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Emergency signals

Pyrotechnic-
flares still
widely used
but
electronic
device use is
growing

by
Casey Conley

Generations of mariners have relied on emergency flares to signal for help and guide rescuers “the last mile” to their location. But advances in electronic signals could one day render pyrotechnic devices obsolete.

There are numerous hand-held strobes, lasers and LED products on the market, and many can be seen for miles from air or water. For now, however, the Weems & Plath SOS Distress Light is the lone product that complies with Coast Guard requirements for nighttime distress signals. In other words, it can replace pyrotechnic flares.

Electronic signals have some distinct advantages over pyrotechnics. They can run for hours, often with off-the-shelf batteries, and unlike flares they don’t need to be replaced every 42 months. Many are waterproof and small enough to fit in a pocket or tie to a personal floatation device. Perhaps best of all, electronic signals don’t

involve firing a projectile or holding a flaming torch on a vessel.

These electronic alternatives also have some downsides. Some aren’t especially visible from distance. Even more problematic, not everyone recognizes these lights as emergency signals, said Chris Edmonston, President of the BoatUS Foundation, the nonprofit arm of BoatUS.

“I guarantee electronic signaling devices will be much more prevalent within a decade or so, and now we are in the transition period where we have to do a lot of education about what these electronic signals look like and what they do,” he said in a recent interview.

Starts with notification

The Coast Guard describes two stages to any emergency situation on land or water. The first is notification, when someone communicates their distress, mostly likely these days using a radio, cellphone or emergency beacon. Next is the locate phase where authorities must find the people who need help.

Historically, pyrotechnic flares have had mixed results as a means of notification. Coast Guard data from 2003-2010 showed that “fewer than 4 percent of search-and-rescue notifications were by visual means, and of those only 17 percent were by pyrotechnics,” the agency said in a 2015 report exploring alternatives to pyrotechnic flares.

“Of these approximately 1,400

notifications over eight years, less than 20 percent of those cases were successfully resolved. The bulk of the ‘flare sighting’ cases had no resolution,” the report noted, suggesting many reported flare sightings were misidentified.

Changes made slowly

The Coast Guard is considering new regulations for visual distress signals, but it could be many years before any changes take effect. For boaters required to carry nighttime distress signals, the rules require three pyrotechnic devices on board or a compliant electronic device. The SOS Distress Light made in the U.S. by Weems & Plath is the one product that complies with the Coast Guard regs. Just one SOS light is required.

Boaters who carry the SOS light along with the orange distress flag sold with the unit will comply with Coast Guard regulations for night and day distress signals, said Drew Fleming, the company’s vice president of sales.

The 8.5-inch hand-held device features a powerful LED light that sends beams vertically and horizontally. The light flashes S-O-S in Morse code and is visible up to 10 miles at night. It runs on standard alkaline batteries. It’s also waterproof and floats with the light facing up. It costs about \$100.

The SOS light has been on the market for about 18 months, and its value in search and rescue situations was affirmed during an incident off Mobile, Ala., in early January. The Coast Guard began

Courtesy North American Survival Systems



Above right, a comparison between a standard pyrotechnic flare at left and an LED electronic flare on the right. Right, the Laser Flare has an astigmatizer lens that extends the laser light out to a line.



Courtesy Greenland Laser

searching for two sportfishermen and they spotted the SOS Distress Light on the vessel from the rescue plane about 10 miles offshore.

"They were spotted and it enhanced their ultimate rescue from their life raft," Fleming said.

Other hand-held devices perform similar functions, although without the coveted Coast Guard compliance to replace pyrotechnic flares. The Daniamant MK3 Odeo Flare, which produces a red light the company says is visible for up to six miles at night, is one example. Another is the compact Ocean Signal rescueME EDF1 electronic distress flare, which can be seen from up to seven miles.

Indispensable gear

The EF-20A-1 Lightning LED Strobe made by North American Survival Systems uses a white light powered by four LED lights that flash 60 times per minute. Company CEO Jim O'Meara, a sailor and former Alaska bush pilot, acknowledged the EF-20A-1 cannot replace rescue flares but considers it indispensable during emergencies.

"I love flares. I think they are great," he said in a recent interview from company offices in Poulsbo, Wash. "They put out a message that is readily understood. Unfortunately, they only burn for a minute or two and you need something after that."

"You have to eventually be seen to be saved, and the sooner the better," he added. "The Lightning Strobe is the brightest electronic visual distress signal product on the market. It is unavoidably brilliant in all directions up to 10 miles at night."

The battery-powered EF-20A-1 is less than 5 inches long and can run for 12 hours at full power using commonly available and easily replaceable CR-123 lithium-ion batteries. The U.S.-made device is waterproof to 50 feet and costs about \$70.

Several LED strobes start working after contacting water. The Ultimate Survival Technologies See-Me LED strobes activate manually or when immersed and flash 60 times per minute. The battery-powered devices start at about \$15. ACR Electronics and other companies offer strobes that clip onto life jackets for about the same price.

Internet links

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www.boat-links.com

The mother of all maritime links. Incredible list of links to all things having to do with the water.

www.nhc.noaa.gov

National Hurricane Center. Extensive tropical weather reports for the Atlantic and Pacific oceans.

www.ndbc.noaa.gov

National Data Buoy Center. Get real-time weather reports from buoys at sea and weather reporting stations.

www.usps.org

United States Power Squadrons. Navigation instruction.

www.co-ops.nos.noaa.gov

NOAA oceanographic products. Real-time and extended tide predictions, now improved.

www.usno.navy.mil

U.S. Naval Observatory. Sun and moon rise/set times, moon phases, eclipses and other data.

www.navcen.uscg.gov

U.S. Coast Guard Navigation Center, the office that maintains GOS, DGPS and Ioran. Lots of communications information, local Notices to Mariners and more.

www.oceanservice.noaa.gov/dataexplorer

NOS Mapfinder. Once you master the complex interface, you can download low-resolution (85-dpi) versions of NOAA charts, aerial photos and more.

www.nauticalcharts.noaa.gov

NOAA's Office of Coast Survey. Info on ordering charts, also Chart No. 1 and many downloadable historical charts.

www.weather.com

The Weather Channel's Internet site. Offers weather-for-dummies-style products, including radar and satellite coverage, and zone forecasts.

www.rmets.org.uk

The Royal Meteorological Society in the U.K. is a boon to the weather enthusiast or amateur sailor, providing links for forecasts, satellite and radar images, and detailed information on all weather-related activities.

www.meteofrance.com

Another handy site for weather-related information is the French weather service, Météo France, which includes an English-language

option for Franco-impaired users.

www.maptech.com

Maptech's MapServer. Well-organized access to charts, topos, aerial photography.

www.scca.org

Seven Seas Cruising Association. Features very lively and open discussion boards and downright scary news flashes.

www.pancanal.com

Panama Canal. Information on the canal, including regulations and fees.

www.uscgboating.org

U.S. Coast Guard Office of Marine Safety. Regulations, publications and more.

www.thedailysail.com

The Daily Sail (formerly Mad for Sailing). An excellent British site covering ocean racing.

www.ussailing.org

U.S. Sailing Association. The major racing organization in the United States.

www.sailing.org

International Sailing Federation. Worldwide racing news.

www.orc.org

Offshore Racing Council. Details of multiple racing rules and worldwide race calendar.

www.gpsinformation.net

Joe Mehafee and Jack Yeazels' GPS information website. Much useful information about GPS, particularly Garmin hand-helds.

www.cgaux.org

U.S. Coast Guard Auxiliary. Boating courses and safety checks.

www.boats.com

An excellent resource for prospective boat owners and for those researching products. The site also offers access to the excellent newsletter *Scuttlebutt*, which supplies daily racing news from around the world.

www.reedsnauticalalmanac.co.uk

Reed's Nautical Almanac for the U.K. Extensive link lists, cruising guide lists, free tide charts and more.

www.celestialnavigation.net

History, links and other resources for the celestial navigator.

www.mainebuiltboats.com

News, audio/video and links to Maine boat-builders.

www.rimta.org

Links to the marine industry in Rhode Island.

Gaining a following

Rescue laser devices also have gained a following among sailors, pilots and adventurers. Greatland Laser of Willow, Alaska, was one of the first companies to enter this market. The company sells three U.S.-made laser flares producing red and green lights, but it is probably best known for its Green Rescue Laser Flare.

Rather than projecting a pinpoint beam, Greatland lasers pass through a special lens to produce a vertical line that spreads out over distance. From 16 miles, the laser expands to 6,000 feet wide, which makes it easier for rescue crews to see from the air, said company CEO Andy Little. At night, the signal can be seen from up to 30 miles away. During the day, visibility is 1 to 5 miles depending on conditions.

"If you are signaling off to another ship or into the sky because you see an



Left, the SOS Distress Light is a Coast Guard-compliant electronic flare. Opposite page, three versions of the Laser Flare in both red and green.

aircraft, you hold the laser such that the line goes straight up and down and phase it back and forth," Little said by telephone. "It paints the whole sky and as soon as it sees someone's eye, they see a flash of light."

Greatland products have lenses that

diffuse the laser to prevent damage to human eyes. Although federal law forbids shining lasers toward aircraft, it makes exceptions for emergency situations. The company's three lasers start at about \$100 for a smaller red-beamed unit to about \$300 for the Green Rescue Laser Flare.

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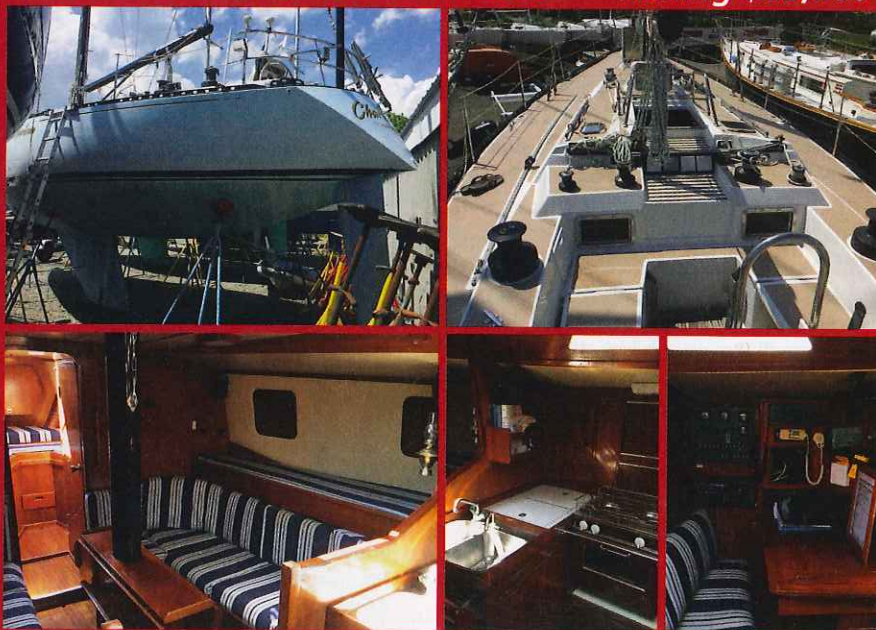
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Courtesy: Greatland Laser

So how well do these devices work? Edmonston, of BoatUS, said his organization has conducted tests in the Chesapeake Bay that highlighted pros and cons with the electronic signals. One big issue: Most LED units are nowhere near as bright as pyrotechnic flares.

"We're talking orders of magnitude difference," he said. "You get into the

question of, are they going to stand out? Are you going to have a difficult time seeing it from more than a few miles away?"

There is also the question of whether red flashing lights from an electronic signal will register as a distress signal rather than, for example, a navigational buoy. BoatUS surveys have shown most boaters recognize the S-O-S flashing signal, but other lights tended to blend into their surroundings. Laser flares were often seen but their signals were not necessarily understood.

"The (Greatland) green lasers we tested were awesome. You can see them forever, and everyone liked them. But like I said, I don't know if it is recognized as a signaling device," Edmonston said.

Steve Miller, a senior safety category manager for West Marine, cited uneven demand for the strobes, lasers and handheld electronic flares not approved to replace pyrotechnics. The Weems &

Plath device, which carries that rating, has sold well enough that he expects other companies to enter the market.

"I would expect that over the next couple of years we will have the next couple products competing with that particular one," he said, adding that better battery technology, smaller sizes and other improvements likely aren't far off.

For now though, various pyrotechnic flares are still the default purchase for the vast majority of boaters. In a given year, he said West Marine sells hundreds of thousands of them.

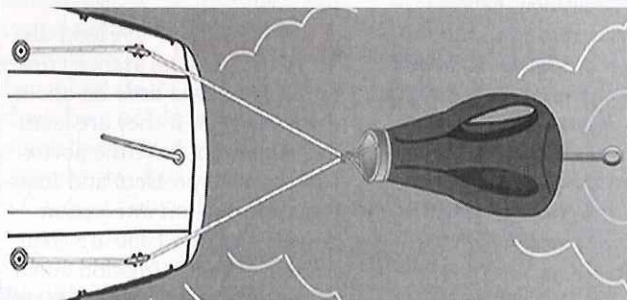
"I think part of it is you are required still to have flares. So all these other ancillary products are add-ons," Miller said. "They're nice to have but not required."

Casey Conley is a frequent contributor to *Ocean Navigator* and *Professional Mariner* magazines and is the editor of *American Tugboat Review*.

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