A-312
Water Ditching and Survival

Course Overview

Purpose
This course is designed to provide participants with a series of procedures to utilize during an aircraft water ditching. Successful completion of A-312 requires students to demonstrate an appropriate level of knowledge and skills required to safely egress an aircraft during a water ditching scenario.

Minimum Instructor Qualifications
Reference OPM-04 or the IAT Guide as appropriate.

Course Logistics

1. Planning
   - Equipment
     - Order CO2
     - Order dunker and PFDs (based on class size)
     - Order optional survival kit(s)/raft
   - Ensure pool is reserved
     - DOI certificate of insurance if required
   - Ensure classroom is reserved
   - Determine travel time between classroom, lunch, and pool

2. Class Size:
   - Two qualified instructors per class
   - A minimum of eight total (to include instructors, students, helpers)
   - Recommended 20 students maximum (based on 4 hours at pool)

3. Length of Course: 2+ hours in classroom; 4+ hours in pool, practical exercises, based upon how many students and instructors).

4. Instructor Materials:
   - Instructor Guide
   - PowerPoint Presentation
   - DVD Presentation
   - Course Presentation Record
   - Student Course Evaluations
5. Student Materials (1 each per student):
   - Participant handout
   - Aviation Life Support Equipment Handbook (ALSE) - Optional

6. Classroom Equipment:
   - Digital projector
   - Laptop computer
   - Large screen
   - Easel chart, pad, and markers
   - Extension cord and power strip
   - Speakers for computer
Welcome and Course Introduction

Welcome the students to the course.
Introduce yourself. Have the second instructor introduce themselves
Have participants introduce themselves (as time allows)
Ensure each student has a Participant Worksheet.

Course Purpose

Share the purpose of A-312: to give the student training and experience with a series of procedures utilized to make them better prepared in the event that they experience an aircraft water ditching.

Course Objectives

Introduce the course objectives to provide the participant with an understanding of what will be expected of them to complete this course. Address any questions.

Play the A-312 Water Ditching and Survival Video to provide an introduction to the Six-Step Process.
Ask the students to internally evaluate how they are feeling coming into the class, and where they might be on the scale. Indicate that you will ask this question again after the pool exercises.

**Module 1: Understanding Policy**

Discuss the difference between overwater flight and extended overwater flight. Explain that much of our policy requirements are differentiated based on the distinction between these definitions.

Review agency policy as it relates to special use and point-to-point flights over water.

Reference DOI Departmental Policy and the Aviation Life Support Equipment (ALSE) Handbook relative to overwater take-offs and landings, single vs. multi engine aircraft, beyond power-off or extended over water flights.
Reference DOI and USFS Policy and the associated direction in the Aviation Life Support Equipment (ALSE) Handbook that refers to Personal Floatation Devices (PFDs).

Ask how many people have used personal floatation devices in training or real deployment. Discuss what equipment may be incorporated into the PFD. Discuss the different types, e.g.: Single or dual bladder, water activated, orally/manually inflated, etc.

Emphasize the importance of inflating a PFD outside the aircraft to avoid becoming trapped inside it.


PFD’s must comply with Federal Aviation Regulations for equipment approved for aircraft use (a Technical Standard Order) TSO number is issued and should clearly be displayed on the PFD (Current TSO for PFD’s is TSO C13f).

PFD’s should be ANNUALLY inspected by fully inflating the PFD which should not lose air for a period of 12 hours. If it does lose air, it should NOT be used.

Special use missions include helicopters landing on platforms, ships or water and PFDs must be worn.

Reference the Policy in the ALSE Handbook which requires when Anti-Exposure garments must be worn or available during overwater flights.

Emphasize that the garments must be worn in a single engine aircraft and available in a multi-engine aircraft when conducting extended overwater flights above water that is below 50 degrees F.

Reference: ALSE Handbook Ch 2.4.2 (page 6)
Life rafts are required for extended overwater operations in accordance with 14 CFR 135.167

FAR Part 135.167 (a)
No person may operate an aircraft in extended overwater operations unless it carries...
(2) Enough approved life rafts of a rated capacity and buoyancy to accommodate the occupants of the aircraft.

Floats are required for single-engine helicopters and single-engine airplanes operated beyond power-off gliding distance of shore.

Exceptions to floats:
- Established traffic flow requires aircraft to operate beyond gliding distance to shore during takeoffs and landings.
- Multi-engine aircraft operated at a weight that will allow it to climb, with the critical engine inoperative, at least 50 feet per minute.

Reference: Part 351 DM 2.2.C

Module 2: Prior to Your Flight
Discuss the definition of water ditching: “A forced landing of an aircraft on water.”
Play Heather Wilson video. Ensure that the student understands that if the decision is made to fly over water based on mission criteria, that a water ditching is possible.

It is imperative to be engaged when receiving a pre-flight briefing. You are receiving detailed information that may just save your life! You need to ASK QUESTIONS when any aspect of the briefing is not clear. When possible, ask to be able to operate the emergency exits to see how they work, (sometimes this is not possible) as well as any shut-down procedures that may be asked of you in the event the pilot is incapacitated.

Ask the students what kind of aircraft they are typically involved with. Ask them to share some of the elements discussed in pre-flight briefings that they may have been involved in.

Review basic pre-flight briefings to passengers. Discuss those items that may be on board an aircraft when flying over water that would not be in a typical pre-flight briefing.

Explain to the students that not only must they protect themselves from incapacitating injuries, but they must also be able to successfully egress the aircraft with their survival equipment. In order to do this certain things should be discussed during a briefing.

Emphasize that the student may want to practice establishing a reference point, and opening their seatbelt and door with their free hand.

Also advise the students they need to discuss with the pilot what effect opening the door prior to impact may have.
Head protection is critical, during the landing and after you egress. It helps to protect from incapacitating injuries. The survivor maybe floating or in a raft and exposed to elements. The helmet will float and lessen heat loss.

Remind students it is policy to wear their seatbelt.

Describe a few of the standard seatbelt configurations that the students may find in the aircraft. Discuss the importance of understanding how the seatbelt operates. Being upside down may complicate the operation of a seatbelt.

Ask the students where they typically store their gear and who has the responsibility of proper placement of gear. Ensure gear is stored properly. Loose items become projectiles.

There may not be time to secure loose cargo in a ditching; stow it prior to flight.

Optional: Play “Wheels Down” video.

Emphasize that the pilot and passenger were able to egress successfully. Ask the students what’s wrong with the landing? (landing with the wheels down on water) Ask the students what would happen if cargo wasn’t secured properly?
Emphasize the importance of knowing the location and operation of the emergency exits. Students should understand that it is their responsibility to ask questions in order to clarify.

**Instructor Note:** If you have sent it out, refer students to the Transport Canada article about “Underwater Egress.” Discuss the fact that in larger aircraft the emergency exit may be a distance from the passenger seat.

Emphasize that during certain missions (rappel, STEP, PSD, ACETA, aerial photography) it will be critical to remember that you are physically attached to the aircraft by ANOTHER restraint, and that you will need a plan on how to remove that attachment prior to flight.

Discuss the location of the items in the photo (i.e. between the passenger and the exit). Do not block the emergency exit with the gear or equipment.

**Module 3: Six-Step Egress**
Emphasize as part of successfully completing this course, students will be required to hold their breath for at least 10 seconds.

 Typically one has 10-15 seconds of air to reach the surface.

 It is important to note that in a swimming pool there is some visibility, however in most water ditching situations the water may be dark and murky making it difficult to rely on visibility for egress. With no opportunity to see, egress will rely on touch and/or feel.

Performing a successful underwater egress actually begins with planning and preparation. You should know how to move through the fuselage of your aircraft with your eyes closed. Reference physical objects that will lead you to exits without having to rely on sight. These objects must be fixed to the aircraft so that they will not be altered or moved during the ditching. It is also good to use items that provide a grip, since you will be pulling yourself towards, as opposed to swimming to, the exit.

If an actual ditching does occur it is extremely important for you to hold the proper brace position throughout the ditching, until the aircraft has ceased all violent motion. This will help to protect the body from flailing injuries as well as reduce the effects of disorientation. As the water movement slows within the fuselage you should be thinking of your reference points. However, you should not reach for your designated reference point until the aircraft has settled.

You should take a breath of air as soon as you sense any rollover motion of the fuselage.

Once you have become inverted, you will find it easier to locate the exits by maintaining the proper brace position. You will also need to focus on your pre-planned exit route and remember the location of the reference points you have chosen. Sit up straight in your seat.
Demonstrate the signal (slashing motion across the throat) the student should use in the dunker to indicate a problem. Examples could include a flight helmet entangled in the netting, or a stuck seatbelt.

Demonstrate and discuss the importance of the Six Steps.

1. “I’m a SURVIVOR!” Set the stage for a positive attitude; you will survive.

2. UNPLUG flight helmet/headset mike jack from coil cord, this prevents getting "hung-up" when exiting the aircraft.

3. Prior to contact with the water, open aircraft door and lock open if you are seated next to one, then BRACE! External water pressure is reduced, making the door easier to open as the aircraft settles or submerges. Most doors are designed such that forward flight will not affect the door when opened. Keep in mind that the door may latch itself again upon impact. If this happens you may have to wait until the water pressure equalizes before being able to open it again. If the aircraft becomes inverted, you will find it easier to locate the exits by maintaining the proper brace position.

4. WAIT 4 seconds to reduce panic; WAIT FOR all violent motion to come to a stop to reduce the risk of exiting into a potentially dangerous situation; WAIT FOR assisted breathing device activation (if applicable).

5. Sit up (if brace position allows), locate and clear exit – Find your REFERENCE point. If you are seated by a door or an emergency exit, locate and open it. Your reference point would be either the door frame or the exit window, depending on which you are holding.

You may need to use a predetermined body part such as a knee to locate your reference point. Place a hand on that predetermined location, then move it to the reference point.

Once you have established your reference point, DO NOT REMOVE YOUR HAND until it is safe to leave the aircraft. Be aware that you may need to climb hand over hand from one seat to another to reach an exit. Never let go with both hands at once.

You should know how to move through the fuselage of your aircraft with your eyes closed. Reference fixed physical objects that will lead you to exits without having to rely on sight.
Use these items to provide a grip to pull yourself towards, as opposed to swimming to, the exit.

This will keep you from becoming disoriented. If you are in another seat, not located by a door or emergency exit, establish a fixed reference point such as a seat back, or console. Do not let go until your departure path is clear.

6. Using your free hand, RELEASE your seatbelt and exit. Do not use your hand holding your reference point! Exit the aircraft following your reference hand, by moving hand over hand. You should not attempt to kick your feet as if you were swimming. This may cause you to become entangled in the harness or, if others are on board, you may cause injury to other survivors. Do not climb over other occupants in the aircraft. Wait until they are out. This will lessen confusion and actually speed-up the process.

Note to instructor: tell the students after exiting to put their HAND UP, HEAD UP, INVESTIGATE, then INFLATE your PFD when you reach the surface. Be sure you investigate the area for danger BEFORE inflating your PFD. You might have to dive back under the water to move away from a dangerous situation!

It is important to note that if a buoyancy device aids your ascent you should make a conscience effort to exhale on the way up. If the aircraft was sinking when you took your final breath, it is remotely possible that the air may have been compressed. Likewise, it is very important that you exhale on ascent if you are breathing from any form of compressed air cylinder.

Activity:
Have the students demonstrate the six steps by walking through the process as a group.

Emphasize that students will be required to repeat these steps to the instructor while seated in the water dunker prior to engaging in the dunking exercise.

Discuss the examples, and how lack of a reference point led to disorientation immediately.
Module 4: Survival Post Egress

Remind students that their mind is their best survival tool. Fear and panic must not be the driving force behind their actions. Panic is the natural tendency in a situation such as this. They must make every effort to remain calm and think clearly.

They must convince themselves that by using their knowledge, common sense, and a logical thought process, they can survive the water ditching. Eliminate negative thoughts and images that may detract from the goal to survive.

Familiarity with the aircraft and a thorough understanding of emergency procedures are essential. They must have this knowledge to aid in exit and survival of a ditching aircraft.

Aircraft have been known to rollover and sink immediately after impact. Many aircraft will float upside down with the cabin submerged for short periods of time due to buoyancy provided by the internal fuel cells. With the cabin inverted and underwater, problems of escaping become compounded, and panic is more likely to occur.

Not only must pilots and passengers be protected physically from impact forces, but they must also be mentally prepared to cope with the events that rapidly occur in a water ditching situation. To be simultaneously shaken up, turned end-for-end, possibly rolled upside down, and submerged beneath cold on-rushing water can be a great shock for even the most prepared person. The initial reactions of most ditching survivors have been disorientation, confusion and panic.

Survivors experience not only the factors we just discussed, but they must overcome other problems that may hamper their escape from the aircraft.

Potential problems:

- On-rushing water. The most frequently reported single problem, it is the greatest deterrent to escape. It forces cabin occupants into the rear corners of the cabin, sometimes disorienting them so that emergency exits cannot be located in the underwater darkness.
Other problems:

- Difficulty using personal flotation devices.
- Darkness or murky water.
- Hampered by obstructions, injury, aircraft attitude, entangled clothing, survival gear, interphone cords or seat belts.
- Inability to open emergency exits.
- Unconsciousness.
- Unable to hold breath long enough.
- Smoke, fire or spilled fuel.

Ask the students how they might determine which way is up. The aircraft may sink rapidly; if visibility is limited then determining which way was up may become crucial to the student’s survival.

- Air bubbles go up. If they can blow bubbles against their hand in front of their face, the student will feel the bubbles go up.
- Flight helmets have buoyancy and will tend to float up.
- As a last resort or if the student is injured, the PFD can be inflated (but only after exiting the aircraft).

Helicopter Emergency Escape Device; students might see one, depending on the mission. Discuss how they work (mini SCUBA tank that provides a minute or two of air).
Try not to inflate the PFD until you’ve investigated what’s at the surface! Hazards at the surface such as fire or debris may require that the student dive back under water.

Emphasize once you have inflated the PFD it will be difficult to dive back underwater. If you have forgotten essential life support equipment or if you wish to assist other crewmembers that remain under the water it will be essential that your PFD is not inflated.

Stress survival tactics such as the “HELP” posture, conserving body heat as a group, protecting your head and staying CALM.

Remember to protect from heat loss by wearing your flight helmet or some other protective head gear.

Discuss: If you are not able to get to a raft, the key to survival is to remain calm. From the standpoint of conserving body heat this is the best possible behavior. Struggling or swimming will cause maximum heat loss due to the flushing action of cold water against the body’s critical heat-loss areas. Also the expenditure of calories produced by strenuous exercise will lessen your endurance.

KEY SURVIVAL POINTS

- A calm body floats better than a tense one.
- 50%-70% of the heat loss of your total body temperature will take place through your head.
- Keeping your head out of the water and the flight helmet on will help minimize this heat loss, as well as provide additional buoyancy.
- The colder the water temperature the more harsh the environment becomes.
HELP Position
If you are alone in the water assume the HELP (Heat Escape Lessening Posture) position. Draw the knees to the chest, lock hands over knees. This will also help retain critical body heat.

Group Huddle
Survivors should huddle together while afloat in the water. Arms should be lower than around each other’s shoulders to prevent heat loss and presents a larger target for rescuers to locate.

Carpet
This technique is among the strongest for keeping the group together. It also is the largest visible target, can facilitate assisting injured or unconscious personnel and places personnel on the surface of the water, where temperatures would be the warmest.

Instructor Note: Have the students demonstrate the carpet in the classroom if there is room, otherwise this can be done at the pool facility before demonstrating in the pool.
Discuss the chart. Emphasize that with some type of flotation device, chance of survival is increased. Also emphasize that in water colder than 50 degrees F., survival suits may be your only chance to survive.

Play anti-exposure garment video.

Play survival equipment video. There are many signaling devices to help survivors increase their chances of being rescued. Each type of signaling device has a specific design and purpose, as well as definite operating limitations. The wider range of devices available, the greater the chance of rescue.

Being able to alert the rescue party of the situation or whereabouts is essential. The chance of being spotted accidentally does not generally occur. The negative effect of heavy swells on the visibility of any floating object in the ocean is well understood by sailors. The chance of an alerted ship or aircraft pinpointing and reaching the position of the raft is slim, unless the survivor can provide a constant signal.

**Signaling Devices: Capabilities and Limitations**

Discuss the capabilities and limitations of the various signaling devices. Emphasize that this is the reason having more than one is best.

Daytime Smoke Flares: Use only if you know aircraft or ships are in the area. These flares are adversely affected by poor visibility. They are difficult for rescue personnel to see if they must look into the sun. They are also limited by relatively short bum times.

**Lights (strobe, flash):** These are effective only at night and have a limited battery life; carry extra batteries.
**Whistle or Horn**: Your position relative to the wind direction and the rescue vessel will influence their effectiveness. The most obvious limitation of a whistle or horn is distance.

**Signal Mirror**: There must be a workable angle between the sun and your mirror, and the sun and the rescue craft. Mirrors have proven effective at 10 miles plus. (Limited to daytime and sunny skies.)

**Dyes**: Dyes are visible in the water at relatively close range only, one mile or less. Dye can best be seen by aircraft flying at higher altitudes, but have limited visibility at sea level from boats. Also, it will dissipate quickly in rough seas.

**Hand-Held Rocket Flares**: These are generally of two types: low altitude with a short burn time and high altitude with a long burn time.

**Pen Gun Flares**: A 45-caliber cartridge is screwed into the end of the pen gun and fired by a spring-loaded pin. The flare generates a candle power of 4,000 and attains altitudes of 450 to 500 feet and has a burning time of between 5 and 10 seconds.

**Pistol Launched Flares**: These are generally available in 12 gauge, 25mm, and 37mm. They produce a candle power of 10,000 and have a burning time of between 10 and 30 seconds. They are also referred to as meteor flares, are capable of alerting ships from as far away as 20 miles and aircraft at around 10 miles depending on atmospheric conditions.

Use signal devices that have some longevity. Discuss how satellites are used to pick up distress signals from EPIRBs and ELTs.

**EPIRB** (Emergency Position Indicating Radio Beacon) is a modified version of the aviation ELT (Emergency Locator Transmitter). It is usually equipped with both a manual and a salt water activating system. This self-contained, battery-operated unit transmits an inaudible, electric oscillating or "swept" tone. The beacon is capable of transmitting a continuous distress signal 24 hours a day for the life of the batteries. The important benefit of an EPIRB is that the survivor need not be awake or be able to see the rescue vessel in order to alert it.

The latest in search and rescue technology is a satellite system called SARSAT (Search and Rescue Satellite). These satellites are equipped with special receivers that are tuned to standard international distress frequencies. Orbiting, these
satellites are capable of receiving and pinpointing transmissions almost anywhere on earth.

** Once Activated EPIRBs or ELTs Should Be Left On Continuously **

Discuss how difficult it can be for searchers to see survivors in the water.

Were the students able to pick out the survivor? It is important to note how imperative it is for the students to try to increase their visibility. For example, a group of survivors linked together in a carpet formation or in a group swim can increase their visibility dramatically. Bigger, brighter, different!

The Rescue Streamer floats on top of the water and can be purchased in different lengths. The black squares at the end of the streamers pick up heat from the sun during the day and will give off radiant heat that can be seen at night via night vision goggles

This streamer can be used in lieu of dyes on some aviation contracts.
Ask Students: When would you deploy the raft? Discuss responses.

Discuss with students that they should never assume the aircraft is going to stay afloat. Start exiting as soon as the rotors or props have come to a full stop. Deploy the life raft, making sure you maintain control of the lanyard (i.e. attach to the strongest swimmer); do not secure the lanyard permanently to the aircraft. Deploy the raft into the wind. This will cause the raft to stay in proximity of the aircraft, making entry much easier.

Inform students that PFD’S should be inflated during the transition between the aircraft and the raft. In calm seas, entry into the raft can be done directly from the aircraft. In rougher seas this is more difficult to accomplish, and entry into the water first is usually necessary.

Play raft deployment video.

Entry into the life raft needs to be expeditious as it will reduce your risk of hypothermia. The manner in which you enter the life raft from the water will depend on what type of raft you have.

Once in the life raft, your first priority is to get dry. You do this by using the bailing bucket and sponge provided in the equipment bag on the raft. You MUST get all the water out.

Review the course objectives. Also cover the practical exercises and logistics:

- Location of pool (address, maps, telephone number)
- Discuss pool attire (what is, and what isn't allowed)
Provide general overview of pool exercises
Break for lunch

Module 5: Pool Portion

Pool Exercise: Suggested Order of Events

1. **Briefing (on deck, dry):**
   Prior to dunker exercises, a safety briefing will be held for the class to include:
   a. Identifying the manner in which emergency medical services will be contacted and the local emergency response numbers. Cell phone, hotel phone, radio, physical address of location, etc.
   b. Designate either an instructor or non-participating student to call the emergency response number(s) in the event of an emergency.
   c. Identify any First Responders or EMT’s that may be in the class.
   d. Identification and location of emergency equipment such as first aid kits, fire extinguishers, ring buoys, backboard, and other rescue and life support equipment.
   e. Identify entry routes for emergency services vehicles/personnel.
   f. Assembly sites and evacuation routes for non-affected students.
   g. Reiterate general overview of pool exercises.

2. **PFDs (on deck, dry):**
   Give each student a PFD and a single CO2 cartridge, demonstrate how to inspect and load the cartridge. Have the students load one cartridge in their PFD. Demonstrate how to put on the PFD properly and point out the equipment that may be provided.

   **Note:** If utilizing the Optional Raft Exercise, describe all the equipment the raft may contain.

3. **Breathing Exercise (in pool):**
   Goal is to instill confidence that students can hold their breath long enough to egress the dunker successfully. Minimum three progressively longer iterations suggested (10 seconds, 20 seconds, maximum time - 30 seconds).

   **Note:** Observe students comfort level in the water. Check one last time for individuals that do not know how to swim, if not identified already.

   **NOTE:** Once students enter the pool to begin any water exercises, at least one instructor should be in the pool with students.

4. **Individual Swim (Optional) (in pool):**
Goal is for students to get a feel for the difficulty and energy expenditure that comes with swimming in clothing. This supports the concept in #8 below.

5. **Inflating the PFD:**
   Have students swim to the bottom of the pool and pull inflation tabs on PFD. Caution students to make sure it is clear above them before inflating. Have them manually inflate the second chamber of the PFD, if applicable. Once deployed, request they attempt to return to the bottom of the pool.

6. **HELP Position:**
   Demonstrate and conduct exercise.

7. **Group Huddle:**
   Have the students come together in groups of 3-10 each. Explain that keeping the circle tight and feet together will help keep warm water in and cold water out. This makes a bigger target for rescue than HELP position. Instructor should ask where an injured or unconscious person would go. (Should be placed in the middle of the group with airway protected above the surface of water)

8. **Group Carpet:**
   This makes a larger target for rescue searchers. It keeps most of the body in the warmest layer of water. This may be more comfortable during longer periods afloat, and provides a strong group connection.

9. **Group Swim:**
   Emphasize that you only attempt to swim when land is in sight. Have the student get into small groups and face the instructor in a line, one behind the other. Have them wrap their legs around the waist of the person in front of them. Explain that their arms will become their “paddles”. The person at the back will be the one to call “cadence”. The first call will be “Up!” then “Stroke!” Emphasize, this is a marathon, not a sprint situation. As a group, they are stronger, will swim farther and more efficiently. Have the students swim one or two laps in this configuration. Explain the importance of working together efficiently (stroking in rhythm) to reduce energy expenditure.

10. **Raft Exercise (Optional):**
    **Demonstrate**
    - how to actuate the C02 and inflate the raft
    - how to right an inverted raft
    - how to board a raft alone
    - how to assist an injured person on to a raft alone and with assistance.

11. **Anti-Exposure Garment Exercise (Optional):**
    **Demonstrate**
    - how to don and doff the suit in the water
    - how to “burp” the suit to remove excess air

12. **Visualization Exercise:**
Have the students sit on the edge of the pool, ensuring they are spaced out appropriately, with their feet in the water and go through the six steps while on the deck. After several dry runs, have the students enter the water after step three by falling forward face-first. Then complete the last three steps under water. Complete as many iterations as necessary until ALL students feel ready to move to the dunker. Emphasize this decision is made by the student alone (no peer pressure) to progress to the dunker.

13. Dunker Egress Exercise:

**NOTE**: Only acceptable method of dunker entry into the water is via forward motion.

**DEMONSTRATE** the procedures for:
- don and doff the helmet
- dunker ingress and seatbelt configuration
- explain dry run and live run sequence
  - remind students to stay engaged during all steps
- student and instructor roles (on deck and in pool)
  - deck: remind students to always have one hand on the dunker
  - deck: remind students to lift with their legs, and tip quickly into the pool
  - deck: advise students to leave the water in the pool
  - deck: remind students to help the dunker occupants with seatbelts and plugs
  - pool: advise students that the pool instructor will determine dunker orientation
  - pool: remind students to always have one hand on the dunker
  - pool: advise students not to block the exits
  - pool: advise students to watch the pool instructor and not put their head underwater
- foot placement

**DEMONSTRATE** the Emergency Procedures for in-pool emergencies:

**NOTE**: Practice the exercises a couple of times with an empty dunker prior to beginning the exercises with students fully engaged. Explain first as a ‘dry’ run on pool deck, then practice dunker entry to water and reversing the motions to remove from water. Emphasize that the goal will be to get the student’s head out of the water as soon as possible and that may require additional rotation.

Demonstrate the following emergency procedures for in-pool emergencies; at this time the instructors will ensure the in-pool assistants are capable of following instructions as well as lifting the dunker on command

The instructors and/or designated medical personnel will determine the need for EMS.
**Student Caught in Dunker**
- The in-pool instructor will signal “UP! UP! UP!” The assistants will lift and rotate the dunker to a position that ensures the student’s head is out of the water.
- The instructor on the pool deck should be prepared to enter the water to assist if necessary.

**Suspected Water Inhalation/Respiratory Problems**
- The in-pool instructor shall direct in-pool assistants in the removal of the student from the water.
- The in-pool instructor shall perform an assessment and administer first aid as needed. Utilize trained students if available.

**Student Strikes the Pool Edge or Bottom**
- The in-pool instructor shall perform a primary survey and administer first aid as needed.
- The in-pool instructor shall direct removal of the student from the water.

**Dry Runs:**
Begin by having student(s) sit in the dunker (belted in and plugged into avionics cords) and go through dry runs. This should be done until both the student(s) and instructors are confident that the student(s) are ready for live runs.

During dry runs the pool instructor should be insuring that pool safety assistants are clear on their responsibilities.

Deck assistants should always be assisting the students in the dunker with seat belts and avionics plugs.

**Live Runs:**
Deck Instructor ensures students in dunker, pool instructor and deck assistants are ready.

Deck instructor announces “Live Run”.

**Suggested Verbiage for Instructor On Deck:**
“Are you ready in the water?” Instructor in water checks personnel, then replies: “Ready in the water”

“Are you ready on the deck?” Helpers on deck reply: “Ready on the deck”

“Are you both ready in the dunker?” Personnel in dunker reply: “Yes”

Have students get through the first three steps. Once in the proper crash position, instructor can move to rear of dunker and announce, “Ditching, ditching, ditching!” Instructor can then help pool assistants push the dunker. Dunker should be push laterally across mats until it tips towards the water. The dunker should enter the water at roughly a forty-five degree angle.
Pool instructor’s positioning under the water should allow the best view of the students’ actions inside the dunker.

Post Course Discussion (After Action Review)
APPENDIX A: Resources and References

Books/Articles

ALSE Interagency Guide (Former ALSE Handbook)


Brooks, Dr. C.J. The Human Factors of Surviving a Helicopter Ditching. Survival Systems LTD.

