



# GET NOTICED

CAN LEDs REPLACE PYROTECHNIC FLARES?  
DUNCAN WELLS RUMMAGES THROUGH THE GRAB BAG

**R**ed rockets, handhelds and orange smoke are still the only recognised flare distress signals under maritime safety rules. Anybody wanting to comply with the international convention for Safety of Life at Sea (SOLAS) needs to carry them.

Pleasure vessels less than 45ft (13.7m) in length are not covered by any statutory safety regulations unless they have paid crew or carry more than 12 people aboard. In fact, they don't need to carry any safety gear at all, not even a life jacket! Boats over 45ft (13.7m) are required to carry flares according to the area in which they operate. Essentially, go over 3nm from the coast and you need four red parachute rockets, four red handheld flares and two orange smokes.

Some consider the pyrotechnic flare to be anachronistic and dangerous. It is certainly true that their disposal takes consideration (see below). But there have been very few incidents where pyrotechnic flares have injured people. This may be because these flares tend to rattle around in their canister for three years before being replaced, so are rarely deployed.

I was on the wrong end of a faulty one while filming an RYA video on safe flare use. We had brand



RAMORAND

● **ABOVE**  
The tester holds North American Survival Systems' EF-20A on the right of the image and a 500ca pyrotechnic flare on the left

● **BELOW**  
Handheld flares and red parachute rockets are part of the requirement for boats over 45ft

## PLEASURE VESSELS LESS THAN 45FT DON'T NEED TO CARRY ANY SAFETY GEAR AT ALL...

new flares but this faulty one shot backwards, through my right hand and lodged in my abdomen, where it burnt at 3,000°C for 60 seconds. It was a magnesium burning white collision warning flare. It knocked the stuffing out of me. But at least I am alive to tell the tale.

### PYROTECHNIC FLARES

**Red parachute rocket** – two-stage detonation propels it 300m high, visible for 28 miles. Fuelled by strontium nitrate, it burns for 40 secs at 1,500°C.

**Red handheld** – visible to five miles,

used when help is three miles distant and as a last mile location device, burns for 60 seconds at 1,500°C  
**Orange smoke** – this is still pyrotechnic as a chemical reaction (potassium chlorate and nitrate) creates smoke but it burns much cooler than the red flares. It is contained in a plastic sleeve, which does not melt. Daylight only, used when help is three miles distant as a last-mile location device.

Flares have a life of three to four years - the expiry date is written on the casing. Manufacturers include Pains Wessex/Drew and Ikarus/Hansson. →



### How to dispose of time-expired pyrotechnics (TEPs), safely

Take them to:

- The place you bought them – they may have a 'take back' scheme
- The manufacturer of the flare, who is duty bound to dispose of them
- A local liferaft service agent – a charge may apply
- A local port or marina – a charge may apply
- Specialist hazardous waste disposal companies (who will make a charge)
- Your local council – they may be accepted at recycling centres
- The Coastguard – not all stations take them, so check and call beforehand

There are also 'flare amnesties' at the various open days, safety days and festivals where you can take TEPs. Ramora is the company that disposes of the flares at these events.

FACING PAGE: OCEAN SIGNAL

There are many who consider that pyrotechnic flares still have a role to play in distress signalling and of course they do not require precious power to deploy. There is also no SOLAS-approved electronic visual distress signalling device (EVSD) to offer as an alternative.

The difficulty when finding a replacement for pyrotechnics is that a flare burns very brightly indeed - 15,000 candela for a red handheld and 30,000 candela for a red rocket - albeit for a very short time. And to replicate this intensity in an electronic device requires massive power, enough lithium batteries to represent a hazardous cargo if transported, which in turn creates tremendous heat, sufficient for them to catch fire and, irony of ironies, we are back where we started with a pyrotechnic flare. But LEDs and lasers create very effective signalling light. The key has been to come up with a standard for electronic distress signals.

There has not been much appetite from our Maritime and Coastguard Agency (MCA) to look at alternatives and it has fallen to the United States Coast Guard to come up with a specification. The major maritime safety light manufacturers have been working with the USCG to find a standard that delivers what is required and yet represents a viable marketing proposition.

Because light intensity of an electronic flare will never match that of a pyrotechnic, the USCG has set the following standard. It must:

- Operate continuously for six hours
- Have a flashing pattern
- Be coloured cyan, red or orange, the most visible colours
- Emit infrared so search and rescue teams with night vision goggles can see it at night
- Float
- Be visible for four to five miles.

So an electronic flare will not replace a red rocket flare, which can be seen for 28 miles, albeit for just 40 secs, but it could replace a

red handheld. At present a number of the manufacturers have rejected this standard, as they cannot create a product to meet it at an acceptable retail cost. Everyone is hoping that the USCG will relax the specifications. If it does and marketable electronic flares can be made, then one would hope that this standard would become accepted by the International Maritime Organisation (IMO) and thus make its way into SOLAS.

There was an announcement a short while ago from the MCA about pleasure vessels under 45ft being able to use electronic flares as last-mile location devices. Well of course, as these boats are not mandated to carry any safety equipment, they can do as they like. The MCA will not recognise electronic flares as distress signals until they are accepted into SOLAS. Interestingly a number of them flash SOS and 'a signal made by telegraphy or by any other signalling method consisting of the group SOS' is an accepted distress signal under the Colregs.

The World Cruising Club, which runs the Atlantic Rally for Cruisers, stipulates in its safety instructions that participating boats must carry four red parachute rockets, four red handhelds and two orange smokes. However, it will allow boats to replace two of the red handheld flares with electronic flares.

### ELECTRONIC FLARES LED

The LEDs used in these are the same as those you will find in your home, but are refined to give greater consistency of light with a special lens to create a more intense beam. **OdeoFlare MK3** – the first of the electronic visual distress signalling devices. The red LED alternates between flickering and flashing SOS in Morse code. Visible for six miles.

**Ocean Signal rescueME EDF-1** claims a slightly greater visible range than the Odeo at 7nm.

**North American Survival Systems' EF 20A-1** claims even greater visible range than the EDF-1 at 10nm.

**Sirius Distress Light** (also branded Weems & Plath) meets a USCG standard for distress signalling - not a SOLAS standard - with a white strobing light and it comes with an orange flag with a black ball over a black square for daytime distress signalling. It does not use lithium batteries, but old-fashioned alkaline batteries. The Sirius is available in the UK through Chart Co.

### LASER

**Lakeland Green Laser** Unlike a conventional laser that concentrates the beam for cutting, this laser has a diverging beam which fans out the light. You aim at the target and move the laser back and forth



● ABOVE American Survival Systems' little EF-20A can be attached to lifejackets or slipped into a foam keyring collar for positive buoyancy

● RIGHT Electronic flares include LED products, like Ocean Signal's EDF-1 and defocused beams from Lakeland lasers (below)



across it. As the beam passes a potential viewer, they see a brilliant flash of green light. Neat.

### TORCH

**Exposure Lights' MOB Searchlight** is an incredibly bright torch (an impressive 1,300 lumen) which is ideal for checking the sails at night but has real MOB potential. It floats lens up, and is designed to activate automatically when thrown into the water to mark an MOB. In white strobe mode it will run for 40 hours.

**Verdict:** For my money, I would choose a green laser for signalling for attention long-distance, and any one of the electronic flares for last mile location.

### ABOUT THE AUTHOR

Duncan Wells is principal of westviewsailing.co.uk, author of *Stress Free Sailing* and creator of *moblifesavers.com*

## TO REPLICATE THIS 30,000 CANDELA INTENSITY IN AN ELECTRONIC DEVICE REQUIRES MASSIVE POWER

### Products and their attributes

PRODUCT	COUNTRY	FLOATS	DURATION	RANGE	COLOUR	CANDELA	COST	APPROVAL
<b>PYROTECHNIC</b>								
Ikarus red H/H	UK	No	60 secs	3nm	Red	15,000	£10	SOLAS
Ikarus rocket	UK	No	40 secs	28nm	Red	30,000	£30	SOLAS
PW red h/h	UK	No	60 secs	3nm	Red	15,000	£10	SOLAS
PW red rocket	UK	No	40 secs	28nm	Red	30,000	£30	SOLAS
<b>LASER</b>								
Lakeland Laser	US	No	5 hrs	30nm	Green	NA	c£230	No
<b>EVSD</b>								
Odeo	UK	Yes	6 hrs	6nm	Red	75	£100	No
OS EDF-1	UK	No	6 hrs	7nm	Red	Unknown	£100	No
Sirius	US/UK	Yes	6 hrs	10nm	White	75	c£77	USCG
NA EF 20A-1	US	No	12 hrs	>10nm	White	300	c£54	No
<b>TORCH</b>								
Exposure Lights MOB	UK	Yes	40 hrs strobe	5nm	White	c750	£180	No

NA = Not applicable Approval = SOLAS or USCG

### COMPETITION

## WIN A GARMIN VIRB ULTRA 30 ACTION CAM WORTH £450

Garmin's brand-new waterproof action camera can shoot stunning Ultra HD footage at 4K/30fps, super slow-mo 720p images at 240fps or 12MP still photos.

High-precision sensors and GPS mean that the VIRB Ultra 30 gathers data to show how far, how high, and how fast users live their adventures. It also boasts voice control, an intuitive LCD colour touchscreen, live streaming, 3-axis image stabilisation and more.

**GARMIN**



For your chance to win, enter at [sailingtoday.co.uk/competition](http://sailingtoday.co.uk/competition)

Competition closes 11 November. Terms and conditions apply.

THERE HAS NOT BEEN MUCH APPETITE FROM THE MCA TO LOOK AT ALTERNATIVES