APAC Water Aerodrome Working Group (WAWG) e-Meeting #02

Meeting Start Date:	04 November 2014
Meeting End Date:	15 December 2014
Commenting Period:	04 Nov – 15 Dec 2014

Meeting Attendees:

1. Ms. Wahyu D. Agustini - Indonesia
2. Mr. Alexander - Indonesia
3. Ms. Fathimath Ramiza - Maldives
4. Ms. Aminath Shiznee - Maldives
8. Mr. Nick Jackson - New Zealand
9. Mr. Michael A.P. Meyers – USA
10. Mr. Atula Jayawickrama – Srilanka
11. Mr. Natarajan Sekhar – ICAO APAC

Agenda

01. Feedback from states to the Draft Water Aerodrome Regulations

02. Any other items.

03. Date of Next Meeting.

Attachment 01 – Draft Water Aerodrome Regulations

01. Feedback from states to the Draft Water Aerodrome Regulations

States to review the draft regulations in Attachment 01 and provide their comments before the end of the commenting period.

2. Any other items

States to propose.

3. Date of Next Meeting: ***December 2014***

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DRAFT WATER AERODROMES REGULATION

1 APPLICABILITY

This ASC applies to all aerodrome operators. However, not all items addressed in this publication would be applicable at every aerodrome. Aerodrome operators should examine each item carefully by considering the size, complexity and scope of operations at the aerodrome to determine what applies.

2 INTRODUCTION

2.1.1 ICAO Annex 14 does not differentiate between land and water as a surface from which aircraft can operate; Annex 14 defines that an aerodrome can be on land or water.

2.1.2 Operations on water differ significantly from those conducted on land, and the licensing criteria for land aerodromes are inappropriate in some areas. Although based on the existing land aerodrome criteria, the different operational and safety risks when operating onto and from water have been recognized and addressed.

2.1.3 The process of granting a licence for a water aerodrome is no different from that of a land aerodrome, and each application would be assessed on the ability to meet the relevant requirements. The following licensing criteria focus on those licensing factors where water aerodromes differ from land aerodromes. These factors primarily include the physical characteristics of the operating environment, mooring procedures, and rescue and firefighting services; however, one fundamental licensing criterion, that requires the licence holder to establish and maintain an appropriate Safety Management System (SMS), remains the same.

2.1.4 The water aerodrome licensing criteria are designed to cater for day, Visual Flight Rules (VFR) operations only; they do not cater for night, Instrument Meteorological Conditions (IMC).

2.1.5 In addition to aviation legislation, a seaplane in contact with the water is subject to maritime legislation; including the International Regulations for the Prevention of Collision at sea and local byelaws that are not addressed in this document. Where appropriate, licence holders should consult with those bodies that have a regulatory or statutory interest in the use of, or in the operation of, an aerodrome within the licensed area.

3 DEFINITIONS

When the following terms are used in this Circular they have the following meanings:

'Licensee' The license holder of the water aerodrome.

'Aeroplane' A power-driven heavier than air aircraft deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

'Dock' A floating platform extending from the shore, on water and supported by pillars or pontoons to hold in position, intended to alongside seaplanes for the purposes of loading or unloading passengers, cargo, fuelling or parking.

'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.

'**Floating Platform** An anchored, defined platform inside protected waters licensed for the purpose of embarkation and disembarkation of passengers or cargo by aircraft. (These could also mean attached jetties).

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

'Water Runway or Channel' A defined rectangular area on a water aerodrome, intended for the landing and take-off run of aircraft along its length. (These could also mean sea lane).

'Goods' Anything taken on an aircraft as personal belongings, baggage or cargo;

'Response Time' is the time between the initial call to the Rescue and Fire Fighting Services (RFFS) and the first effective intervention at the accident site by a rescue and firefighting vessel.

'Resort Agent' Person employed by the licensee who will be responsible for communication on arrival/departure of the aircraft with the operator, handling of passengers, preparing a passenger manifest and load sheet and providing assistance during emergency evacuation of the aircraft and other related emergency scenarios.

'Protected Area' An area usually located on the atoll-ward side near islands, which is protected from large waves by the surrounding reef or lagoon.

4 GENERAL

4.1 Requirement to Hold a Water Aerodrome licence

4.1.1 No person shall operate a water aerodrome, unless that person holds and complies with provisions of a water aerodrome licence and the Water Aerodrome Operations Manual (WAOM) and the Safety Management System Manual (SMS Manual) applicable to the water aerodrome.

4.2 Application for a Water Aerodrome License

4.2.1 Applications for Water Aerodromes shall be forwarded to the Regulatory Authority. Upon making an application for the grant of a licence, the applicant shall pay applicable administrative charges.

4.2.2 As part of the licensing process, the applicant shall prepare and submit a Water Aerodrome Operations Manual (WAOM) which will include all pertinent information on the aerodrome site, facilities, services, equipment, operating procedures, organization and management including a safety management system for acceptance prior to granting the water aerodrome licence.

4.2.3 The applicant shall arrange a survey of the proposed site to be used as a water aerodrome by surveyors appointed Regulatory Authority.

4.2.4 The applicant shall request for an inspection once the water aerodrome is ready for operation with PEDS (passenger emplaning and deplaning system) installed, safety equipment are obtained and personnel are trained as specified in this Circular for licensing the water aerodrome for public/ordinary use.

4.2.5 If there is a requirement for charter or ad-hoc operations to an unlicensed site, then the area of operation should be risk assessed and a copy of the risk assessment report with the ad-hoc landing request shall be submitted to the Regulatory Authority.

4.3 Cancellation of Water Aerodrome License

4.3.1 Regulatory Authority may cancel or suspend a water aerodrome licence when water aerodrome is no longer in operation or when the water aerodrome no longer meets the licensing requirements.

4.3.2 The operator may request cancellation of the water aerodrome license where the water aerodrome is closed or no longer meets the applicability criteria.

4.3.3 Where the water aerodrome license has been cancelled or suspended, the operator shall return the water aerodrome license to the Regulatory Authority within ten (10) working days from the reception of the notice of cancellation or suspension.

4.3.4 Where the water aerodrome license has been cancelled the operator shall remove all facilities and equipment installed for the purpose of the water aerodrome operation as soon as possible but not later than ninety (90) days from the reception of the notice of cancellation.

5 Obligations of the Water Aerodrome Operator

5.1 The Water Aerodrome Operator shall

5.1.1 Notify the Regulatory Authority in writing of any change in the physical characteristic or operations of the Water Aerodrome

5.1.2 Notify the relevant service provider of aeronautical information services of changes to operational information published in the aeronautical information publications; and

I. where a hazardous condition has been identified, issue a NOTAM identifying the hazard; and

II. where a change in water aerodrome operations constitutes a change to the provisions identified in the water aerodrome licence, ensure the change has been approved by the Regulatory Authority.

5.1.3 As soon as aware, the Water Aerodrome Operator shall give to the Regulatory Authority and to the provider of aeronautical navigation services, notice of any of the following circumstances;

a) any projection by an object through an obstacle limitation surface relating to the water aerodrome;
b) the existence of any obstruction or hazardous condition affecting aviation safety at or in the vicinity of the aerodrome;
c) any reduction in the level of services at the water aerodrome published in an aeronautical information publication;
d) the closure of any part of the maneuvering area of the water aerodrome; and
e) any other conditions that could be hazardous to aviation safety at the water aerodrome and against which safety measures are warranted.

5.1.4 The water aerodrome operator shall remove or cause to be removed from the dockside of the water aerodrome any object or other obstruction that is hazardous to aviation safety.

5.1.5 The water aerodrome operator shall

a) conduct a formal survey of the Obstacle Limitation Surfaces, based on lowest normal tide or water level
b) provide OLS charts and lists of obstacles in the vicinity of the Aerodrome environment and include the information in the WAOM.

6 PERSONNEL

6.1 Accountable Executive

6.1.1 The Water Aerodrome Operator shall appoint and identify a person as the accountable executive to be responsible and accountable on behalf of the Water Aerodrome Operator for meeting the requirements of this regulation.

6.1.2 No person maybe appointed as the accountable executive uncles the person has control of the financial and human resources required for the operations or activities authorized to be conducted under the operations licence.

6.2 Number of Personnel

6.2.1 The Aerodrome Operator shall determine the number of personnel required to comply with the requirements of this Part.

6.3 Appointment of Water Aerodrome Manager

6.3.1 The WAO shall appoint a Water Aerodrome Manager (WAM) who meets the requirements of this section.

6.3.2 The Water Aerodrome operator shall assign responsibilities, in writing to the Water Aerodrome Manager.

6.3.3 The Water Aerodrome Manager shall acknowledge in writing that the WAM know, accepts and will carry out the assigned responsibilities and a copy of the assigned responsibilities shall be in the WAOM.

6.4 Qualifications of the Water Aerodrome Manager

6.4.1 No person shall act a WAM unless the person successfully demonstrates, to the Aerodrome Operator, knowledge of the following;

a) contents of the WAOM
b) contents of the Water Aerodrome Certificate and related operational procedures; and
c) the regulations and standards in this section and other applicable regulations and standards necessary to carry out the duties and responsibilities to ensure safety.

6.5 Responsibilities of the Water Aerodrome Manager

6.5.1 The Water Aerodrome Manager shall ensure safe operation of the water aerodrome by

a) exercising operational management of the water aerodrome
b) coordinating the functions which impact on operational management
c) supervising the development and amendment of the WAOM
d) liasing with the regulatory authorities an all matters concerning Water Aerodrome Operation, including modifications to the WAOM;
e) liasing with external agencies on all matters which may affect Water Aerodrome Operations;
f) ensuring that the maintenance of the water aerodrome operations are being conducted in accordance with current regulations, standards and WAOM;
g) receiving and taking action on any aeronautical information affecting the safety of the Water Aerodrome;

7 PHYSICAL CHARACTERISTICS OF THE WATER AERODROME

Note : The Particulars of Aerodrome Dimensions and related Information shall be included in the Water Aerodrome Operations Manual

7.1 Units of Measurement

7.1.1 Except as specified, units of measurement shall be as follows;

a) Elevations to the nearest meter;
b) Linear dimensions to the nearest one-half meter;
c) Geographic coordinates in latitude and longitude to the nearest second;
d) Geographic co-ordinates measured in accordance with WGS 84 reference datum;
e) Bearings given to the nearest degree;

f) Water depth to the nearest meter to the nearest decimal; and
g) Range of tides or water levels to the nearest meter to the nearest decimal.

7.2 Physical Characteristics

7.2.1 Reference Point

The water aerodrome reference point (WRP) should be located at the planned geometric centre of the manoeuvring area, or of the main one if more than one is provided.

7.2.2 An Aerodrome Reference Elevation(ARE) should be determined at the ARP. This elevation should be determined from the Chart Height, or the lowest recorded water level, converted to an elevation in meters above Means Sea Level.

7.3 Movement Area

7.3.1 License holders shall determine the area of any land and water on which seaplane operations may take place. It is this area that shall be the movement area.

7.3.2 One or more manoeuvring area(s) should be established within the movement area of a licensed aerodrome.

7.3.3 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 and ebb; and flow of tide.

7.3.4 As far as practicable, all reasonable effort should be made to provide a movement area that is free from debris likely to cause damage to a seaplane. In particular, procedures should be established for the regular inspection of the manoeuvring area(s) to remove foreign Object Debris (FOD).

7.4 Manoeuvring Area

7.4.1 The manoeuvring area(s) should be square or rectangular in shape, and should encompass all parts of the water surface intended for the taking off and landing of seaplanes including the strips.

7.4.2 Whatever shapes the manoeuvring area is, the take-off run available should be adequate to meet the operational requirements of the seaplanes for which the water runway is intended and should be not less than the longest length determined by applying the corrections for local conditions to the operations and performance characteristics of the relevant seaplanes.

7.4.3 The following water aerodrome dimensions shall be available for the manoeuvring area

Manoeuvring Area	**Water Runway Width**	60 m
	Strip Width	30 m
	Strip Width(including Runway)	120 m
	Length take-off and landing area	800 m

a) the width of the runway shall be a minimum 60m
b) the width of the strip shall be a minimum of 30m each side of the runway;
c) the width of the take-off and landing area shall not be less than 120m; and
d) length of the primary take-off and landing area(manoeuvring area) shall not be less than 800m;
e) the depth of the water in the take-off and landing area shall not be less than 1.8m unless the aerodrome is restricted to aircraft requiring less than 1.8m in which case the depth of the water shall be based on the requirements of that aircraft.

7.4.4 Where parallel water runways are intended for simultaneous use, the minimum distance between their centre lines shall be in accordance with ICAO Annex 14 requirements.

7.5 Taxiways

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

7.5.2 Where taxiways are provided, the width of taxiways should be not less than 45 m.

7.5.3 depth of taxiways should be not less than 1.2 m (4 ft.)

8 VISUAL AIDS

8.1 Wind Indicators

a) Unless the direction of the wind can be determined by radio, a wind direction indicator shall be installed.
b) Where a wind direction indicator is installed it shall be;
   I. of a conspicuous colour
   II. in the form of a truncated cone

c) The wind direction indicator shall be;

I. visible at a height of 1000feet above the indicator; and
II. visible from any portion of the manoevring area.

8.2 Marker Buoys

Marker buoys shall be visible to aircraft manoevring

I. on the surface of water; and
II. 300m above the landing area

8.3 Take-off and Landing Area Markers

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

a) Both ends of the take-off and landing area shall be marked with floating markers.
b) The markers shall be visible from a distance greater than 2 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 and landing area as specified in(I),
(i) Guidance such as geographical points and/or other visual references shall be provided to designate the take-off and landing area; and
(ii) These visual references shall be identified and published.

8.4 Strobe Lights/ Beacon lights

8.4.1 For floating platforms located in open waters strobe lights/ bacon lights shall be installed, it shall be

a) White, quick flashing
b) Located in an area that is easily and constantly seen by both marine and air traffic; and
c) Radio activated or activated by the water aerodrome operator or designated agency.
d) Beacon lights shall be installed on the floating platforms on the outer reef and its height shall not be one (1) meter from the level of the platform. The beacon and its fixing strut shall be made out of frangible material. The beacon shall be ON from dusk to dawn.

8.5 Hazardous Areas Markings

a) Where shoals or other hazards could endanger an aeroplane, marker buoys shall be installed to clearly indicate the hazardous area.

b) Marker buoys for delineating hazardous area shall be coloured international orange.

c) Danger zone on the platform underneath the Aircraft wing when the aircraft is docked to the floating platform shall be marked with a " DANGER" sign and painted alternating international orange and white diagonal stripes, restricting passengers from the docking area until aircraft propellers have come to a complete stop.

8.6 Special VRF Operations

8.6.1 At water aerodromes where Special VFR operations are allowed, at least one water runway's edge markers and threshold markers should be lighted for the benefit of pilots. In addition, this will enhance safety during dusk and dawn operations.

9 OBSTACLE LIMITATION SURFACES (OLS)

9.1 Obstacles limitation Surfaces of the Water Aerodrome shall be established as per ICAO, Annex 14 Volume I. Chapter 4.

10 WILDLIFE HAZARD MANAGEMENT

10.1.1 Licence holders shall provide a Wildlife hazard management plan that includes the identification of the risk and hazards that may exist, and suitable mitigation measures.

10.1.1 All reasonable measures should be taken to discourage Wildlife from gathering in the movement area, and under anticipated departure and arrival flight paths.

11 Emplaning and Deplaning of Passengers, Baggage and Cargo.

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

11.1.2 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.

11.1.2 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.

11.1.3 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

11.1.4 Safety Inspections shall be carried out at regular intervals by the Aerodrome operator to check the underwater and above water structural conditions of platforms, docks, wharfs and ramps including the safety equipment provided. Records of such inspections shall be kept and available for inspection by Regulatory Authority, if and when required.

11.1.5 The following safety equipment shall be readily available on the floating platforms, dock, ramps and wharfs:

a. 30 m life line ropes – adequate to cater for the number of seaplane docking positions

b. Life Rings - adequate to cater for the number of seaplane docking positions

c. Fire extinguishers – for each seaplane docking position one extinguisher

12 EMERGENCY PLANNING

12.1.1 The licensee shall prepare an Aerodrome Emergency Plan (AEP) for the particular water aerodrome or floating platform and shall submit the AEP to the Regulatory Authority for approval/acceptance.

12.1.2 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.

12.1.3 AEP shall contain provisions for:

a. water rescue;

b. fire response; and

c. recovery of disabled aircraft from the movement area.

12.1.3 Additional guidance on seaplane accidents in the water is outlined in Appendix 6 to the ICAO Airport Services Manual (Doc 9137) Part 7.

12.1.4 The AEP shall contain procedures for periodic testing of the adequacy of the plan and for reviewing the results in order to improve its effectiveness.

12.1.5 The AEP shall be tested by conducting:

a. a full-scale water aerodrome emergency exercise at intervals not exceeding two years; and

b. partial exercises in the intervening year to ensure that any deficiencies found during the full-scale water aerodrome emergency exercise have been corrected; and reviewed thereafter, or after an actual emergency, so as to correct any deficiency found during such exercises or actual emergency.

13 RESCUE AND FIRE FIGHTING SERVICES (RFFS)

13.1.1 At a water aerodrome where the hours of operation are notified, the RFFS should be available from 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.

13.1.2 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.

13.2 Where the Daily Average movements are under 100

13.2.1 Procedures for the enhancement of passenger and crew post-accident survival should be developed, and facilities in terms of staff and equipment, appropriate to the type of seaplane operations anticipated at the water aerodrome, should be provided. Within the provision of these procedures and facilities, account should be taken of the effect that variable environmental conditions might have on the ability of the rescue staff to respond rapidly to accidents and incidents.

13.2.2 Where provided, a rescue vessel should be of a design and size that would allow survivors to be brought aboard, or it should be equipped with an adequate number of floatation devices of a design that would enable survivors to remove themselves from the water.

13.2.3 All vessels shall be at least 200 m away from the floating platform and the manoeuvring area when the seaplane is on final for landing or ready for take-off

13.3 Where the Daily Average Movements are above 100.

13.3.1 At water aerodromes where the average daily movements exceed 100, rescue and firefighting vessel(s) shall be provided appropriate to the level of protection required.

13.3.2 The rescue vessel/(s) provided shall be appropriate for the environment involved and they shall be capable or shall carry equipment capable of accommodating twice the maximum number of passengers carried by the largest type of seaplane serving the water aerodrome.

13.3.3 The level of protection provided at a water aerodrome for rescue and firefighting shall be appropriate to the water aerodrome using principles in paragraphs 9.2.4 and 9.2.5 of ICAO Annex 14 Vol I – 6th Edition.

13.3.4 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 ICAO Annex 14 Vol I – 6th Edition..

13.3.5 The following equipment shall be available in rescue and firefighting vessels:

a. Area Maps
b. Navigational Charts
c. Bailing Buckets
d. Water Pumps
e. Wool Blankets (for passengers and crew)
f. Bullhorn(s)
g. Communication Equipment
h. Emergency Lights
i. Flares
j. Forcible Entry Tools
k. Marine Night Vision Binoculars
l. Life rafts (with paddles or oars)
m. Medical Kit
n. Navigational Equipment
o. Portable Resuscitation Equipment
p. Flood Lights (500 watts or greater)
q. Rescue Nets
r. Stretchers and Litters
s. Rescue Throwing Bags and Anchors

13.3.6 A discrete communication system shall be provided linking the water aerodrome fire station, control tower (if available), fire and rescue vessel/(s), fire and rescue vehicles and any other fire station on the island.

13.3.7 An alerting system for rescue and firefighting personnel, capable of being operated by that station, shall be provided at a fire station, any other fire station on the island and the aerodrome control tower.

13.4 RESPONSE TIME

13.4.1 For water aerodromes within the house reef, the operational objective of the RFFS shall be to achieve a response time not exceeding three (03) minutes to any point of each operational water runway, in optimum visibility and surface conditions.

13.4.2 Where water aerodromes are located outside the house reef of an island and where access is not easy to the floating platform, the response time shall be as agreed by the Regulatory Authority and the operator and as such, this time shall be recorded and reflected in the Aerodrome Emergency Plan (AEP) for that locale.

Reference documents:

- ICAO Annex 14
- CAP 168, UK
- Safety Case - Air and Water Operations Victoria Harbour, Cananda
- ASC 14 – 2 , Procedures for licencing of Water Aerodromes, Maldives