Transport Canada Transports Canada

Advisory Circular

Subject: **Pilot Egress Training (Seaplane)**

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Table of contents

1.0 Introduction

(1) This Advisory Circular (AC) is provided for information and guidance purposes. It describes an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend or permit deviations from regulatory requirements, nor does it establish minimum standards.

1.1 Purpose

(1) The purpose of this document is to provide guidance to air operators and Transport Canada Regional Operations Inspectors and their managers concerning the criteria for approval of pilot egress training for seaplane operations conducted pursuant to subparts 703 (Air Taxi) and 704 (Commuter) operations of the Canadian Aviation Regulations (CARs).

1.2 Applicability

(1) This document applies to Transport Canada Civil Aviation (TCCA) regional personnel involved in the approval of air operators' pilot training programs. This document is also available to the aviation industry for information purposes.

1.3 Description of changes

(1) Not applicable.

2.0 References and requirements

2.1 Reference documents

(1) It is intended that the following reference materials be used in conjunction with this document:

(a) *Aeronautics Act* (R.S.C., 1985, c. A-2

(b) Subsection 101.01(1) of the *Canadian Aviation Regulations* (CARs) — Interpretation

(c) Subsections 703.98(2) and 704.115(2) of the CARs

(d) Transportation Safety Board of Canada Accident Investigation Reports A09P0397 and A12O0071; and

(e) Commercial Business Aviation Policy Letter (CBAPL) 154- Approval of Air Operator Training Programs.

2.2 Cancelled documents

(1) Not applicable.

(2) By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

2.3 Definitions and abbreviations

(1) The following **definitions** are used in this document:

(a) **crew member** means a person who is assigned to duty in an aircraft during flight time,

(b) **flight crew member** means a crew member assigned to act as pilot or flight engineer of an aircraft during flight time;

(c) **Pilot egress training** means a Transport Canada approved training program for flight crew members of seaplanes, for the purpose of achieving competency in escape techniques from a sinking or submerged aircraft.

(d) **Seaplane** means an aeroplane that is capable of normal operations on water; (and includes flying boats, float planes and amphibian aeroplanes.).

(2) The following **abbreviations** are used in this document:

(a) **AOC:** Air Operator Certificate

(b) **CARs**: *Canadian Aviation Regulations*

(c) **POI**: Principal Operations Inspector

(d) **TTL**: Technical Team Leader; and

(e) **TSB:** Transportation Safety Board of Canada.

3.0 Background

(1) Seaplane accidents result in a number of fatalities every year in Canada, primarily from drowning events after the initial aircraft collision with the water. Statistically, one out of every two seaplane accidents on the water results in a fatality. The Lyall Harbour Accident Investigation Report A09P0397 and the Lillabelle Lake Accident Investigation Report A12O0071 generated a number of Transportation Safety Board (TSB) Recommendations for the conduct of commercial seaplane operations, including a need for pilot egress training.

(2) In the 2012 Lillabelle Lake Report, the TSB stated the following:

(a) Seaplane travel is common in Canada, particularly in British Columbia. In the Vancouver Harbour alone, there are about 33 000 floatplane movements per year, carrying approximately 300 000 passengers. The TSB has found that the risk of drowning for occupants involved in seaplane accidents is high. TSB and British Columbia Coroners Service data show that, over the last 20 years, about 70% of the fatalities resulting from accidents where aircraft crashed and were submerged in water were attributed to drowning. Half of the deceased were found in the submerged wreckage. While it could not be determined in all cases, some investigations found that the occupants were conscious and able to move around the cabin before they drowned.

(b) Past occurrences validate the probability that able-bodied persons can be trapped in sinking aircraft and drown as a result. This investigation concluded that the pilot survived the impact, but was unable to locate a suitable exit and drowned. Pilots who receive underwater egress training have a greater probability of escaping from the aircraft and a greater chance of surviving the accident.

(c) The TSB is concerned that pilots who have not received training in underwater egress may not be able to exit the aircraft and subsequently help passengers to safety.

(d) Therefore, the Board recommends that **The Department of Transport require underwater egress training for all flight crews engaged in commercial seaplane operations. A13-02**.

(3) On February 23, 2019, Regulations Amending the *Canadian Aviation Regulations* (Part I, VI and VII – Seaplane Operations (SOR/2019-49) were published in Canada Gazette II. These changes involve definitions, editorial changes, the wearing of life jackets and pilot egress training for seaplanes operated for air transport purposes under subparts 703(Air Taxi) and 704 (Commuter Operations) of the CARs.

(4) The wording of subsections 703.98(2) and 704.115(2) of the CARs has been modified to include the new training requirements for pilot egress qualifications as follows:

"Initial training followed by training every three years on underwater egress for seaplane pilots."

(5) The new Regulations come into force 18 months after publishing in Canada Gazette II. In this case, as per Section 3.0 (3) that date is February 23, 2022.

(6) At the present time, there are no applicable Standards in place for this new regulatory training requirement. However, Transport Canada must approve all training programs employed by commercial air operators for the purpose of flight crew training. This AC is intended to ensure the elements of the operator's training program satisfy the regulatory requirement for effective pilot egress training.

(7) One of the key considerations for this training is that pilots in smaller aeroplanes are the primary asset for assisting and directing passengers to safety after a crash. Some of the most common air taxi seaplane models have a limited number of doors available for emergency egress and because of the engine placement, tend to sink by the nose, placing the forward cockpit door(s) underwater very quickly. Efficient use of the limited time available for successful egress is critical to pilot and passenger survival. Knowledge and prompt implementation of the correct escape procedures may make the difference between life or death for the occupants.

(8) The emergency is often compounded because of a common practice by seaplane pilots to not use the mandatory shoulder harness portion of the safety belt restraint system. This often results in an incapacitated or badly injured pilot who also needs assistance and is now blocking one of a limited number of exits.(Reference : subsections 605.27(3) and 605.25(1) of the CARs)

(9) The key to a successful egress is familiarity with the aircraft, full and proper use of the installed equipment, training exposure to the emergency scenarios that could occur, and the ability to correctly follow an emergency procedure and not panic after immersion. Other factors that may determine a successful egress are the person's age, fitness, mental preparation, recency of underwater egress training, exposure to over water flights, cold water acclimatization, and a strong will to survive. Hopefully, egress training that addresses these various issues to the extent possible will instill a level of confidence and knowledge in the pilots to prevail.

4.0 Intent

(1) This AC is intended to provide commercial seaplane operators with AOCs issued under CAR 703 and 704, and Regional Inspectors and their TTLs, with guidance in developing, assessing and approving pilot egress training programs, until Commercial Air Service Standards for this purpose are developed and approved.

(2) Private operators and commercial aerial work operators operating under subpart 702 of the CARs are also strongly encouraged to undergo pilot egress training for their operations.

(3) There are a number of established commercial enterprises in Canada that specialize in this kind of training. Operators may consider these established specialists for incorporating "off the shelf" pilot egress training modules into their company training program.

5.0 Course Content – General

(1) The following list consists of general elements required to comply with the new regulatory training requirements, plus suggestions for common sense inclusions and considerations:

(a) An air operator's training course for pilot egress training must include a ground school component and a swimming pool or suitable open water training component. (The open water reference is intended to provide an option for an operator who may not have

access to a suitable pool, such as a shallow pond or lake where the exercises can be safely conducted.) The training program must include specified initial and recurrent syllabi, and be safe and effective for the stated purpose.

(b) The ground school syllabus ideally should be conducted in a classroom, but online or similar training involving distance learning modules is acceptable for remote operations.

(c) The ground school training must be conducted initially and then every three years thereafter at a minimum. Operators are strongly encouraged to include annual reviews of some critical aspects of the ground school syllabus for pilot recency considerations.

(d) The water portion must be conducted initially and every three years thereafter as well, and must include access to a submersible device to simulate a generic cockpit with a door and latching mechanism, a pilot seat and safety belt as minimum requirements.

(e) The device must be capable of being manually overturned in water of a sufficient depth to facilitate a realistic escape scenario under adverse conditions. The device should permit the pilot's head to remain above the water level until it is activated or inverted.

(f) Appropriately trained divers or equivalent safety personnel with life-saving qualifications must be in place beside the device when in operation, to assist pilots if necessary.

(g) Proper instruction for water safety, including hand signals to be used for assistance should be included in the briefings, to be given to the pilots and the water safety team employed. Underwater portions of the training need to be closely monitored and a maximum time should be set for completion of the egress, once initiated. Two way (pilot/safety diver) hand signals should be established for assuring the candidate is okay at all times, or to indicate when something has gone wrong. Procedures should be in place for the safety diver monitors to respond immediately if the time has run out, anything appears amiss, or expected hand signals are not given.

(h) These measures, company Standard Operating Procedures (SOPs) and the program itself need to be fully described in the air operator's company operations manual (COM) before approval can be granted.

(i) Pilot training records including dates and training hours for both ground and water exercises must be kept in the pilot's individual training files to verify the successful completion of each element of the training. The initial training should be documented and kept in the pilot's permanent training file. The latest recurrent training records should be kept until the training is repeated and the pilot requalified (three year cycle).

(j) The mandatory use of pilot shoulder harnesses is to be reviewed, including for takeoff and landing in seaplanes. (Reference 605.27(3) of the CARs)

5.1 Suggested Syllabus

(1) The following list consists of topics that should also be addressed in the operator's ground training syllabus. This list is not definitive and may be modified as deemed appropriate by the operator, with the concurrence of their Principal Operations Inspector (POI).

(a) Discussion of equipment, hazards and procedures associated with overwater flight; such as:

(i) Egress in salt water and fresh water environments

(ii) Egress in poor visibilities

(iii) Flight preparation and loading considerations with passengers and cargo (aeroplane type specific)

(iv) Use of high visibility/ survival clothing and vests

(v) Strategies to prevent passengers from Inflating life vests inside of the aircraft –

(vi) Proper stowage of cords and seat belts to prevent entanglement.

(b) Limitations of aircraft types operated, including any special considerations for pilot and passenger egress;

(c) Discussion of seaplane accidents involving the same or similar types operated, or similar operations (environment, geographical area, weather phenomenon.);

(d) Pre-ditching procedures and immediate post-ditching actions and procedures;

(e) Evacuation procedures from floating and submerging aircraft using emergency exits;

(f) Discussion and consideration of alternate procedures for jammed main exit(s);

(g) Use of life vests and rafts (if carried);

(h) Hypothermia and cold water diving reflex effects and limitations;

(i) Stowage and use of flares and signaling devices;

(j) Company Operational Control procedures for flight following and overdue aircraft; and

5.2 Validity period and transportability

(1) As per the CAR 703 and 704 regulatory requirements, pilot egress training is valid for a period of three years, Consistent with existing protocols, pilot egress training approvals are therefore valid until the first day of the 37th month, following successful completion of the operator's approved program.

(2) This training is operator –specific and is intended to address company aeroplane types, as well as operator SOPs and including geographical and environmental aspects peculiar to the operator's areas and types of operations. However, the procedures for pilot egress from an overturned aeroplane are relatively standard from type to type.

(3) For those reasons, the water qualification portion of the training may be transported from operator to operator within its existing three year validity period, but the operator-specific ground portion of pilot egress training must be completed and signed off by the new employer upon commencement of employment.

(4) For transportability consideration, the transferring pilot must present adequate documentation from the previous employer to verify this training was successfully completed, including the validity/ expiry dates. This documentation is to be added to the pilot's training file until the next requalification program is completed.

(5) The validity period for the transported approval remains the same as the original validity period. Full training including the water portion must be completed by the three year anniversary date to remain in force.

6.0 Information management

(1) Not applicable.

7.0 Document history

(1) Not applicable.

8.0 Contact us

For more information, please contact:
Chief, Commercial Flight Standards (AARTF)

E-mail: AARTInfoDoc@tc.gc.ca

We invite suggestions for amendment to this document. Submit your comments to:
Civil Aviation Communications Centre

Telephone: 1-800-305-2059
E-mail: services@tc.gc.ca

Original signed by

Félix Meunier
Director, Standards
Civil Aviation