



# MultiMedia

July 2003

The Newsletter of the Florida Offshore Multihull Association

## The Case of the Hot Marina

*By Jim Shafer, CAM Components/Harbor Marine Consultants*

While enjoying Memorial Day on the sundeck of their houseboat on a lake, a mother and her adult daughter decided to go for a brief swim. Aside from a couple splashes and a shout that the water was cold, neither woman gave any indication that anything was wrong, but as a second daughter prepared to follow them a short time later, she looked down and saw her mother floating face down near the swim ladder; her sister was nowhere to be seen.

The subsequent efforts to resuscitate the mother and daughter were to no avail. The autopsy suggested both had drowned because neither body had suffered any physical trauma. The surviving daughter reported that they were both good swimmers.

As the investigation into their deaths continued, it became increasingly evident that the women were the victims of a phenomenon that has become known as electric shock drowning.

Combining electricity and water always creates the potential for danger. If the grounding system at this marina had been working properly, these deaths could have been avoided.

**Dangerous currents.** Electric shock drowning is often the result of a situation similar to a hair dryer falling into a bathtub; in these cases the hair dryer is a boat and the bathtub is a lake. **The cause is often an undetected ground fault that energizes the hull and causes a low-level current to flow through the swimmers, thereby disabling muscle function.** It's referred to as electric shock drowning and not electrocution because there is no physical injury. The victims either

lose muscle control if the current level is in the 0.01A to 0.02A range or suffer ventricular fibrillation at 0.05A to 0.06A current levels. Many electric shock drownings are mislabeled as deaths attributable to alcohol intoxication or heart attack. Often the drownings are attributed to electric shock are classified that way because of circumstantial evidence like multiple deaths and a tingling sensation reported by the survivors.

How does the hull become energized? The American Boat and Yacht Council (ABYC) recommended practices require that the AC shore cord's green bonding wire be joined on a boat to the DC negative bus and the underwater gear bonding system. Should a fault develop on the boat, the fault current in the ground wire will initiate a breaker trip or at least prevent a potential (voltage) rise on the hull or underwater gear. *However, there's no way to know if the ground wire is OK under normal operating conditions.*

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## Our Next Meeting

Our July meeting will take place on a special day, **Monday July 19<sup>th</sup>**.

Be sure to read on, because we have a special deal available for you!

Come join us watch the Hottest Team in Baseball take on the mighty New York Yankees in exciting American League action at Tropicana Field. **This is the last time this season that the Bronx Bombers will invade Tropicana Field**, and both teams

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***We even have a special deal available for you!***

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have something to play for. New York needs to continue on top of the American League, and the Rays might be able to get to the playoffs if they can get ahead of Boston, which is the only team between them and the Yanks.

**THE SPECIAL DEAL:** The first 11 people to show up and meet Steve Steakly near the Will Call windows around 6:30 PM (the West side of the stadium, facing I-275) will get to sit in a luxury suite courtesy of Steve Steakly! For Free!

The stragglers will sit in Section 310. Try and get to your seats around 6:30 PM. The game starts at 7:15 PM. Last year, almost two dozen FOMA members enjoyed the game! ***Let's Go Rays!***

## August Meeting

Are you ready for some fun in the sun? FOMA is proposing that in August, we gather at the Clearwater Community Sailing Center on Sand Key on **Saturday, August 14<sup>th</sup> from 4:00 PM until 10:00 PM** for a Beach Party! The center would provide food, non-alcoholic beverages, and a cash bar, plus the use of their boats. The fleet includes Hobie Waves, Sunfish, Lasers, and more.

FOMA members will divide into teams for some 'intense' competition including relay races, water balloon tossing, and the like. It has been suggested by Wayne that the competition be staged several beers after the bar opens!

The cost for the tropical extravaganza? Well, you can get all this for only \$25 per person, \$40 per couple, and \$50 for a family. Obviously, we need to provide the Sailing Center with a head count ahead of time, so they can get the appropriate amount of food and beverages.

**Please RSVP to Uncle Sid at 727-736-9462 or Wayne at 813-837-5281 As Soon As Possible, then get your beach attire ready!**

## FOMA Sponsors



## The Hot Marina

*Continued from page 1*

Current takes all paths back to the source, so even with a good ground system there still may be a small voltages on the hull. The boat may become lethal if the ground return is damaged and located in **fresh water**.

The grounding system in this dockside service panel was called into question in the investigation.

Regardless of the size of the AC fault, the potential may rise to lethal levels as low as 15 Volts. Even with a poor ground, **a boat in salt water won't develop enough potential to cause a problem for a swimmer**. Lakes are a different story. Fresh water is a very poor conductor by comparison, so an ungrounded fault will raise the potential on the hull. A swimmer represents a lower resistance path, even if only in the electric field and not touching anything.

The investigation revealed that the boat owner failed to connect the grounding (bonding) wire to the female plug, which ultimately led to an ineffective ground-fault return path.

**A preventable disaster.** The investigation into the deaths of the two women focused on the electrical system. On the day of the incident, the resort at which the boat was docked had put into service new power pedestals that required new shore power cords. The owner of the boat in question — and the husband and father of the two victims — had been working that morning on converting his existing power.

However, in making the conversion, he altered the female plug connector at the boat. In doing so, he miswired the ground and hot wire, thus energizing the boat's aluminum hull, railing, and ladder.

Closer inspection ultimately showed that the boat owner connected a hot conductor to the ground connection.

*Shafer is the president of CAM Components/Harbor Marine Consultants in Stuart, Fla. Contact him at [kp2r@bellsouth.net](mailto:kp2r@bellsouth.net) with any information on other electric shock drowning cases.*

## June Meeting Notes

*by Colin Povey*

At our June meeting, 21 FOMA members heard from our speaker, Captain Al Barrett, owner of the Dunedin Canvas Shop, a custom maker of marine canvas products, including Biminis, Cushions, and sailcovers.

Al, who showed up resplendent in a real Soviet Captains Uniform, spoke on boat canvas (i.e. Sunbrella) and related topics. Al mentioned that dark colors of Sunbrella lasted longer. He also said that blue and green were the most durable, with red, yellow, and orange expiring first.

He said that you can expect 9-10 years from Sunbrella products. Until recently, the sewing threads were the first to go, but new Gore-tex threads were more durable than other materials.

To clean Sunbrella, he uses this mix: Mix 1/2 cup Ivory Snow flakes with 1/2 bleach in a large bucket. Add five gallons of water.

A product called Zep is good for removing mildew, but it also removes the waterproofing. To re-waterproof Sunbrella, he recommends Aquatite. He said NEVER use Thompsons Water Seal on fabric.

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