2 The operator shall propose their own operational requirements for proposed seaplane operations, which shall not be lower than the requirements contained in this CAR, keeping in view the nature and area of their operations.

3.3 The operational requirements for such operations shall be specified in the company Operations Manual prepared in accordance to the general requirements stipulated in CAR Section 8 Series O Part VII, and the layout specified in **Annexure 1** to this CAR.

4. AIRWORTHINESS REQUIREMENTS:

4.1 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 Certified, its type certificate validated or type accepted by DGCA.

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 8 Series 'O' Part II.

4.3 Maintenance of seaplane 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.

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 Initial endorsement of type on CPL / ATPL.

Requirements for grant of initial endorsement on seaplanes having AUW at or below 5,700 Kg are defined in CAR Section 7 Series B Part XVI. Requirements for grant of endorsement of seaplanes having AUW above 5,700 kg are as defined in CAR Section 7 Series B Part XIX. Training shall include maritime operation / navigation, maritime regulations and associated knowledge required for seaplane operations.

5.2 Other training and checking requirements.

Pilots training programme shall be specified in Operations Manual Part D. Requirements shall not be less than those defined in CAR Section 8 Series F Part VII or CAR Section 8 Series F Part VIII as applicable. The chapter wise contents shall be as per **Annexure 1** to this CAR.

5.3 Training for other personnel.

The operator shall ensure adequate training for other personnel involved in operations, based on the nature of their duties. Such other personnel may include dispatchers, ground handlers, load and trim staff, security personnel etc. Initial, recurrent, and other training requirements shall be documented in Operations Manual Part D.

5.4 Experience requirements

The minimum experience requirements for flight crew to operate commercial seaplane operations shall be as approved by DGCA and shall be documented in the Operations Manual. The minimum total cockpit experience shall not be less than 200 hours on type / similar type of seaplane.

5.5 Requirements for authorisation as seaplane Check-pilot

a. A check-pilot provides flight training towards issuance of a seaplane class rating in India. He must have the following minimum qualifications, and shall be approved by FSD, DGCA for the purpose;

b. Shall hold a valid CPL or ATPL. And

c. Shall have experience of not less than 300 hours on seaplanes with not less than 100 hours on type.

d. Shall follow the seaplane rating instructor guide approved in OM – D.

Note: the Instructor guide – seaplane rating issued by Transport Canada https://tc.canada.ca/sites/default/files/migrated/tp12668e.pdf or equivalent document acceptable to FSD shall serve as a reference guide.

5.6 Requirements for authorisation as seaplane Examiner.

a. Examiner shall meet the criteria stipulated in CAR Section 7 Series I Part III, and shall be approved by FSD, DGCA to carry out functions of an Examiner.

b. The qualifications, privileges and other criteria shall be as stipulated in CAR Section 7 Series I Part III.

6. Operational Requirements:

Operational requirements of seaplanes are defined in **Annexure 2** to this CAR. Operator shall ensure that all aspects of operations are covered in the operations manual.

Sufficient briefing shall be provided to passengers based on the type of operation and risks involved. Indicative briefings to be provided to passengers are in **Annexure 3** to this CAR.

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. Requirements for Water Aerodrome.

8.1 The minimum requirements for Site Selection, Specification and Operations of Water Aerodrome shall be in accordance to **Annexure 4** to this CAR.

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

8.3 The operator shall undertake a comprehensive Safety Risk Assessment and mitigate all identified risks before commencing operations.

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, the latest edition of CAR Section 9 Series C Part 1 "***Rules of the Air***" may be referred for operations from/to water.

10. ARRANGEMENT WITH AIR TRAFFIC SERVICES.

The operator shall, in coordination with AAI, establish a coordination procedure with the concerned ATS Unit. Where the water aerodrome is situated within the control zone of an aerodrome, the procedure of the controlling ATS Unit shall be followed.

11. PERMIT FOR SEAPLANE OPERATIONS

On satisfactory compliance by the operator with these requirements, DGCA will grant specific operation permission to the operator for carrying out Scheduled / Non Scheduled (NSOP) / Scheduled Commuter 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.

(Vikram Dev Dutt)
Director General of Civil Aviation

Annexure 1

Contents of seaplane operators Operations Manual.

Generic provisions of CAR Section 8 Series O Part VII shall apply. The part-wise and chapter-wise topics that shall be covered in the operations manual are as follows: -

OM Part A	**- General**
OM Part B	**- Type specific aircraft operating information**
OM Part C	**- Areas, routes, and aerodromes / water aerodromes; and**
OM Part D	**- Training**

OPERATIONS MANUAL PART A

Chapter 0: Manual administration and control

0.1 Mission / Vision statement. Safety policy and Quality policy.

0.2 Statement from the accountable manager that the manual complies with all applicable regulations, and that in case of any inconsistency, each personnel shall comply with the regulation.

0.3 Statement that the manual contains operational instructions that shall be compiled with by the relevant personnel.

0.4 A list and brief description of the various parts, their contents, applicability, and use.

0.5 Explanations and definitions of terms and words needed for the use of the manual.

0.6 System of amendment and revision.

Chapter 1: Organization

1.1 Organization chart showing the nominated post holder operations (Director – operations), nominated post holder training (Director – Training) , both must report only to the accountable manager.

1.2 Organization chart of the operations department.

1.3 Organization chart of the training department.

1.4 Roles and responsibilities of key personnel including the accounting manager, Director operations and Director training.

Chapter 2: FDTL

2.1 Approved FDTL scheme.

2.2 SOP for schedulers.

2.3 All other policies and procedures pertaining to rostering.

Chapter 3: Equipment

3.1 Navigation equipment.

3.2 Communication equipment.

3.3 Safety and emergency equipment.

Chapter 4: Operational Procedures

4.1 Circumstances in which a radio listening watch is to be maintained.

4.2 Method for determining minimum flight altitudes.

4.3 Method for determining aerodrome operating minima.

4.4 Safety precautions during refueling and defueling when passengers are on board

4.5 Procedures prescribed in Annex 12 for PIC observing an accident.

4.6 Instructions on the maintenance of altitude awareness and the use of automated or flight crew altitude call-out.

4.7 Instructions on the use of automation.

4.8 Instructions on the clarification and acceptance of ATC clearances, particularly where terrain clearance is involved.

Chapter 5 Ground handling

5.1 Check in procedures including method of allocation of seats.

5.2 Pre-flight security check of passengers and their baggage.

5.3 Security hold area and (optionally) provision of safety video to passengers.

5.4 Embarkation procedures.

5.5 Baggage loading

5.6 Determining load and trim

5.7 Provision of flight plan and associated documents to flight crew.

5.8 Towing and startup procedures/ SOP for ground crew.

5.9 Precautions to be taken by ground crew while taxying.

5.10 Flight watch / flight following.

5.11 Dock in procedures / SOP for ground crew.

5.12. Disembarkation procedures.

5.13 Baggage un-loading.

5.14 Aircraft cleaning / dis-infecting.

5.15 Catering SOP for ground crew.

5.16 Security – ground crew aspects.

5.17 Severe weather SOP for ground crew.

5.18 Emergency equipment to be maintained by ground crew.

Chapter 6 – Crew composition.

Flight crew for each type of operation including the designation of PIC and succession of command.

Chapter 7 – Fuel & Oil.

Specific instructions for the computation of the quantities of fuel and oil to be carried, considering all circumstances of the operation including the possibility of loss of pressurization and the failure of one or more engines while en route.

Chapter 8 – Oxygen

The conditions under which oxygen shall be used and the amount of oxygen determined.

Chapter 9 – Mass and Balance Control

Chapter 10 – Flight plan package.

Specifications of the operational flight plan and associated documentation such as NOTAM, mandatory circulars, Weather, manifest etc.

Chapter 11 – Standard Operating Procedures.

SOP for each flight crew (CM1 / CM2) and (PF / PM) for each phase of flight, shall cover all aspects from the time of reporting at aerodrome till leaving the aerodrome after duties.

Chapter 12 – Checklists.

Normal checklists
Abnormal checklists
Emergency checklists.

Chapter 13 – Contingency procedures.

13.1 Contingency procedures for ramp events and events during taxi.

13.2 Takeoff contingency procedures.

13.3 Climb contingency procedures.

13.4 En-route contingency procedures

13.5 Descent contingency procedures

13.6 Approach and landing contingency procedure.

13.7 ACAS procedures.

Chapter 14 – Briefings.

14.1 Briefings to ground personnel / cabin crew (if applicable)

14.2 Pre-flight briefing and finalization of route, fuel, and oil.

14.3 Departure briefing.

14.4 Approach and landing briefing.

Chapter 15 – Route and destination familiarization.

15.1 Route familiarization and current experience requirements.

15.2 Aerodrome / water aerodrome familiarization and current experience requirements.

15.3 Re-qualification / recency recovery procedures.

Chapter 16 – ALAR

16.1 Stabilized approach procedure.

16.2 Limitations on high rates of descent near the surface.

16.3 Commencing or to continuing an approach.

3D instrument approach
2D instrument approach
RNAV / GPS approach
Visual approach

16.4 GPWS / EGPWS

Chapter 17 - Interception of civil aircraft.

Procedures described in CAR Section 9 Series C Part I for intercepted aircraft.
Visual signals for use by intercepting and intercepted aircraft.

Chapter 18 - Safety Management System.

Chapter 19 – Dangerous goods.

Chapter 20 – Security instructions and guidance to flight crew.

Chapter 21 – Search procedure / checklist.

Chapter 22 – Special operations.

Chapter 23 – Rules of the air.

Chapter 24 – Maritime rules and aspects.

Chapter 25 – Records

OPERATIONS MANUAL PART B

Chapter 1 – AFM / POH and other aircraft manuals / documents.

Chapter 2 – Limitations and Memory Items.

Chapter 3 – Normal procedures and checklists.

Chapter 4 – Abnormal procedures and checklists.

Chapter 5 – Emergency procedures and checklists.

Chapter 6 – Environmental limits (Wind, tide, wave, temperature etc.)

Chapter 7 – Data for preparing load and trim sheet.

Chapter 8 – Loading / unloading including securing of loads.

Chapter 9 – Aircraft systems, associated controls, and instructions for their use.

Chapter 10 – MEL

Chapter 11 – Emergency evacuation procedures.

Chapter 12 – Survival and emergency equipment

Chapter 13 – Ground – air visual code for use by survivors.

Chapter 14 – Procedures for determining performance for each flight.

OPERATIONS MANUAL PART C

Chapter 1 – Maps, charts, and other information required for the intended type of operation.

Chapter 2 – Minimum flight altitudes for each aerodrome / route.

Chapter 3 – Aerodrome operating minima.

Chapter 4 – Minima increment.

in the case of degraded lights / markings / nav-aids or other approach or aerodrome facilities.

Chapter 5 – Performance for all phases of flight

Chapter 6 – Performance during abnormal / emergency and mitigation measures.

Chapter 7 – Route / aerodrome briefing guide for each aerodrome including.

a, Location / coordinates
b. Orientation, layout, and category
c. specific hazards.
d. Route / aerodrome specific performance highlights and limitations.
e. Minimum qualification requirement for each route / aerodrome.
f. Departure / arrival procedures.
g. Route / aerodrome specific contingency procedures.
h. Hours of operation / restrictions (route and aerodrome specific)
i. ATS procedures for that route / aerodrome.
j. Safety services.
k. Operational control procedures.
l. Ground handling arrangements.
m. Emergency response plan.

OPERATIONS MANUAL PART D

General instructions

Include requirements pertaining to continuing qualification, re-qualification, aircraft transition or conversion, upgrade to PIC, specialized training requirements as per nature of operations, initial / recurrent egress training as recommended by the OEM or ATO approved by an ICAO contracting state shall be documented. Egress training shall be undertaken mandatorily in case the same is a requirement prescribed by either the OEM or the ATO. The recurrent and other training elements applicable for seaplanes, as recommended by the OEM shall be adopted, alternately training programs adopted by reputed ATOs of ICAO contracting state (more restrictive of both) shall be considered as reference.

Chapter 0 - General and regulatory training requirements and guidelines.

Chapter 1 - Induction qualification requirements.

Chapter 2 - Type endorsement training.
Initial tech – performance ground training and test.
Initial SEP training
Initial CRM training
Initial FSTD / aircraft training.
Skill test day
Skill test night
Familiarization training / ZFTT sim training.
Other training as per OEM / ATO syllabus for endorsement.
Initial SLF
Initial Route check(s) and release checks.
Initial ancillary training.

Chapter 3 - 3 takeoff & landing in 90 days
Procedures to ensure, and procedures to re-gain recency.

Chapter 4 - Recurrent training on FSTD / aircraft (annual)

Chapter 5 - PPC check on FSTD / aircraft.

Chapter 6 - IR check on FSTD / aircraft.

Chapter 7 - Annual ground refresher – tech, perf, SEP etc.

Chapter 8 - Initial and recurrent CRM training.

Chapter 9 - Initial and recurrent DG training.

Chapter 10 - Initial and recurrent AVSEC training.

Chapter 11 - Upgrade training from P1 to PIC.
- Ground training.
- FSTD / aircraft training.
- Skill test day
- Skill test night
- Familiarization training / ZFTT sim training
- Other training as per OEM / ATO syllabus
- Upgrade SLF
- Upgrade route check(s) and release check.
- Upgrade ancillary training.

Chapter 12 - Variant training. (same type of aircraft / different variant)

Chapter 13 - Check pilot qualification, selection, training, and release.

Chapter 14 - Examiner qualification, selection, training, and release.

Chapter 15 - Ground personnel
- Qualification for each position
- Selection
- Initial training
- Recency requirement
- Recurrent training

Chapter 16 - Assessed ATOs and FSTDs

Chapter 17 - Training infrastructure.

Chapter 18 - Corrective training.

Chapter 19 - Special operations training.

Chapter 20 - Maritime aspects – initial and recurrent training.

Chapter 20 - Administration and records.

Annexure 2

Seaplane operating procedures

1. Operations shall be conducted in accordance with the approved operations manual. Procedures to be followed by all personnel in the event of abnormal or emergency situations shall be clearly defined.

2. SOP shall be defined for all phases of flight for both PF and PM (if applicable) and included in Operations Manual Part B. SOP for associated operations such as passenger / cargo handling, load and trim, security etc. shall be defined in operations manual part A.

3. Stabilized approach criteria and parameters requiring a go-around shall be documented in Operations Manual Part A.

4. Only IFR or day VFR operations are permitted.

5. Detailed SOP shall be formulated for passengers needing assistance to ensure safe operations.

6. Detailed passenger briefing card / pre-flight video shall be provided to all passengers detailing instructions to cater to abnormal and emergency situations. Such material shall meet the standards applicable for NSOP operators and have elements required for seaplane operations.

7. Pilots shall ensure pre-landing briefing to passengers as per best industry practices.

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

9. The aerodrome operator shall install and maintain the required infrastructure and safety equipment and ensure training of personnel before operationalizing the water aerodrome.

10. Performance information including takeoff, climb, cruise, descent, approach, and landing performance requirements shall be documented in Operations Manual Part B. Such information shall comply with the OEM documentation such as POH, AFM etc. Obstacles, air-space requirements, and other relevant details shall be considered for each take-off and landing.

11. Minimum altitudes shall be defined in accordance with applicable regulations.

12. OEM documentation required for operations such as POH / AFM etc. shall form part of Operations Manual Part B.

13. Safety and Emergency equipment as required for safe seaplane / amphibious operations shall be installed in accordance with OEM recommendations and best industry practices as applicable to NSOPs. As a minimum the following equipment are required.

    a. Amphibious aircraft shall be equipped with a functioning landing gear advisory system.
    b. Equipment necessary to facilitate mooring, anchoring, or maneuvering the seaplane on water, appropriate to its size, mass and handling characteristics including an emergency anchor, fixed ropes for docking, one line (50' or longer) for securing the aircraft to shore during emergency or breaching scenarios,
    c. Float pumps.
    d. At least one paddle stowed on board and accessible to the pilot for single-engine seaplanes.
    e. One inflatable life preserver or inflatable personal floatation device for each occupant with SOP for its usage.

14. MEL shall be defined and the same shall form part of Operations Manual Part B.

15. Aerodromes and routes shall be assessed and categorized. A comprehensive route guide including maps and charts, departure, arrival, approach, and other procedures shall be documented in Operations Manual Part C.

16. Operating minima for crew and each aerodrome shall be computed based on a safety risk assessment and the same shall be included in Operations Manual Part C.

17. Performance limited water aerodromes shall be identified, and suitable initial and recurrent training shall be ensured before operations to such aerodromes.

18. Composition of flight crew shall not be less than the requirements specified in the OEM documentation. Single pilot operations if permitted by OEM POH/ AFM require special approval and may be permitted only for aircraft less than 1,500 kg AUW provided such pilot has at-least 500 hours on type and has completed an approved initial / recurrent Single-Pilot Resource Management (SPRM) course.

19. Supplementary manuals such as SEP manual, DG manual, Security Manual, Ground Handling Manual, Load & Trim Manual etc. shall form part of the operations manual.

20. 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 inaccordance with the procedures contained in the airplane flight manual (AFM), pilot's operating handbook (POH), or manufacturer's recommendations.

21. 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.

22. 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.

23. 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 for passengers needing assistance and prelanding briefing shall also be carried out. The briefings required have been detailed at Annexure 3 to this CAR.

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

Annexure 3

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-overhand" 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) **Pre-landing 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.

Annexure 4

REQUIREMENT FOR SITE SELECTION, SPECIFICATION AND OPERATIONS

Note: "Water aerodrome" referred to in this annexure may be an existing water aerodrome or a new aerodrome that may be established by the operator to support seaplane operations.

1. REQUIREMENTS FOR SITE SELECTION

1.1 When selecting a site for a water aerodrome, the following shall be taken into consideration:

a. If the location is inside the house reef of the island, if the location conditions are conducive for safe operations.

b. If the location is outside the house reef, whether adequate safety measures are taken to protect the area of operation;

c. Depth of sea bed in the proposed area of operation and the size of aircraft intended to be operated;

d. Distance of water aerodrome or floating platform from the servicing islands;

e. Maritime movements in the location;

f. Navigable airspace;

g. Effect on the surrounding community; and

h. Available length of clear and safe water runway with respect to the size and type of aircraft intended for use.

1.2 Orientation of the water runway shall be such that cross wind operations are kept to a minimum and downwind operations shall be avoided. In other words the landing and take-off areas should be oriented to permit operations into wind. Nature Reserved designated marine areas and Fishing Grounds shall not be used for water aerodromes or to install floating platforms. The water runway shall be free from large obstructing coral rubbles to a definite depth and located inside protected waters which are safe to use during landing/take-off by a definite aircraft.

1.3 Operational procedures should be developed for safe seaplane taxiing and mooring in the proximity of other seaplanes and obstacles that minimize the risk of damage to occupied or unoccupied seaplanes, particularly where this might result from variations in wind direction; water current, depth, sea state, and flow of tide.

2. The operator shall:

a) Conduct a formal bathymetric survey of special order (Certified by in-charge-Surveyor) based on Chart Datum in tidal stretches or lowest water level in non-tidal stretches along with survey for Obstacle Limitation Surfaces around the water aerodrome.

b) Provide OLS charts and lists of obstacles in the vicinity of the Water aerodrome environment and include the information in the manual.

3. MOVEMENT AREA (WA)

3.1 Operator shall determine the area of any land and water on which sea plane operations may take place. This area will be designated as movementarea (WA).

3.2 **Water runway and runway strip**

3.2.1 The landing area (WA) should be rectangular in shape, and should encompass all parts of the water surface intended for the taking off and landing of seaplanes.

3.2.2 The following water aerodrome dimensions shall be available for the landing area (WA)

a) The dimension of the landing area (WA) (Runway) shall be a minimum 800m X 60m.
b) The dimension of landing area (WA) including strip shall not be less than 920m X 120m; and
c) The depth of the water in the take-off and landing area (WA) shall not be less than 1.8m unless the airport is restricted to aircraft requiring less than 1.8m in which case the depth of the water shall be based on the requirements of aircraft type.

3.3 **Taxiways**

3.3.1 Taxiways should be provided where required, to permit safe and expeditious surface movement of aircraft.

3.3.2 Where taxiways are provided, the width of taxiways shall not be less than 45 meters.

3.3.3 The depth of the water measured at low water level in the taxi channel should not be less than 1.8 m (6 ft.) or less than 0.3 m below the hull or floats when the seaplane is stationary and loaded to Maximum take-off weight.

3.3.4 Wingtip to wingtip clearance for passing seaplanes (dual directional taxi channels)

should be not less than 15 m (50 ft.).

3.4 **Apron**

3.4.1 Facilities to emplane and deplane passengers, Baggage and Cargo (apron) shall be provided in the form of a dock, ramp or beach and floating platform, shall be based on the requirements of the seaplanes using the water aerodrome.

3.4.2 Where a dock is provided, it shall;

a. be designed in such a manner as to provide a safe clearance between an aircraft wing and any object the dock could come in contact with;
b. be in a condition that permits constant use without injury to persons or damage to aircraft;
c. where applicable, be attached or anchored in a manner that prevents it from shifting position or becoming detached;
d. have access from the shore that provides for the safe movement of persons using the facility;
e. have sufficient tie down points at each aircraft parking position to secure aircraft; and
f. When an aircraft is normally secured in a position where any aircraft propeller overhangs the dock and constitutes a hazard to the movement of persons using the facilities, the hazard shall be clearly indicated.

3.4.3 Where a ramp or beach is provided, it shall

a. be built at least 1.5 times the width of floats or landing gear of the largest seaplane intended to use the facility;
b. be designed in such a manner as to provide a safe clearance between an aircraft and any object it could come in contact with; and
c. Be designed for the seaplane using the facility.

3.4.4 Where Floating Platform is provided, it shall

a. provide adequate support and buoyancy for the loads imposed by embarking/disembarking passengers and their luggage;
b. Be anchored in a manner that prevents it from shifting position or becoming detached.

3.4.5 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.

3.4.6 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 30m

Life line – rope

01 Crow Bar

01 Fire Extinguisher (At least 5 liters, 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.

3.4.7 The flashing beacon shall be installed on the floating platform and its height shall be 1 meter 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. 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.

3.5 **Mooring Areas**

3.5.1 Mooring areas should be provided, whenever necessary, for the mooring of seaplane and to permit the embarkation and disembarkation of passengers, loading and unloading of cargo and mail without interfering with the aerodrome traffic.

3.5.2 When mooring areas are provided:

a. The size of the mooring areas should be adequate to permit expeditious handling of the peak hour traffic.
b. The depth of water at the mooring area measured at low water level should be at least that of the corresponding taxi channel.
c. The mooring area shall be designed in such a manner as to provide a minimum clearance of 15 m (50 ft.) between any part of the seaplane and any object it could come into contact with depending on water level.

3.6 Inspections shall be carried out at regular intervals by the operator to check the underwater and above water structural conditions of platforms, docks and ramps including the safety equipment provided.

4. WILDLIFE HAZARD

4.1 Operator shall provide a bird hazard/wildlife management plan that includes

the identification of the risk and hazards that may exist, and suitable mitigation measures.

4.2 All reasonable measures should be taken to discourage birds from gathering in the movement area (WA), and under anticipated departure and arrival flight paths.

5. VISUAL AIDS

5.1 Wind Indicators

5.1.1 A wind direction indicator shall be installed which should be of a conspicuous color of an international orange, orange and white or red and white color and in the form of a truncated cone.

5.1.2 The wind direction indicator shall be visible at a height of 1000feet (300m) above the ground and visible from any portion of the movement area (WA).

5.2 Marker Buoys

5.2.1 Marker buoys shall be visible to landing aircraft from a height of 1000feet (300m) and for maneuvering aircraft in any part of movement area (WA).

5.3 Take-off and Landing Area (WA) Markers

5.3.1 Where there is no conflict with marine traffic or marine regulations;

a) Both ends of the take-off and landing area (WA) shall be marked with floating markers.
b) The markers shall be visible from a distance not less than 5 nautical miles.
c) Each markers shall be
   i. Coloured International orange and white; or
   ii. Alternating international orange and white
   iii. Where it is impracticable to mark the take-off/ landing area (WA) as specified in:

      a. Guidance such as geographical points and/or other visual references shall be provided to designate the take-off and landing area (WA) ; and
      b. These visual references shall be identified and published.

6. PASSENGER TRANSFER VESSEL (PTV)

6.1 If floating platforms are provided for emplaning and deplaning passengers the operator shall provide a mechanized transfer vessel that will be available for the purpose of transferring passengers to and from the floating platforms to the shore.

6.2 The operator shall ensure that instructions are given to the PTV drivers about the direction of water runway, and the movements of the aircraft for taxi and

the specific time of its arrivals.

7. RESCUE AND FIRE FIGHTING SERVICES (RFFS)

7.1 At a water aerodrome where the hours of operation are notified, the RFFS should be available from minimum 15 minutes before till 15 minutes after the times published. Where the hours of operation are not notified, the RFFS should be available prior to the engine start of the first departing seaplane, or to the first arriving seaplane commencing its final approach; and until the last arrival is moored, or 15 minutes after take-off of the final seaplane whichever is later.

7.2 RFFS personnel shall receive initial and recurrent competence-based training relevant to their role and task, and shall at all-time be physically capable of performing the tasks expected of them.

7.3 The level of protection provided at a water aerodrome for rescue and firefighting shall be appropriate to the water aerodrome using principles in paragraphs 9.2.5 And 9.2.6 of CAR Section 4 Series B Part I.

7.4 Types of extinguishing agents and the amount of water for foam production and complimentary agents shall be provided on the rescue and firefighting vessel/(s) in accordance with the water aerodrome category determined under Table 9-1 and Table 9-2 of CAR Section 4 Series B Part I.

8. EMERGENCY PLANNING

8.1 The operator shall prepare an Emergency Response Plan (ERP) for the particular water aerodrome or floating platform and shall be accepted by the Regulatory Authority.

8.2 **The emergency plan should consider the particular hazards associated with seaplane operations, including:**

a. passenger evacuation into a further life-threatening environment, e.g. deep water;
b. the onset of hypothermia, and its associated effects, during and following prolonged immersion in cold water; and
c. the immediate toxicity and respiratory effects on survivors in the water following the ingestion of floating fuel and oils and their associated vapors, and fire suppressant foams, powders and gases.

8.3 **ERP shall contain provisions for:**

~~d.~~a. water rescue;
~~e.~~b. fire response; and
~~f.~~c. Recovery of disabled aircraft from the movement area (WA).