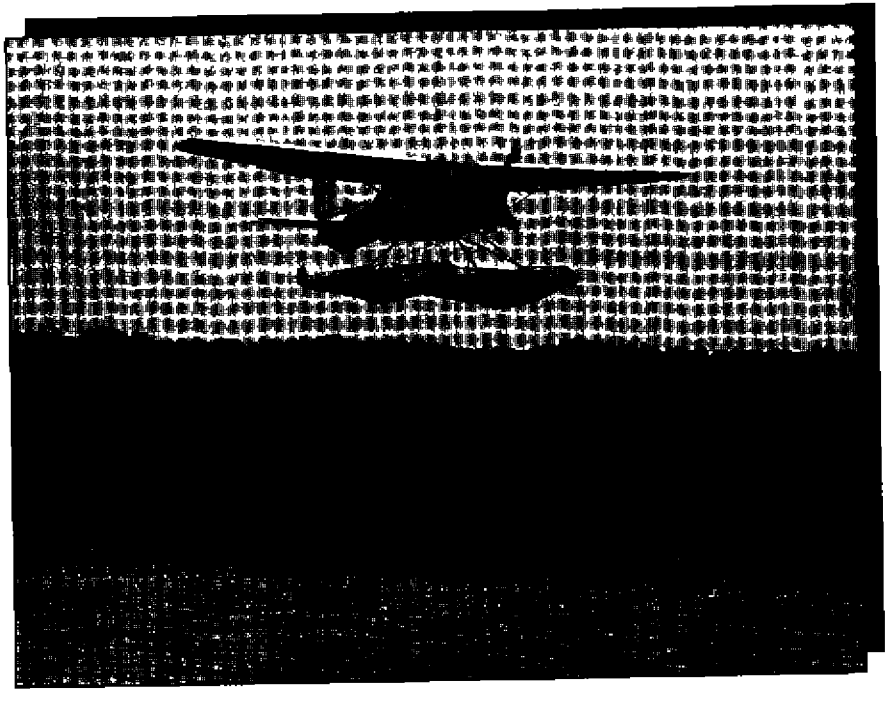
AC 91-69

U S Department
of Transportation
Federal Aviation
Administration

SEAPLANE SAFETY



FOR FAR PART 91 OPERATORS

SEAPLANE SAFETY FOR FAR PART 97 OPERATORS

Foreword

This advisory circular (AC) contains recommendations for the safe operations of seaplanes under Federal Aviation Regulations (FAR) Part 91. The suggestions concerning use and wearing of life jackets while operating on or near water in a seaplane are advisory in nature only and do not carry the force of a regulatory requirement. However, prudent operators will find that this information will enhance already safe operations. This AC is intended to be operational advisory material and has been produced in a size and format that makes it easily added to pilot flight manuals or carried in flight cases. This AC does not change or interpret agency regulations and does not authorize deviation from regulatory requirements.

William J. White
Acting Director, Flight Standards Service

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SEAPLANE SAFETY FOR FAR PART 91 OPERATORS

1 PURPOSE This AC provides information to FAR Part 91 seaplan operators regarding seaplane preflight, oral briefings for seaplan passengers, the use of safety belts and shoulder harnesses i seaplanes, escape/egress after capsizing, water survival, and flotatio gear for seaplane occupants

This AC specifically recommends that seaplane operators equi, their aircraft with approved flotabon gear that is readily available tc and preferably worn by, each occupant and that pilots in comman (PC) bnef passengers on the location and use of flotabon gear an the location and operation of each normal and emergency exi Appropnate types of flotation gear are discussed later in this AC

2 BACKGROUND

a *For-Hire Operations.* FAR § 91 205(b)(11) requires that approvec fbtation gear be readily available to each occupant of an aircraft including a seaplane, when it is operated for hire over water anc beyond power-off ghdmg distance from shore FAR § 91 107(a) requires each PIC of any aircraft to ensure that persons on board are briefed on the following

- to fasten their safety belts and shoulder harnesses (if in-- stalled) before takeoff and landing, and
- how to fasten and unfasten the safety belt and shoulder harness (if Installed)

FAR Part 91 contains no specific requirements for the carnage of approved flotation gear on seaplanes operated for hire over water but *within* power-off gliding distance from shore Similarly, if flotation gear is on board a seaplane operated for hire over water but within power-off gliding distance from shore, the PIC is not required to bnef passengers on the location of flotation gear or aircraft exits However, seaplanes are susceptible to capsizing under certain conditions, e g , turning upwind from downwind in strong winds, because of Improper water takeoff/landing techniques, or landing gear down on water with

amphibious floats Consequently, in accidents passengers who managed to escape might have been saved from drowning had they had flotation gear

b ***Status of Seaplanes as Vessels.*** According to the United States Coast Guard (USCG), a *seaplane is not* a vessel *once it lands* on the *water* Consequently, the seaplane is not required to comply with USCG regulations while on the water

> **NOTE:** A USCG memorandum dated August 8, 1991, and stating the above policy is on file at Federal Aviation Administration (FAA), Operations Branch, AFS-820, 800 Independence Avenue, S W, Washington, DC 20591 A copy of that memorandum has been provided to the Seaplane Pilots Association, 421 Aviation Way, Frederick, MD 217014798

3 **DEFINITIONS.** In this AC *seaplane* refers to an airplane on floats (amphibious or non-amphrbtous) or a flying boat (water-only or amphibious)

4 **RELATED READING MATERIAL.** Readers may find additional information on FAR requirements and other information related to the subject of this AC in the following

a FAR §§ 91 107. 91 115. and 91 205, which are contained in a subscription to FAR Pan 91 sold by the U S Government Printing Office, Superintendent of Documents, Washington, DC 20402-9325,

b AC 61-21 A, *Flight Training Handbook, sold by the U S Government Printing Office, Superintendent of Documents, Washington, DC 20402-9325,*

c AC *12047, Survival Equipment for Use in Overwater Operations, free from the US Department of Transportation, Utilization and Storage Section, M-4432, Washington, DC 20590,*

d AC 121-24A, *Passenger Safety Information Briefings and Briefing Cards,* free from the U S Department of Transporfabon, Utilization and Storage Section, M-443 2, Washmgton, DC 20590, and

e AC 150/5210-13A, *Water Rescue Plans, Facilities, and Equipment,* free from the U S Department of Transportation, Utilization and Storage Section, M-443 2, Washmgton, DC 20590

5 SEAPLANEPREFLIGHT With some exceptions the preflight inspection of a seaplane is similar to that for a landplane The mapr difference is checking the floats or hull, and the airplane flight manual (AFM), pilot's operating handbook (POH), or manufacture& recommendations will contain procedures for doing this in addition to the usual preflight actions, such as fuel sumping, control checks, etc

a *Some operators* haul seaplanes out of the water for dry land storage on a trailer or raft, making preflight more convenient for the pilot However, the plot should NOT conduct an abbreviated inspection just because a seaplane must be preflighted while in the water

b *The pilot should* first note how the seaplane ndes in the water If the stem of the floats or hull is very low in the water, i e , float stem submerged or, in a flying boat, tall in the water, the seaplane could be loaded Incorrectly or there could be a leak in a float compartment or in the hull This is why floats and hulls must be Inspected and bilge-pumped before each flight

(1) The pilot should first Inspect floats and hulls for obvious or apparent defects or damage, such as dents, cracks, deep scratches, loose rivets, corrosion, separation of seams, punctures, ard general condition of the skin

(2) Because of the rigidity of float installations, the pilot should check fittings, wire or tubular bracing, and adjacent structures for cracks, defective welds, proper attachment alignment, and safety wires and nuts

(3) Pilots should check all hinge points for wear and corrosion, particularly if the seaplane operates on salt water

(4) The pilot should inspect the water rudders, if installed, and their cables and springs for free and proper movement.

(5) The pilot should pump out each bilge or compartment of a float or the hull to remove water. A small amount of water, e.g., a cupful, is not unusual and can occur from condensation or normal seepage. (If the bilge pumps out no water, it is more likely that the pump itself is defective.) All water should be removed before flight by pumping or with a sponge because the water may critically affect the seaplane's weight and its center of gravity. Finding an excessive amount of water should we the pilot to look for the source of the leak. If drain plugs and inspection plates are installed, the plot should use a systematic (read "checklist") method to remove the plugs and plates and examine the compartments thoroughly. Of course, it is equally important to reinstall the plugs and plates systematically before a water takeoff.

(I) Some floats are equipped with a bilge funnel which does not require the removal of a cover to pump the bilge. However, if the funnel becomes disconnected, the pump will not produce any water, and there may still be water in the float. The answer is to be suspicious if no water emerges when bilging after an extended time on the water or in storage.

(II) Floats stored in freezing climates must be inspected particularly closely because water in the floats expands upon freezing. Frozen water in compartment seams can cause severe leakage problems. Many operators who store the floats off the airplane for a season put them away upside down with compartment covers off to allow drainage.

(6) The pilot should assure that nothing is stored in compartments of floats not approved for storage. For those floats approved for storage of items, the pilot must ensure that the contents and their placement allow the seaplane to remain within its weight and balance limitations. Another consideration is that floats are certificated to continue to float after two compartments per float have been flooded. The potential for capsizing or sinking is increased if compartments are

at their limit for storage and other compartments become filled with water after accident damage

6 PASSENGER BRIEFINGS.

a Background From the standpoint of passenger survival in seaplanes, an upset or capsizing from acadental water contact--whether it is a float or a wingtip or an encounter with a large wave or landing gear down on amphibious floats--is the most critical type of occurrence This is because of the lack of time for preparation for evacuation and the likelihood of mapr cabin structural damage from impact with the water During such a crisis, the pilot may be too busy coping with the problem to give instructions beyond the order 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 acadents or incidents but can remain afloat for long penods of time if the floats are not breached, the FAA cannot stress enough the importance of a thorough preflight passenger bnefing, even when one is not required (Although this AC suggests topics to cover in such a preflight bnefing, the pilot should also consult the POH or the AFM for any special evacuation procedures) Evacuation of a seaplane creates a few problems not associated with a landplane. therefore, passengers need to know the location and operation of normal and emergency exits, flotation gear, seatbelts and shoulder harnesses, etc The PIC is directly responsible for and the final authonty as to the operation of an aircraft Being "directly responsible" may also include responsibility for passengers carried in that aircraft in the event of an accident or incident

b ***Presentation*** The pilot should present the pretakeofl oral bnefing preferably before engine start so passengers can easily hear it and easily see the actual or simulated demonstrations Pilots should speak clearly and distinctly and physically point out and explain the operation of both normal and emergency exits and any safety equipment on board Whenever possible, pilots should demonstrate use of safety equipment 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

c ***Pretakeoff Briefing.*** Before each takeoff, the pilot should orally brief all passengers on each of the following

(1) When, where, and under what conditions passengers may smoke and when smoking matenals 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 of the seatbelt in the event of capsizing

(3) How to operate the seats, forward and backward, to enhance egress

(4) That the seat back should be upnght for takeoff and landing

(5) The location of each normal and emergency exit

(6) The operation of each normal and emergency exit by explanation and demonstration, if practical

(7) To leave carry-on items behind in the event of an evacuation in the water

(6) To establish "situational awareness" Dunng 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 plot gives the evacuation order, e g , "Exit through the left rear door," or "Exit nght side " Using positional situational awareness and the "hand-over-hand" technique decreases the possibility of becoming disoriented The pilot shwld stress the point that whether a passenger k upnght or inverted, left and nght are still the same, i e , if the exit is on the passenger's nght while upnght, it will still be on the passenger's nght

if inverted The pilot should also be sure to make all directional references to the passenger's nght or left, NOT the pilot's

(9) The following vanous aspects of flotation gear

(i) If using flotation cushions, the pilot should bnef on the type, bcahon. and how to use in the water, mcludmg 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

(ii) If using some form of personal flotation device (PFD) or life preserver, the pilot should bnef on the type, location, and use of the available PFD or life preserver, including a demonstration of how to don the device or life preserver and a simulated demonstration of how to inflate an inflatable device either by carbon dioxide (CO_2) or by oral or manual methods ***after*** entenng the water ***The pilot must emphasize that inflatable life*** preservers ***should not*** be ***inflated before exiting the aircraft since these devices can easily get hung up*** on ***wreckage,*** Mock an ***exit,*** or ***prevent*** *a passenger* ***from exiting*** *an* ***inverted seaplane***

> NOTE The FAA suggests that operators consider establishing a policy where a//occupants would wear inflatable life preservers or jackets any time the seaplane operates on or near the water

(10) The use and operation of any fire extinguishers on board, location of survival gear--including the Emergency Locator Transmitter (ELT) and flares--an appropnate brace position, and the proper bcahon for carry-on items

(11) Caution around the propeller Serious injunes have resulted from propeller stnkes when unwary passengers attempt to help in the launching or docking of a seaplane In the preflight briefing plots 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, mcludmg a precaution about avoiding the spinning propeller

d ***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 appropnate route to an exit, when to move toward the exit, and the most appropnate manner of assisting the passenger

e ***Prelanding Briefing*** At a minimum before each landing, the pilot should orally brief all passengers to fasten seatbelts and shoulder harnesses (if installed), place seat backs in the upnght position, and stow carry-on items

7 USE OF SEATBELTS AND SHOULDER HARNESSES IN SEAPLANES Seaplanes are subject to the seatbelt and shoulder harness requirements of FAR § 91 107, namely that dunng takeoff and landing each person must occupy a seat with a seatbelt and shoulder harness (if installed) fastened about the person Unfortunately, takeoff and landing are the phases of flight where improper pilot technique or water or wind conditions could result in a capsized seaplane The shock of entenng cold water and being inverted while strapped into a seat can cause panic in passengers That is why the preflight bnefing on seatbelt operation is very Important Some operators have occupants leave seatbelts unfastened dunng water taxiing to position for takeoff or have pilots instruct passengers when to unfasten seatbelts for water taxiing after landing Other operators have occupants leave seatbelts loosely fastened while water taxiing A bosely lastened or unfastened seatbelt, however, may not offer adequate protectron for occupants if the seaplane should capsize dunng water taxiing Pbugh taxiing usually does not involve high speeds and the use of either practice may be acceptable, however, at no time dunng step taxiing should passengers remove or loosen seatbelts If an operator chooses either procedure, the preflight bnefing on the fastenmg and unfastenmg of seatbelts and shoulder harnesses must be accurate and complete so that the pilot does not have to be distracted at cntical phases of flight by supplying additional instructions to passengers

8 ESCAPE/EGRESS IN THE EVENT Of AN UPSET IN THE WATER

a *Accident History* A review of current seaplane accidents on the water indicates that the pilots ard passengers in inverted aircraft often survived the impact but were unable to evacuate the aircraft underwater and subsequently drowned In some cases passengers were unable to unfasten their seatbelts, and, consequently, their bodies were discovered with little or no Impact injuries still strapped to the seats In other cases passengers were able to get out of their seatbelts but were unable to find an exit and/or open the exit because of impact damage or ambient water pressure Those who did survive generally spoke of the extreme disonentation and that they did not exit in what may be considered a normal procedure, I e , they did whatever they had to in order to get out of the aircraft

(I) Opening a door underwater can be extremely difficult, and some operators adopt the practice of water taxiing with one door open at all times to permit easier egress However, operators should check the POH or AFM for evacuation procedures since, in the event of capsizing, this practice could lead lo the cockpit ard cabin flooding sooner and a swifter sinking of the seaplane

(2) In many cases pilots could exit relatively easily through a smashed cockpit windshield or the cockpit door and seemed to have less difficulty evacuating the seaplane because of their familiarity with it Passengers, on the other hand, often do not have a thomugh knowledge of their surroundings Investigations of evacuations of air carrier aircraft have shown that passengers tend to want to exit through the door where they entered It IS likely this would hold true even for a small seaplane because where the passenger entered might be the only familiar frame of reference for the passenger in an emergency

(3) In some of the accidents where pilots survived and passengers did not, investigation revealed that plots had met the requirements of FAR § 91 107 but did not go beyond that, I e , did not bnef passengers on how to exit in an emergency, on the location, donning, and inflation of life preservers or jackets, and on the procedures for an underwater exit of the aircraft There were accidents where the pilot

was injured or killed and could not assist passengers in an underwater evacuation Therefore, a ***comprehensive preflight briefing, although not*** a ***regulatory requirement, can provide critical information to passengers so that they can help themselves.*** The information in that prefhght briefing could make the difference between a successful evacuation and being trapped inside a submerged seaplane

b ***Evacuation.*** The pilot should ***never*** take for granted that people already know how to exit the seaplane After an accident,and especially while submerged Inverted in water, the passengers are likely to panic, but they will usually defer to what the pilot instructs In their eyes, the pilot knows what to do

(1) The pilot should keep commands simple and concise, since it is likely the passenger will cease to listen much beyond the initial order to evacuate Pilots should issue commands and make decisions in a positive, confident, and expeditious manner

(2) Being upside down can cause orientation problems Once the turbulence of the upset has subsided, even though the plot may have briefed passengers on situational awareness before takeoff, the plot may still need to help passengers establish positive situational awareness so that they can determine left from nght

(3) Maneuvenng while holding flotation devices can also be disorienting because it occupies the hands, making swimming or treading water difficult This adds to the argument for the jacket type of life preserver However, it is Important to remember ***not to inflate the flotation gear until after exiting*** the ***seaplane*** It is virtually impossible to swim downward to an exit (from an inverted position) with inflated flotation gear Any preflight briefing on the use of inflatable flotation gear should include this vital point

(4) Impact forces may jam normal or emergency exits and prevent them from operating Pilots should be prepared to and have briefed passengers to be prepared to break out or kick out windows in order to escape In many Instances, this may be the only option for evacuation and everyone on board should plan to use this technique if necessary

9 WATER SURVIVAL Successful egress from an inverted seaplane into the water is only the beginning of the survival process The pilot may be the only person who understands the effects of cold waler, even water only a few degrees cooler than normal body temperature, on the human body Seaplane accidents that occur even on small bodies of water may mean a wart for rescue, especially if the location is remote Furthermore, even if the evacuees make it to shore fairly quickly after submersion, they may still have to deaf with the effects of cold temperatures even if it is just evaporative effect Espeaally for seaplanes operating into remote areas, operators should consider stocking the seaplane with survival gear appropnate for the operabon The survival kit should be assembled in one container that is leak-proof, easily accessible, and, preferably, floatable Some Alaskan and Canadian operators attach a rope and a fbat to the survival kit to allow for easier recovery once everyone has exited the aircraft This has proved quite successful in emergency situations in some of North Amenca's harshest terrain

a ***Hypothermia.*** Cold water (less than 70 °F) lowers body temperature rapidly, creating a condition called *hypothermia* Hypothermia means that the body's inner core temperature has begun to descend significantly below the body's nom-r of 96 6 °F A drop of only three or four degrees In body temperature could overload the heart, impair circulation, and lead to irreversible brain damage (Hypothermic persons generally lose consciousness and drown before these effects can occur)

(1) Even though a person may be weanng a life jacket-type life preserver, the body cools down 25 times faster in cold water than in cold air Water temperature, body size, amount of body fat, and movement in the water are all factors that play a part in how quickly a person becomes hypothermic and, therefore, in that person's survival Generally, small people cool down faster than larger people, children cool down faster than adults

(2) Flotation gear can still help a person stay alive longer in cold water because they allow the person to float without expenditure of energy, i e , the person's movement in the water can be used exclusively for moving toward shore rather than trying to stay afloat

Flotation gear also protects the upper torso somewhat from the effects of cold water For example, a snug-fitting life vest would be more effective in keeping the upper torso warm than a loose-fitting one or a seat cushion used as fbtabon gear

b ***Effects of Hypothermia.*** The exact nature of the hypothermic process is not yet fully understood The following table provides some indication of the onset of unconsciousness and the expected time of survival in water of specific temperatures

Water Temperature in °F	*Exhaustion or Unconsciousness*	***Expected Time of Survival***
Up to 32 5″	Under 15 minutes	15 to 45 minutes
32 5″ to 40°	15 to 30 minutes	30 to 90 minutes
40° to 50°	30 to 60 minutes	1 to 3 hours
50° to 60°	1 to 2 hours	1 to 6 hours
60° to 70°	2 to 7 hours	2 to 40 hours
70° to 80°	2 to 12 hours	3 hours to indefinitely
Over 80°	Deferred indefinitely	Indefinitely

*Information from Underwriters Laboratory Inc.

c ***Handling Victims of Hypothermia.*** A hypothermic person requires special attention, and rescue personnel (and this could be the operator's personnel who have no medical training) should be aware of the following guidelines on how to handle victims of hypothermia

(1) Lack of movement does not mean dead Rescue personnel should make no assumptions based only on the victim's appearance, touch, or absence of a discernible pulse or breathing In deep hypothermia it is not always possible to make an on-site determination whether a person is still alive Some medical experts believe that deep hypothermia places the body in a state similar to hibernation, where brain and other organ functions become depressed, therefore requiring less oxygen from a reduced bloodflow Some victims have been revived, but the extent of injury or damage from the hypothermia has varied

(2) Rescuers should NOT warm the victim externally, such as by immersion in warm water or by applying heat directly to the body Rescuers should cover exposed skin with a blanket and provide shelter but should avoid abrupt temperature changes in the victim's immediate environment The rescuers should arrange for transport to a medical facility as soon as possible

10 FLOTATION GEAR FOR SEAPLANES As stated above, the purpose of this AC is to suggest that seaplane operators provide flotation gear for occupants any time a seaplane operates on or near water The following paragraphs will discuss the various requirements of the FAA and the USCG for the types of flotation gear and the advantages and disadvantages of each Operators must bear in mind that seaplane operations pose unique ingress/egress situations in which a non-inflatable, USCG-approved PFD, because of its bulkiness, could restrict or impair exiting the seaplane

a ***USCG Requirements.*** The USCG requires PFD's for each *occupant* on all vessels, but this does not include seaplanes However, many States have statutes requiring PFD's to be carried on board vessels operating on any inland body of water for which the USCG has no jurisdiction Although the USCG does not consider seaplanes on the water to be vessels, State or local requirements may not follow this example Navigable bodies of water may come under Federal, State, or local jurisdiction or, in a few cases, may be privately owned

b ***FAA Requirements.*** FAR § 91 205(b)(11) requires approved flotation gear for aircraft operated for hire over water and beyond power-off

gliding distance from shore FAA approves life preservers under Technical Standard Order (TSO) C13E and individual flotation devices under TSO C726

(1) FAA-approved gear differs from that required for navgable waterways under USCG rules FAA-approved life preservers are Hatable designs as compared to the USCG's non-inflatable PFD's that may consist of solid, bulky material Such USCG PFD's are impractical for seaplanes and other alrcraft because they may block passage through the relabvely narrow exits available to pilots and passengers

(2) Life preservers approved under TSO C13E contain fully inflatable compartments The wearer inflates the compartments pnmanly by Independent CO_2 cartndges with an oral inflation tube as a backup This flotation gear also contains a water-activated, self-illuminating signal hght The fact that plots and passengers can easily don and wear inflatable life preservers (when not Inflated) provides maximum effectiveness and features an uncluttered extenorsurtace that protects the working components and allows for unrestricted movement

c Buoyancy The buoyancy in a fbtabon device must be distributed so that if the wearer IS unconscious or disoriented in the water, the device will "self-nght" the wearer, I e , if the wearer IS face down in the water, the distribution of the buoyant matenal in the device will "turn" the wearer face-up This IS another Important reason why pilots should demonstrate or supervise the proper donning of the device so that wearers will not put the device on improperly and defeat this self-nghting ability The C13E life preservers have excellent self-nghting capabilities, however, many USCG PFD's do not

d *Flotation Gear Maintenance* Lifesaving equipment must be maintained in serviceable condition as per the manufacturer% recommendations Any FAA-approved flotation gear used in operations for compensation or hire must ix inspected within the preceding 12 months by persons authorized by FAR Part 43 This inspection would be included in the annual or 100-hour inspection for the aircraft or under any other inspection program that the operator may use

e ***Wearing of Flotation Gear During all Phases of Flight.*** When a standard marine life jacket or FAA-approved life preserver stored in a pouch is tucked unrestrained under a seat, it could be thrown or tossed from the seaplane with other debns in the event of an accident or capsizing In this case, the flotation gear becomes ineffective for swimmer and non-swimmer alike Furthermore, life jackets in sealed pouches can be awkward to remove and cbn in a flooded aircraft When a survivor attempts to put on a jacket in the water, it may be difficult to find and fasten its straps and hooks It would take considerable effort to accomplish the combined maneuver of pulling a life jacket over one's head while in the water trying to stay afloat If a life preserver is not worn before flight, it is practically impossible for a survivor with an injured arm, for example, to don the life preserver in time for it to be effective for survival Wearing an *uninflated* C13E life preserver at all times in the seaplane and inflating only *after exiting the* seaplane would seem to be the best protection

f ***Types*** of ***PFD's.*** The folbmng are various non-inflatable, USCG-approved PFD's, categorized by type and intended use The USCG has indicated the advantages and disadvantages of each This discussion is for informational purposes only and is not an endorsement of any specific type of PFD for seaplane operations

(1) Type 1 PFD • Off-Shore Life Jacket

Descnption

- Turns most unconscious wearers face-up in the water
- Most effective type in rough water
- Reversible, i e , can be worn inside out
- Comes in two sizes to fit most adults and children

Intended Use

- Abandon-ship life jackets for commercial vessels carrying passengers for hire

Advantages

- Best for all waters, including open ocean, rough seas, remote water, or where rescue may be sbw
- Best performing PFD in rough and calm waters
- Provides best chance of survival for unconscious wearer
- When worn, best device for non-swimmers

Disadvantages

- Bulky and not easily stowed
- May be too uncomfortable for wear for extended penods
- May not hold up to extremes of some sizes, especially child sizes

(2) Type 2 PFD - Near-Shore Buoyant Vest

Description

- Will turn some unconscious wearers face-up in the water
- Comes in most adult sizes and three child sizes infant, small, and medium
- Compromise between Type 1 PFD performance and wearer comfort

Intended Use

- General boating activities

Advantages

- Good for calm inland waters or where there is a good chance for a fast rescue
- More comfortable than a Type 1 PFD

Disadvantages

- May be too uncomfortable after weanng for extended penod of time
- Will not turn as many people face-up as a Type 1 PFD
- Allows wearer's face to be covered by waves in rough water
- Not intended for extended survival in rough water

(3) Type 3 PFD - flotahon Aid

Descnption

- Provides a stable, face-up position in calm *water* for a wearer floating head up

Intended Use

- General boating or specialized activities such as water skiing, hunting, fishing, canoeing, kayaking, etc

Advantages

- Available in a mde variety of sizes for a good fit
- Good for calm inland waters or where there is a good chance of survival
- Designed so that wearing it will complement boating/water activities
- Should be comfortable to wear for extended penods
- Comes In a wide variety of designs to fit its use

Disadvantages

- Wearer may have to tilt head back to avoid going face down
- Will not hold face of an unconscious person clear of the water
- In rough water, wearer's face may often be covered by waves
- Not for extended survival in rough water

(4) Type 4 PFD - Throwable Device

Descnption

- Grasped and held by the user until rescued
- Used with a lanyard, a "person overboard" pole, a locator light, or a smoke signal

Intended Use

- For use on small boats in calm water or inland water with heavy boat traffic where help is always nearby
- For use on large boats as an extra device for persons overboard

Advantages

- Provides enough buoyancy for users to hold thee heads out of the water
- Can be thrown to someone in the water within 40 feet
- Can be used as a seat cushion or mounted on wall brackets for immediate availability
- Good back-up buoyancy when used with a wearable PFD

Disadvantages

- Not for unconsaous or exhausted persons
- Not for non-swimmers or children
- Not for rough water survival

g ***Other*** Wafer ***Survival Equipment.*** Dive shops and manne equipment retailers offer many types of supplemental water survival equipment Among these are buoyancy compensator belts and small, compact "spare air" containers used by scuba divers as a backup to their regular air tanks These "spare air" contamers can hold up to 4 mnutes of air, and they are relatively lightweight and easy to stow Four minutes of breathable air could provide pilots and passengers with some extra time to don Me jackets and exit an overturned seaplane that has flooded Although these "spare air" containers may meet or exceed USCG requirements, they are not FAA-approved

11 SUMMARY The best time to know emergency procedures and the worst time to learn them is an actual emergency Non-mflatable, USCG-approved PFD's are usually impractical for most seaplanes and other aircraft because they may prevent people from exiting through doors or windows The best protectron is afforded when weanng inflatable life preservers When weanng Hatable life preservers, pilots and passengers should always wart until clear of the seaplane

before inflating. Finally, the best safety devices are useless without the proper preflight briefings and safety demonstrations.

NOTES

CONTENTS

SAMPLE PASSENGER PREFLIGHT BRIEFING CHECKLIST

NOTE: This "checklist" Is a guideline for pilots to use in conductlng an oral preflight briefing of passengers. This list *should* not be used as a substitute for the briefing itself.

1 Smokrng considerations Where, when, and under what condrtions

2 Seatbelts/Shoulder harnesses How to fasten, tghten, and unfasten, how to stow the loose end of the belt

3 Seats Operation forward and rearward, seatbacks upnght for takeoff and landing

4 Exits Location and operabon (by demonstration) of each normal and, rf applicable, emergency exit

5 Carry-on items Stowed properly and left on board during evacuation

6 Situational awareness Establish a frame of reference for left and nght in relation to the aircraft exits, remnd left and nght are the same whether right side up or upside down

7 Flotation gear

Cushions Type, location, use, and demonstration of use
Personal flotation device Type, location, use, donnrng, and simulated demonstration of inflation

8 Fire extinguishers Location and how lo operate

9 Survival equipment Location and how to retneve

10 ELT Location and how to turn on

11 Flares Locabon and use

12 Brace position Demonstration

13 Propeller cautions No assistance In docking/launching by passengers unless requested by pbt. If passenger assistance IS required, specific instructions on duties, placement, and caution about propellers

14 Passengers needing assistance Briefed individually on all above topics including who will be assisting the passenger to exit, if passenger is accompanied by an attendant, bnef both

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