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SIX WAYS TO SINK YOUR BOAT

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This story is based on fact, even though the names are fictional, and incidents have been added in reconstructing the original news story. The list of what went wrong on Starfisher *may seem exaggerated ("Could all* that *happen?"), but sinkings more often than not are the result of a train of misfortunes or errors. Usually, only a few errors are enough to sink a boat—and when a defective lifeboat is added to the chain, no one returns to tell the story. So follow the trials of the Barlow brothers; maybe we can all learn from them . . . and save some lives in the future.*

Arlo and Tim Barlow, brothers who had made many fishing trips together, got their 12-meter (40-foot) combination boat, *Starfisher,* underway one night last March for a one-week trip to the local fishing grounds.

As they cleared the inner harbor, they felt *Starfisher* start to work in the large swells coming into the outer harbor. After clearing the sea buoy, they set course for the fishing grounds, ignoring the heavy swell, and both brothers settled down to their at-sea routine.

Before they were two miles beyond the sea buoy, *Starfisher's* motion became labored—she hesitated before righting herself after each swell passed beneath. As *Starfisher* hung up on one particularly large swell, almost refusing to right herself, Arlo decided he had better see if everything was in order.

Shining a light into the engine compartment, he saw that the boat was taking water. Her motion in the swells had apparently opened a seam in the engine compartment, and the bilge pump was not staying ahead of the rising water.

Arlo told Tim to send the distress signal on the radio while he tried to put the other bilge pump on the line. Within 20 minutes, both the engine compartment and the adjacent fish hold had flooded (*Starfisher* had a common bilge for both spaces).

Tim had no luck raising anyone on the radio. Then, much to his relief, he saw the lights of not one but two ships bearing down on *Starfisher.* He thanked heaven their problem was solved.

This bulletin was prepared by Edward J. Condon, Extension Oceanographer, Oregon State University. It was first published in 1975 under the title Starfisher's Last Voyage (SG 33).

The bilge pump was not staying ahead of the rising water.

Tim had no luck raising anyone on the radio.

Just to be sure that the ships saw him, Tim flashed a spotlight at first the bridge of one and then the other . . . . Moments faded into minutes. Neither ship slowed or gave any indication it had seen *Starfisher*. Both passed and eventually disappeared without even acknowledging *Starfisher's* presence.

Meanwhile, Arlo found that the bilge pump driven by the engine had clogged with debris from the bilge and was no longer working. He could not

find the standby pump, though he was sure he had told Tim to pick it up at the repair shop the day before. He realized then it must not be aboard.

Arlo clambered topside. He found *Starfisher* so low in the water that seas were washing over the deck. A quick—and unprintable—exchange between the brothers made it clear the situation was hopeless; it seemed their best bet now was to abandon *Starfisher*.

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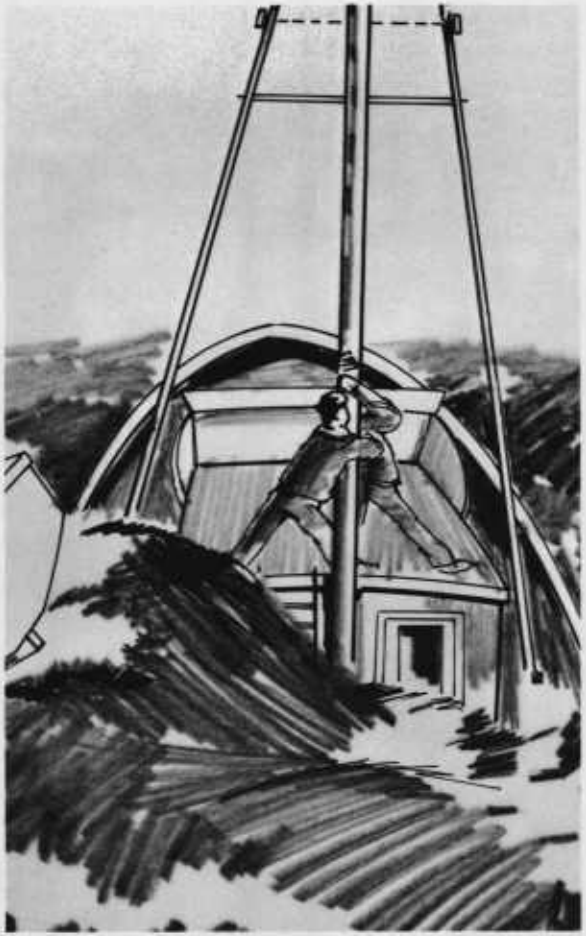


Arlo and Tim climbed the mast as Starfisher *continued to settle.*

With that, they unlashed the lifeboat, tenderly lowering it alongside, and wasted no time climbing in. As they cast off, they realized with a shock the lifeboat was *also* taking water—worse yet, it began to sink faster than *Starfisher*. They made a jump for *Starfisher;* within moments the lifeboat capsized and sank.

At this stage, the brothers decided to put on their lifejackets and stick with *Starfisher* as long as she remained afloat. A frantic search through the now-flooded cabin revealed no lifejackets, so without them both men climbed the mast as *Starfisher* continued to settle. Clinging to the mast, Arlo and Tim were reduced to signaling with their flashlights to try to attract attention.

They chanced to live and tell about their misadventure because a fellow fisherman became curious. Captain Jack von Kelly later said it was those weirdly flashing lights that prompted him to take a look before he returned to port. His curiosity almost certainly saved the Barlow brothers.

The moral? Not maintaining the equipment on a boat is like playing Russian roulette . . . eventually the odds will catch up.

The sea may forgive a careless error or two, but those who compound one error into a series of mistakes and *return to tell about it* are few and fortunate.

Those Six Ways to Sink Your Boat

1. **That opened seam.** It probably opened because the Barlows had not had *Starfisher* recalked in quite a long time. Wood boats need continual tender loving care. Without it, their enemies—"dry rot" (really fungi), marine borers, normal wear and tear—inevitably will put them in danger of sinking. Could the Barlows have stopped or slowed the flooding?

   - *From the inside,* they should have stuffed the open seam with rags, paper, anything that could plug the hole. Then they should have nailed a temporary patch in place until they could make port.

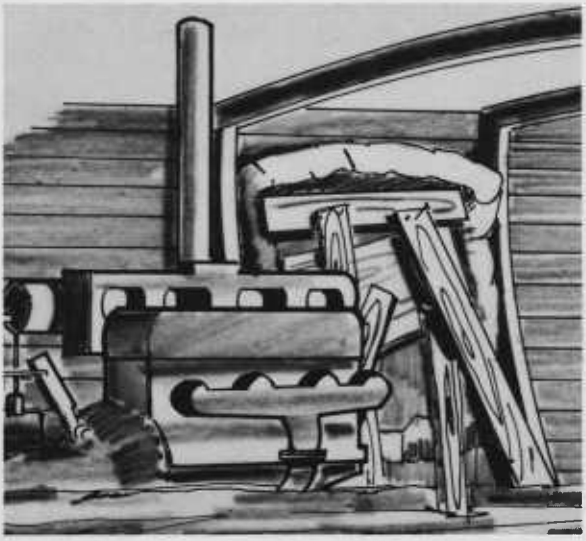
   - What about *outside* the hull? They could have slowed the leak considerably just by lashing a canvas, heavy plastic sheet, tarp, or even bedsheet over the open seam.

2. **What went wrong with the bilge pump?** Why? Bilge suction is normally located at the low point of the bilge. Unless you take the pains to clean the bilge, you can count on clogging the bilge pump. In most hulls, the suction is located where it is difficult to clear when it *does* become fouled. The best precaution is to keep the bilges clean.

3. **The missing standby pump.** The obvious lesson here is not to go to sea until quick checks insure that *all* life-sustaining equipment is indeed *on board and in working order.*

4. **What went wrong with the lifeboat?** There are two strong probabilities:
   - In their excitement, the Barlows forgot the drain plug in the bottom of the lifeboat (this plug is normally kept out when a boat is out of water for long periods).
   - If the lifeboat had sat on deck for a long time, the sun had dried (shrunk) the calking.

5. **What happened to *Starfisher's* radio?** (It's true that the nonfunctioning radio did not actually help *sink* the boat, but it made it next to impossible for the brothers to get any help.) Perhaps nothing happened to the radio. Most likely, this was another example of poor maintenance: the brothers had probably not maintained the radio properly over the years. Marine radios are extremely reliable, but they do need periodic service checks by qualified electronics technicians.
   - What channel did Tim use for his distress message? Was it one of the *International Distress Frequencies,* which are monitored constantly by all U.S. Coast Guard stations (and by most ships—and many boats—at sea)?
   - Did Tim use the radio distress code word (the word that alerts all listeners for the message to follow)? It's *MAYDAY, MAYDAY!* Next, proper procedure calls for giving the name of



They should have stuffed the seam from the inside. . . .

Distress Frequencies

2182 kHz *156.8 MHz (channel 16)*

These two are the *marine* distress frequencies monitored constantly by all U.S. Coast Guard stations—including Oregon's two Coast Guard helicopter search and rescue stations—and by most ships and many boats at sea.

your vessel, your approximate position, and the nature of your difficulty. Don't jam the radio by transmitting continuously. Repeat your message twice every 10 minutes or so—and get off the air so someone can acknowledge your call!

6. **Where were the lifejackets?** Like other seldom-used equipment on *Starfisher*, the lifejackets were probably stowed in some forgotten nook and had not been inspected in years.

Some Further Points to Ponder

What about visual and audio signals for a boat in distress in daylight hours? at night?

- *Visual signals:* In daylight, flying the flag upside down is a generally recognized distress signal. At night, use a light to flash the Morse code letters *SOS* (short-short-short . . . long-long-long . . . short-short-short), repeated over and over again. Point the light directly at the ship, boat, or airplane—or at houses on the beach. A *red* flare is a distress signal.
- *Audio signals:* Ringing your boat bell and blowing its horn are distress signals, if someone is close enough to hear them.

Why didn't the large ships stop and assist? Ships see thousands of boats on any given voyage. Unfortunately for the Barlows, many boats at sea flash lights at ships at night, just to insure that the ships see them—and won't run them down. In this case, the two freighters would have

Flying the flag upside down is a recognized distress signal.

stopped if they had received an *SOS* by light, had seen a red flare, or had heard the whistle and bell—or (better yet) had both seen lights and flares *and* heard whistle and bell.

If the water temperature had been 10°C (50°F), how long could Arlo and Tim have stayed conscious in it? In 10°C (50°F) water, a person can stay conscious for 60 minutes to 6 hours (depending on his or her physical condition and clothing) before losing consciousness and drowning.

- **What about water at 5°C (41°F)?** At this temperature, a person remains conscious for between 30 minutes and 3 hours.
- These figures are approximate; there are considerable differences among individuals. Some persons have survived in cold water longer than these maximums; others have perished in less than the minimum times shown.
- Note the drastic change between 10° and 5°C (50° and 41°F)—*this short drop* cuts survival chances *in half*.

What kills people so fast in cold water? "Immersion hypothermia" is the medical term. To back up a bit, body temperature depends on maintaining the balance between body heat produced (conversion of food to energy) and body heat lost.

- The circulatory system (heart, arteries, veins, capillaries) pumps heated blood throughout the body. Immersed in cold water, the body loses heat primarily from the skin surface.
- The nervous system counteracts by demanding faster movement of warmed blood *to* the skin.
- If the body remains immersed, a point is reached (depending on a combination of water temperature, physical condition, degree of exhaustion, clothing, age, weight, and sex) where the blood can no longer keep the skin warmed to its normal temperature, approximately 37°C (the familiar 98.6°F).
- As the body cools, circulation slowly stops in the hands and feet; in effect, the body concentrates heat in the vital inner core.
- Gradually, the cooled blood from the extremities begins cooling the inner core; when the vital organs eventually become chilled, they stop functioning.
- Death follows. Medical experts cannot be precise about when this point is reached; but they hold that for most persons, a core temperature below 33° to 35°C (91° to 95°F) will require some source of heat *external to the body* to prevent death.

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