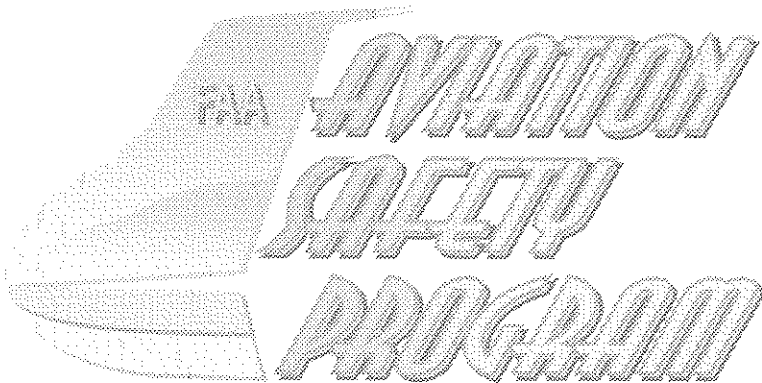


***Water
Survival:
The Skills You
Never Want
to Use***



Foreword

The purpose of this series of publications is to provide the flying public with safety information that is handy and easy to review. Many of the publications in this series summarize material contained in FAA Aviation Safety program audio-visual presentations. The handouts for "Water Survival" contain material intended to supplement the "Water Survival: The Skills You Never Want to Use" video presentation.

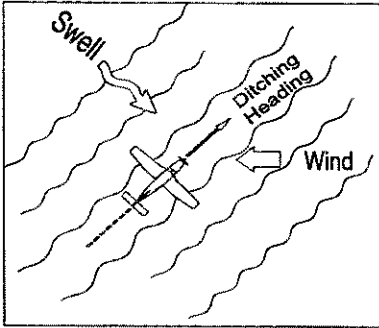
Comments regarding these publications should be directed to the Department of Transportation, Federal Aviation Administration, Aviation Safety Program Branch, AFS-803, 800 Independence Avenue, S.W. Washington, D.C. 20591.

Acknowledgments

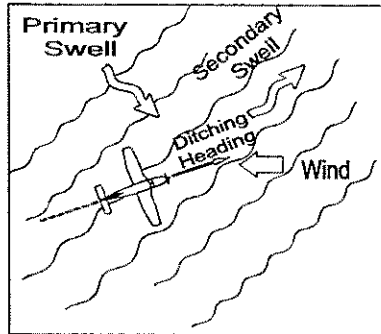
Handout preparation "thanks" go to the services of FAA's Information Media Division (Oklahoma City). Additional copies of this handout are available from any FAA Flight Standards District Office.

A Cooperative Project By:
Stark Survival Company
United States Coast Guard
FAA's Information Media Division

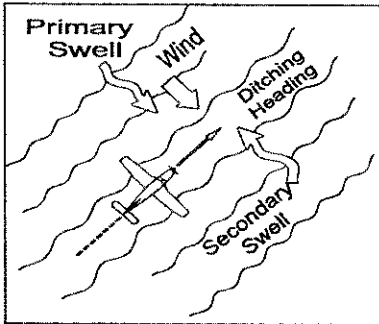
CORRECT PROCEDURES FOR LANDING ON A SWELL



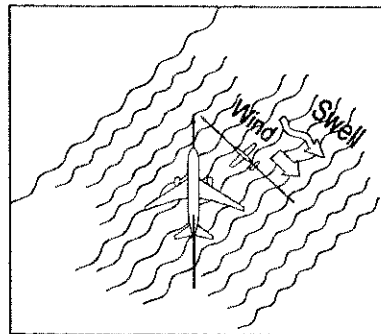
Single Swell (15 knot wind)



Double Swell (30 knot wind)



Double Swell (15 knot wind)

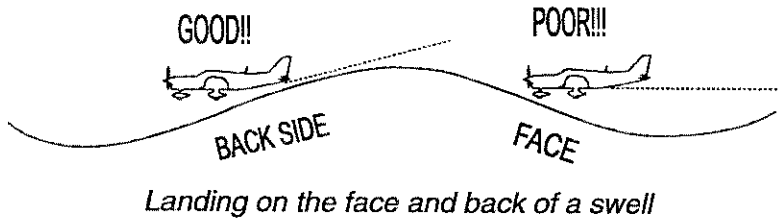
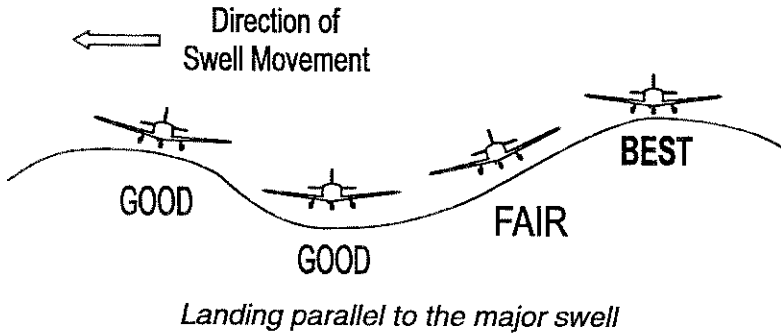


Aircraft with low landing speeds – land into the wind.

Aircraft with high landing speeds – choose compromise heading between wind and swell.

Aircraft with both landing speeds – land on backside of swell.

WIND-SWELL-DITCH HEADING



A successful aircraft ditching is dependent on three primary factors. These are listed in order of importance:

1. Sea conditions and wind
2. Type of aircraft
3. Skill and technique of pilot

IMPORTANCE OF FILING A FLIGHT PLAN

It's extremely important to file a flight plan. This advises every one of your flying intentions. This way, if you do get involved in an emergency situation, assistance is more likely to be provided along your route of travel.

PRIOR TO DITCHING

- Have radio communications and identify your aircraft
- State your present position or location
- State the nature of your emergency
- State your intentions
- Prop open a door/window so that pressure won't prevent you from exiting

WHEN FLYING ALONE

Make sure your emergency equipment is accessible. You should have a working knowledge of the survival equipment on your aircraft.

WHEN FLYING WITH A CREW

Your pre-flight briefing should cover over-water emergencies. Everyone must know what to do in the event of an emergency. If put in a survival situation, everyone on board must be given productive assignments - helping one another; assisting the injured; dividing supplies, navigating, signaling, etc. Getting rescue takes effort and determination!

CERTIFYING EQUIPMENT

Emergency equipment must be certified and maintained at *least once a year* by an FAA Authorized Repair Station. Contact your local FSDO for further information.

SUGGESTED ITEMS FOR AN AVIATION SURVIVAL DITCH KIT

Survival kits can be purchased commercially or you may choose to customize and prepare your own ditch kit. At a minimum your ditch kit should contain:

- ✓ water maker
(reverse osmosis pump) 30 manual pumps every 10 minutes can provide 8 oz. of water. Approximate cost is \$550
- ✓ signal flares
(hand-held, signal gun or parachute flares.) Flares of any type are considered hazardous materials on an aircraft. Be conscious of wind direction. Know how to use flares prior to a crisis situation; use them sparingly.
- ✓ signal mirror
(can use a hologram on a credit card for signaling)
- ✓ 1-liter of packed water
small bottles as opposed to 1-2 large bottles are less likely to break upon impact
- ✓ bailing bucket
helps keep you as dry as possible (especially when in a raft). The goal is to keep your body's temperature constant.
- ✓ life raft patch kit
- ✓ rope
you should tie everything into the raft (all items, including people.) All rafts should be tied together.
- ✓ duct tape
- ✓ pocket knife
- ✓ plastic bags
have multiple uses (cold water on forehead); personal waste can be discarded in them (so you are less attractive to sharks.)
- ✓ large mylar bags
typically bright orange in color. They are excellent for signaling, insulating, and can be shelter-like.
- ✓ limited supply of food rations



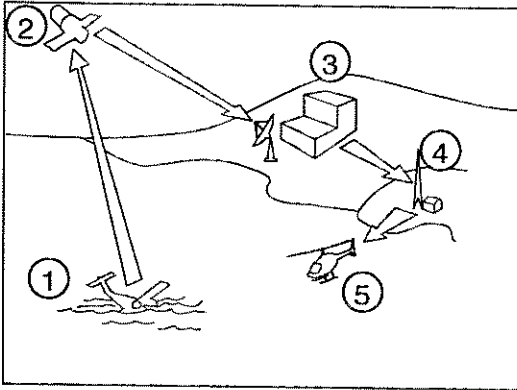
All survival kits should also contain a first-aid or medical kit. The kit should include:

- + prescription medications (if needed)
be aware of expiration dates
- + allergy medicines
- + extra set of reading or prescription glasses
- + seasick tablets, patches or bracelets
helps conserve body fluids due to seasickness; seasickness promotes dehydration.
- + sunscreen
helps maintain your body's core temperature; sunscreen should be waterproof and at least SPF 30.

As a reminder the Federal Aviation Administration *requires* you to have the following items for any over water flight:

- ✓ E.L.T: the batteries usually last 48 hours; DO NOT turn off and on: once ON, leave ON. Otherwise it can appear as a mistake to rescuers.
There are two types of ELTs:
121.5 transmitter – offers minimum coverage with faults; narrows search to 25-30 sq. miles (avg. cost \$300-\$800)
406 transmitter – offers maximum coverage; narrows search to 2 sq. miles (avg. cost \$2500)
- ✓ life vests
- ✓ life raft
- ✓ aeronautical maps

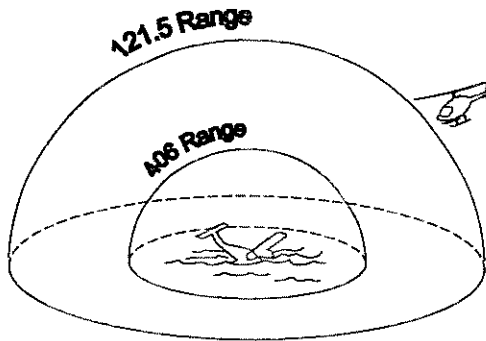
HOW AN ELT WORKS



1. People in distress use an emergency locator transmitter (an ELT).
2. Help signals are transmitted to Search and Rescue satellites.
3. Satellites forward data to a Ground Receiving Station.
4. Ground Receiving Stations relay information to a Mission Control Center and/or a Rescue Coordination Center.
5. These Centers help implement Search & Rescue Forces.

From a rescue standpoint, even if you do everything correctly, you can expect 24-36 hours to elapse before being rescued.

COMPARING TYPES OF ELT'S



121.5 Transmitter

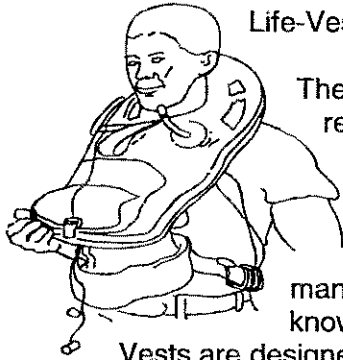
This is the most common type of ELT. It can narrow a rescue search within 25-30 square miles. Unfortunately, many of the signals it sends out are false activations.

406 Transmitter

This is the transmitter of choice, although more expensive. It can narrow a rescue search within 2 square miles. The signal it transmits is decoded to provide such information as the aircraft owner's name, address, telephone number and type of aircraft. Such information increases the accuracy of locating a downed aircraft while further expediting rescue efforts.

PROCEDURES WHEN DITCHING

- a. Make radio communications and implement proper emergency procedures.
- b. Put on life vest but DO NOT inflate until you are OUT of the aircraft.



Life-Vest Know-How:

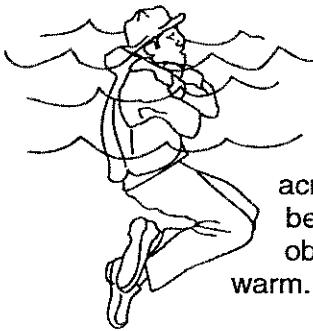
The waist belt should fit snug but not restrictive.

A toggle line allows you to attach yourself to the raft and other survivors.

Be sure you know how to manually inflate your vest as well as know how to use a CO2 cartridge.

Vests are designed to keep the face from submerging even if the wearer is unconscious or incapacitated.

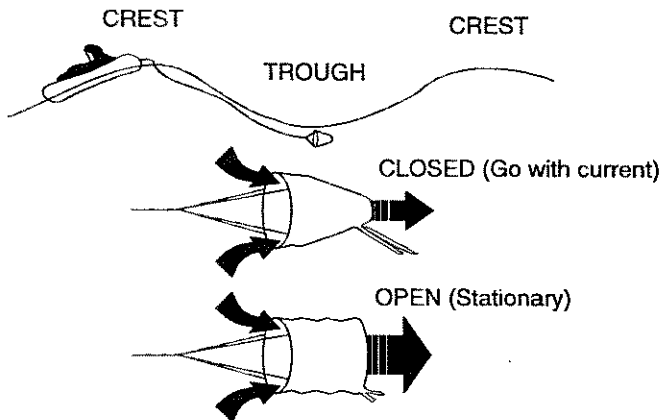
- c. If you don't have a raft, know the proper body position to take in the water.



Proper Body Position:

Your head and neck should be above water with your arms resting across your chest. Your legs should be crossed at the ankles. The objective is to save energy and keep warm.

- d. If you have a raft, moor it to the aircraft, then inflate (it usually takes 10-17 seconds to inflate.) Mooring the raft to the aircraft prevents the raft from drifting. The mooring line is designed to break at 500 lbs. of pressure. Before the aircraft sinks, try to cut the mooring line to keep better control of the raft. You will have to get in the water before you get into the raft. DO NOT pull the raft up to the aircraft as sharp metal can puncture it. Make sure the raft has a drogue or sea anchor to prevent the raft from spinning. If you have a canopy, install it. Do whatever you need to do to protect yourself from the elements.



Adjust the sea anchor from the crest of a wave to trough or vice versa.

- e. Try to stay in the vicinity of the wreck – as chances are your last transmission will be from there.
- f. Bail out any water from the raft; keep your body temperature constant.
- g. Be selective at the timing of your release of dye-markers and signal flares.

REFERENCES

If you desire further information on the subject matter of “Water Survival” here are some suggestions to help you get started:

- Attend a survival and/or first-aid course
- Purchase a commercially prepared ditch kit
- Investigate buying individual survival components
- Check your local bookstore; read stories about survivalists; search the Internet on related topics

THE FINAL WORD

Aircraft ditchings account for numerous flying accidents each year. Life can be sustained for long durations if the right preparation, training and attitude prevail. So what can you do to increase your chances of survival?

Review the basics; memorize emergency procedures. Sharpen your skills - get recurrent training on survival skills and first-aid whenever possible. Learn about the different types of survival products available. Learn from those who have survived such situations. Always be prepared in case the unfortunate happens to you.

Water Temp.	Duration of Survival	Water Temp.	Duration of Survival
32° F.	Less than an hour	60° F.	2 to 24 hours
40° F.	½ to 3 hours	70° F.	3 to 40 hours
50° F.	1 to 6 hours	80° F.	Indefinite

Water Survival Ditch Kit Checklist

- An Emergency Locator Transmitter with batteries
- Life vest
- Life raft with patch kit
- Aeronautical maps
- Water maker
- Signal flares
- Signal mirror
- Small bottles of water
- Bailing bucket
- Rope
- Duct tape
- Pocket knife
- Plastic bags
- Large mylar bags
- Limited Supply of food rations
- First-Aid Kit:
 - Prescription medications
 - Allergy medications
 - Extra set of prescription glasses
 - Seasick prevention tablets
 - Sunscreen

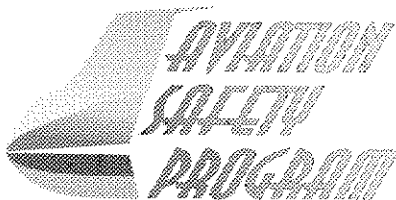
Remember the clothing that you wear can also play a vital part in a survival situation. Layer clothing is a good choice, while also selecting clothing that does not restrict your movements and ideally made of material that is waterproof and windproof. Regardless of ambient temperature, head covering is always a good idea.

Use whatever tools or processes might provide you strength, wisdom, and the possibility of rescue. Depending upon your beliefs, you may want to pray or meditate. Some survivors take comfort in singing, reciting creeds, liturgies, etc. Remember that no matter how bad your situation, there have been others that have endured and survived worse circumstances. Never lose hope and never give up.

Keep checklist in you flight bag

Cut along dotted line

This is a **Back
to Basics,**
Aviation Safety
Program Product.



Federal Aviation Administration
Aviation Safety Program (AFS-803)
800 Independence Avenue S.W.
Washington D.C. 20591
<http://www.faa.gov/avr/asphome.htm>
202/267-7956

Contact your local FAA Flight Standards District Office's Safety Program Manager for more safety information.



U.S. Department of Transportation
Federal Aviation Administration
Washington, D.C.