

Volume 3. Air Operator Technical Administration

CHAPTER 10. EMERGENCY EVACUATION AND DITCHING

SECTION 4. DITCHING DEMONSTRATION

1735. GENERAL.

A. An applicant or certificate holder who proposes to operate a landplane in extended over-water operation must conduct a ditching demonstration. Extended over-water operation is defined as an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline. However, in some cases operators are allowed to operate certain types and models of airplanes at a distance greater than 50 miles from land without the operation being designated as extended over-water operation. When this is the case, the waiver that allows this will be given in the operations specifications. The ditching demonstration is conducted in accordance with the requirements specified in Title 14 of the Code of Federal Regulations (14 CFR) part 121, § 121.291(d) and (e), part 121, Appendix D(b), and the direction and guidance provided in this chapter. The purpose of the demonstration is to evaluate the operator's ability to safely prepare the passengers, airplane, and ditching equipment for a planned water landing. During the demonstration the following four areas are evaluated:

- Emergency training program
- Ditching procedures
- Crewmember competency
- Equipment reliability and capability

B. Ditching and water landing are defined differently. Ditching as commonly used in aviation is a planned event. When the airplane lands in the water without warning, this is an unplanned water landing. A ditching demonstration will simulate a planned water landing. The preparation for ditching is similar in nature to the preparation for a planned evacuation.

1736. CREWMEMBER CRITERIA. The selection and number of crewmembers to be used in the ditching demonstration is very important. The following paragraphs supplement the information in Section 2, paragraph 1697F:

A. The qualifications of the crewmembers used in the ditching demonstration should be consistent with the qualification of line crewmembers. Whenever possible, crewmembers used in this demonstration should have been "line crewmembers" for the last 2 years. Experience gained

prior to the previous 24 months should not be a consideration when selecting crewmembers for possible use in the demonstration. In addition, when possible crewmembers should not have been used in a demonstration within the last 6 months. There are smaller airlines where this may not be possible. When this is the case, the former experience should be documented and included in the report regarding the demonstration. When the FAA determines that crewmembers to be used in the evacuation and ditching demonstrations have been allowed to "practice" opening the doors/exits they should not allow these crewmembers to be used in the ditching demonstration, unless this additional training is included in the operator's FAA approved training program.

B. The air carrier should present a minimum of two complete crews for the demonstration(s). During the consultation with AFS-200 through the CHDO that is required as a result of two demonstration failures, the lack of trained crewmembers for future demonstrations should be discussed. It is possible that in the case of failure due to equipment, the same crewmembers can be used to test the equipment. However, this decision should be made in consultation with AFS-200 and the CHDO.

C. It is very important that the "back-up" crewmembers that may be used if the first demonstration fails are not given any information about the first demonstration. Sometimes, this is best accomplished by having these crewmembers isolated in an area which is physically removed from the first ditching demonstration. However, if these back-up crewmembers are not held in an area away from the demonstration they should stay in a group with an FAA inspector present so the inspector can insure they are not given any information about the first demonstration.

D. When an airline is new, typical line crewmembers may not be available. When this is the case, the carrier must train the first cadre of flight attendants; it is quite possible that these flight attendants will also be instructors. Nevertheless, they should not be given instruction or experience that will not be given to trainees who will be expected to serve as flight attendants on this aircraft in operations. For example, they should not have had "train the trainer" training until after their participation in the ditching demonstration. Flight attendant managers who are in charge

of the air carrier's overall flight attendant program should not be used as crewmembers during the demonstration, unless no other flight attendants have been hired.

E. Crewmembers who are used in evacuation demonstrations may also be used in the ditching demonstration. However, the FAA encourages whenever possible the use of separate crewmembers for the emergency evacuation demonstration and the ditching demonstration. Some air carriers may not be aware of the stress level the crews face by participating in these types of demonstrations. Additionally, by providing separate crewmembers for each demonstration it provides the FAA with a better assessment of the training program. In the event of a non-flight attendant demonstration failure (e.g. equipment failure) it is recommended that a new flight attendant crew be selected from the remaining flight attendant group.

1737. REGULATORY REQUIREMENTS. Section

121.291(d) requires an operator to conduct a ditching demonstration for each type and model of airplane used in extended overwater operations. This demonstration must be conducted in accordance with each of the conditions stipulated in § 121.291(d) unless the operator can present documentation that another operator conducting operations using Part 121 operations specifications has conducted a successful ditching demonstration using the same type and model of airplane. When the operator provides the FAA with this documentation then § 121.291(e) provides relief from some of the conditions contained in § 121.291(d). Specifically § 121.291(e) provides relief from those requirements of paragraphs (b)(2), (b)(4) and (b)(5) of Appendix D to Part 121. The purpose of a ditching demonstration is to show the FAA that the certificate holder has the ability to efficiently carry out its ditching procedures. In accordance with § 121.291 and Appendix D to Part 121, the ditching demonstration is conducted as follows:

A. The demonstration must be conducted during daylight hours or in a lighted hangar if conducted at night.

B. The FAA minimum required crew complement (both flight crew and flight attendants) must be available and used during the ditching demonstration.

C. When an operator's procedures use able bodied persons (ABPs) to remove or launch life rafts, then the same number of persons who will act as ABP(s) must be used in the demonstration. The ABP(s) should be provided by the operator and should have experiences similar to average passengers. Crewmembers, mechanics, and other air carrier personnel who would have knowledge regarding the use of emergency equipment should not be used. The FAA should insure that able-bodied persons are not given additional training. The ABP(s) should be briefed and perform the duties as stipulated in the appropriate crewmember manuals. The operator should supply enough ABP(s) to ensure

coverage if the first demonstration fails.

D. Stands must be placed at each emergency exit and wing. The life rafts or slide rafts should be inflated onto the stands and then lowered to the hangar floor. This will prevent injury to participants, as well as damage to the life rafts or slide rafts.

NOTE: 14 CFR part 25, § 25.807(d) requires that, during type certification, ditching emergency exits must be above the calculated waterline which will exist when the airplane is at rest in the water. This "waterline" and the designated ditching emergency exits are defined in the "manufacturer's ditching document" which is part of the final Part 25 type certification report. The operator should obtain waterline and ditching exit information from the manufacturer. This waterline is where the tops of the stands should be positioned.

E. Each evacuee (crewmembers and passenger participants (ABPs), if applicable) must don and inflate a life preserver according to the operator's procedures and the flight attendant's briefing.

F. Each life raft or slide raft must be launched and inflated according to the operator's procedures. When air carrier procedures require a survival kit to be attached to a door mounted slide/raft, the survival kit must be attached prior to inflation. All required emergency equipment must be placed in the rafts. Each evacuee must enter a life raft or slide raft. The crewmembers assigned to the raft shall locate and describe the use of each piece of emergency equipment.

G. Each life raft must be removed from stowage for inspection. One life raft or slide raft (selected by the FAA) shall be inflated and launched and the evacuees assigned to that raft shall get in it. The rafts and/or slide rafts must be the same as those used on the aircraft.

NOTE: In addition, they must be equipped as they would be on the aircraft in regular operations. The crewmembers assigned to the raft shall locate and describe the use of each item of emergency equipment.

H. Either the airplane, a life-size mockup, or a floating device that accurately simulates the passenger compartment must be used for the demonstration (Part 121, Appendix D(b)(6)(i)(ii)).

NOTE: It is FAA policy to use an airplane for all ditching demonstrations. If the operator proposes to use a life-size mockup or a floating device to conduct the demonstration, approval must be granted by AFS-200.

1739. THE DITCHING DEMONSTRATION PLAN. The ditching demonstration is normally conducted after the satisfactory completion of the aborted takeoff emergency

evacuation demonstrations. In these situations, the same team leader and FAA team members should conduct and observe the ditching demonstration. Every effort should be made to have cabin safety inspectors (CSI) act as team leaders or at least be involved in the planning and conducting of the ditching demonstration. This may not always be possible because of the workload of some cabin safety inspectors. When a cabin safety inspector is not available, assistance from other experienced inspectors should be sought. However, if an operator plans to initiate flights into extended-overwater areas for the first time, with an airplane that they previously operated over land areas, they must conduct a ditching demonstration. See paragraph 1737.

A. If the operator plans to conduct the ditching demonstration in conjunction with the emergency evacuation aborted takeoff demonstration, the operator's aborted takeoff demonstration plan must include information applicable to the ditching demonstration such as the following:

- (1) Copies of the operator's manual relating to crewmember's ditching duties and responsibilities
- (2) A description of applicable emergency equipment used for ditching (such as life rafts, survival gear) including the type and model of the emergency equipment.

B. If the operator presents the FAA with documentation that another operator conducting operations using Part 121 operations specifications has conducted a successful ditching demonstration using the same type and model of airplane, then § 121.291(e) provides relief from some of the conditions contained in § 121.291(d). Specifically, § 121.291(e) provides relief from those requirements of paragraphs (b)(2), (b)(4) and (b)(5) of Appendix D to Part 121.

C. If the operator must conduct a ditching demonstration that is not in conjunction with an emergency evacuation aborted takeoff demonstration, the operator's demonstration plan must be submitted at least 15 working days before the date of the actual demonstration. This plan must include the information in paragraph 1739A and the following additional information:

- (1) The airplane type and model which will be used
- (2) The proposed date, time, and location of the ditching demonstration
- (3) The name and telephone number of the company's ditching demonstration coordinator
- (4) A representative diagram of the aircraft which includes the following:
 - (a) Location and designation of each exit
 - (b) Location of each item of emergency ditching equipment including:
 - Life rafts/slide rafts
 - Survival radios
 - Pyrotechnic signaling devices
 - Passenger/crewmember life preservers or individual floatation devices

(5) A list of all crewmembers (both flight crew and flight attendants) that are qualified to participate in the demonstration must be in the operator's plan. The crewmembers must be qualified in the aircraft to be used; however, the initial operating experience requirement need not be completed. Flight attendant personnel (in accordance with § 121.291(c)(3)) must have completed an FAA-approved training program for the type and model of airplane being demonstrated. Flight attendants designated by the FAA to participate in the demonstration shall not be provided emergency training or aircraft emergency equipment familiarization more than specified in the operator's approved training program before the demonstration.

(6) Copies of the appropriate crewmember manual pages describing ditching duties and responsibilities, including cabin preparation time parameters for both planned and unplanned ditching. See paragraph 1737A(3) for guidance regarding ABPs.

1741. REVIEW OF THE DITCHING DEMONSTRATION PLAN.

A. When the ditching demonstration plan has been submitted, the principal operations inspector and cabin safety inspector must review the proposal to ensure the following:

- (1) The proposed demonstration will meet the criteria in § 121.291(d) or (e) and Appendix D, (b).
- (2) The emergency training program and ditching procedures in the operator's manual must have been approved and accepted and provide for safe operating practices.
- (3) The ditching duties and responsibilities, including cabin preparation time parameters for both planned and unplanned ditching is realistic and is understood by all.

B. The FAA team must plan for the observation and evaluation of the ditching demonstration. Normally, the demonstration is conducted after the completion of a successful aborted takeoff emergency evacuation demonstration. If an aborted takeoff emergency evacuation demonstration is not conducted, the district office manager shall appoint an FAA ditching demonstration team and a team leader in the same manner as the aborted takeoff demonstration. As a reminder, every effort should be made to have CSIs act as team leaders or at least be involved in

the planning and conducting of the ditching demonstration.

1743. CONDUCT OF THE DITCHING DEMONSTRATION. The ditching demonstration shall be conducted in the following manner:

A. Before the ditching demonstration the team shall inspect each item of emergency ditching equipment for compliance with appropriate airworthiness and other relevant directives.

B. The FAA team leader ensures inspectors and crewmembers are at their assigned positions and then advise the captain to commence the demonstration.

C. The amount of time a crew is given to prepare the cabin for a ditching demonstration should be reasonable. Certificate holder manuals and procedures stipulate crewmember notification, including time parameters for both planned and unplanned ditching, before touchdown, etc., in their crewmember operating manuals. Both the FAA team leader and the operator should agree on a time limitation for the demonstration based on the operator's planned ditching time parameters. The flight attendants should be performing duties associated with normal flight such as serving meals with the cart in the aisle when the signal to ditch is given. The timing should start when the pilot notifies the flight attendants of the impending ditch. The crewmembers must use the air carrier's procedures as outlined in the appropriate manuals. The timing stops when the flight attendants have completed preparations and notify the captain that the cabin is prepared. It is important that inspectors evaluating ditching procedures ensure that both timing and preparations follow those stipulated in the operator's manuals.

NOTE: Regulations do not specify a maximum time limit for the demonstration. However, it is imperative that emergency equipment, crewmember competency, and emergency procedures provide for rapid evacuation since during an actual ditching situation, the airplane may remain afloat for only a short time. During the demonstration, emphasis is on crewmember ability and efficiency in the time period between the decision to ditch and the actual water landing. Fifteen minutes is considered a realistic time acceptable for ditching preparation beginning with the ditching announcement to the simulated water landing. However, timing adjustments may be made in coordination with the FAA team leader and operator, as some operator's manuals stipulate longer or shorter time periods for planned preparations. Once the time is agreed upon, all participating crewmembers must correctly don life preservers, brief passenger participants (ABPs) (if applicable), secure the cabin, and complete all required checklists and procedures within the time specified. Failure to be prepared at

the end of this time constitutes an unsatisfactory demonstration.

D. The FAA team leader begins timing when the captain issues the prepare for ditching order. At the end of the fifteen minutes, or other agreed upon time for the planned ditching demonstration, the crew must be prepared for a simulated water landing. After the simulated aircraft landing and stopping, each crewmember must follow the operator's procedures as contained in the appropriate manuals regarding the launching and boarding of life rafts and/or slide rafts. If the aircraft has more than one type of raft, then each type should be launched, but only one type needs to be boarded. After the timing has stopped each crewmember must board the raft and must be able to answer questions regarding the location and function of various pieces of equipment on the raft, describe the use of each item in the survival kit, and erect the canopy as a group. The current regulations require that training programs ensure that each crewmember remains adequately trained and currently proficient with respect to each airplane, crewmember position, and type of operation in which he or she serves. If a crewmember fails to answer the appropriate questions then the Team Leader should carefully evaluate the question and failure to answer so that appropriate changes to the operator's training program can be made, if needed. However, the failure of one crewmember to answer a question may not constitute failure of the demonstration.

E. Section 121.291(d) requires that all life rafts and slide rafts be launched and inflated. Section 121.291(e) requires only one life raft (or slide raft), designated by the FAA team leader, to be launched and inflated. However, if a slide raft is the primary means of flotation, then this should be the selected raft. For the purpose of this demonstration "launching" a life raft means to remove it from stowage, manipulate it out of the airplane (via stands or ramps), and position it on the ground before inflation. "Launching" a slide raft means to inflate it in a normal manner and then lower it to the ground.

NOTE: Section 121.291(e) does not require detachment of each slide raft from its respective door mounting. However, each slide raft must be inspected for its airworthiness. Any life rafts stowed inside the airplane must be removed from stowage and placed on the cabin floor for inspection.

F. When an operator's procedures use able bodied persons (ABPs) to remove or launch life rafts, then the same number of ABPs should be used in the demonstration. The ABPs should be provided by the operator and should have experiences similar to average passengers. Crewmembers, mechanics, and other air carrier personnel who would have knowledge regarding the use of emergency equipment should not be used. The FAA should insure that able-bodied persons are not given additional training. The ABPs should be briefed and perform the duties as stipulated in the

appropriate crewmember manuals. The operator should supply enough ABPs to ensure coverage if the first

demonstration fails.

1744. - 1748. RESERVED.

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