REPORT OF THE OSR WORKING PARTY ON DISTRESS ALERTING AND LOCATION

Working Party membership

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Introduction

Pyrotechnic flares have been the accepted standard for short range alerting and location for more than 100 years. The use of this technology for distress alerting and location has been dropping recently and being replaced by EPIRB, PLB, cell phones, sat phones, VHF and augmented by GPS, AIS, EVDS and radar for location. Many national marine safety organizations are reviewing the carriage of the pyrotechnic devices and are looking at the use of modern technology as an alternative for alerting and location. For the yachtsman, there has always been issues of safety in the carriage and use of these items as well as the costs to purchase and dispose of them.

Terms of Reference:

1. To provide information from the national and international marine safety organizations on the present status and proposed future status of distress alerting and location using pyrotechnics (OSR 4.23).
2. What are the current plans to reduce the quantity or type of pyrotechnics currently specified by major sailing countries?
3. Are there plans to introduce required training or certification for use of pyrotechnics?
4. To provide information on what, if any, studies or investigations are being undertaken on products to replace these pyrotechnics indicating what devices are being considered, what the timing of a possible introduction is.
5. To prepare a summary of the above with recommendations on present and future actions that the OSR sub committee should consider.
6. To submit an interim report by 1 April 2014 and a final report by 22 September 2014.
7. To prepare any Submissions by 22 September following from the report.

DISCUSSION

To provide information from the national and international marine safety organizations on the present status and proposed future status of distress alerting and location using pyrotechnics (OSR 4.23)

The Working Party has received information from the following counties on the present status and proposed future status of distress alerting and location using pyrotechnics:

Austria, Estonia, Denmark, France, Germany, Ireland, Italy, Netherlands, Norway, Spain, Sweden, Switzerland, UK, USA and Australia.

The result is that there are a number of differing national requirements which recreational craft may be expected to adhere to dependant on flag state rules. These are:

- Mandatory carriage requirement irrespective of craft length (this would appear to be the situation in Australia, Netherlands, Italy, Spain, Switzerland)
- Carriage requirements only applicable to commercial craft and recreational craft of a certain length and over (for example in the UK recreational craft of 13.7m in length and over must carry pyrotechnics, those that are less than 13.7m in length are not required to do so).
- Carriage requirements that are only applicable to recreational craft that are over a certain distance from the coast (Austria, Estonia).
- Carriage dispensation if specified equipment such as VHF with DSC is carried (France).
- No mandatory requirement for recreational craft less than 24m LOA, but a voluntary code of practice (Denmark, Ireland, Germany, Norway, Sweden).
- Compulsory carriage at night and some exemption during the day dependant on LOA (USA).

What is clear is that no matter what OSR might require both now and in the future, flag state regulation takes precedence in terms of type and number. Regrettably there is little appetite at the International Maritime Organisation to review the carriage of pyrotechnics and therefore the efficacy of pyrotechnics as a primary means of raising an alert. The inertia stems from the fact that the signals to be exhibited to indicate distress are set out in IRPCS, Annex IV. However, these were written in 1972, long before the advent of mobile phones, the internet, satellite communications and the COSPAS-SARSAT system in 1979.

What are the current plans to reduce the quantity or type of pyrotechnics currently specified by major sailing countries?

Some countries are starting to review their carriage requirements in the light of modern distress alerting and locating technology; among these are the US and UK who are looking at the so called Electronic Visual Distress and Alerting (EVDS) devices as a suitable replacement for hand held distress flares. France is reviewing its position and is one of the few countries that permits a reduction in the carriage of parachute flares if a VHF DSC connected to GPS is carried provided it is within range of a CROSS station (Centres Régionaux Operational de Surveillance et de Sauvetage). However, it is quite clear that national maritime authorities, for reasons that are not entirely clear, are quite content to specify that flares should continue to be carried for raising distress even though technology has enabled the production of fast reliable devices such as EPIRB and PLB and the COSPAS-SARSAT system.

Are there plans to introduce required training or certification for use of pyrotechnics?

In the European Community area the requirements of the Pyrotechnic Articles Directive 2007/23/EC http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:154:0001:0021:EN:PDF

(implemented into national legislation by 4 Jul 2013) means that pyrotechnics that are not covered by the Marine Equipment Directive need to be CE marked and grouped either as P1 and P2 according to their hazard rating. Hand held and smoke pyrotechnics come under the P1 Category, but parachute rockets may be categorised P2 which means that they can only be sold by and operated by 'persons with specialist knowledge'. The WP could find no definition for this but take the view that it is not an average recreational boater. Even if they are compelled to carry parachute rockets by virtue of national maritime regulations, it would seem that a good number of people have been potentially been breaking the law from 4 Jul 2013.

As far as we are aware, a small number of countries such as Germany have implemented some form of training, but most do not. Furthermore training in some administrations is all but impossible to arrange without insurance which can be prohibitive (UK is an example). However, this does not address their effectiveness or reliability as a primary means of alerting; it simply ensures that national administrations can continue to compel their carriage.

To provide information on what, if any, studies or investigations are being undertaken on products to replace these pyrotechnics indicating what devices are being considered, what the timing of a possible introduction is.

The US Coastguard Acquisition Directorate has initiated a project to look at EVDS as alternatives to pyrotechnics for distress alerting. This is being undertaken by the Radio Technical Commission for Maritime Services (RTCM).

The goals of this project are to:

- Develop conspicuous and identifiable signal
- Determine signal characteristics consistent with good visual response including:
  - Colour/hue and flash pattern/duration
  - Determine effective intensity needed to meet:
    - 6 NM minimum range with “negligible to sparse” background
    - 6 NM minimum range with “moderate to substantial” background.

So far the project has completed an analysis of maritime background lighting environment and full laboratory testing. Field testing is in progress and it is hoped to report the results and recommendations in October 2014. Until the outcome is published there is no indication whether the EVDS will be accepted and whether other maritime administrations will review their carriage requirements where these are compulsory.

While this project is to be very much welcomed, maritime administrations that continue to compel the carriage of pyrotechnics are rather missing the point. Distress alerting needs to be separated from Location; this makes it simpler to consider what is suitable for each. EPIRB, PLB and VHF DSC are all recognised methods of initiating distress under IRPCS Annex 4 and they alert the search and rescue authorities directly, (unlike a flare they do not rely on a third party seeing you and then taking action to raise the alert).

Once a distress alert has been raised and received by the SAR authorities, someone will be looking for you. It is useful to carry something to identify your location when in sight if necessary. This can be done with a powerful torch, an EVDS (Electronic Visual Distress Signal the name given to laser flares). In addition, an EPIRB transmits a 121.5 MHz homing

signal with a 10 mile range and has an inbuilt strobe light. A PLB also has the 121.5 MHz homing signal and some now have a strobe light.

The Working Party recognises that there will be those who consider flares to be an essential part of their emergency equipment and who will continue to want to carry them; it is their choice and it is respected. However, modern distress beacons and DSC VHF provide a more reliable and safer option for distress alerting than pyrotechnic flares. Maritime administrations should recognise that modern technology provides accurate, timely, and reliable distress alert and location data to help search and rescue authorities assist persons in distress.

In simple terms, the International Satellite System for Search and Rescue (COSPAS-SARSAT) detects and locates emergency beacons (EPIRB and PLB) activated by vessels and people in distress to reduce the time required to locate a distress and provide assistance. DSC VHF allows distress alerts to be sent automatically to 'all stations' simply by pressing one button. This triggers an alarm on every DSC enabled set within range. Furthermore, the alert is repeated every few minutes until it is either acknowledged or switched off. Clearly a DSC alert should always be followed up by a mayday call and traditional sets can still initiate distress with a mayday call on Channel 16.

On the other hand, if you choose to fire a pyrotechnic flare to initiate a distress alert, you have to cross your fingers and hope that someone is close enough to see it, that they are looking in the right direction during the 40 seconds to one minute it will burn and that they then react by raising the alert. All of that would appear to be rather hit or miss, particularly the further out to sea you are.

An alerting device listed in COLREG such as EPIRB (ideally with GPS and a homing device) or VHF DSC set (correctly connected to the GPS) which is suitable for the intended area of operation together with some form of strong light or EVDS for location in the final mile may be a suitable combination.

Recommendations on present and future actions that the OSR sub committee should consider.

The need for OSR to specify the carriage of pyrotechnics requires a fundamental rethink and acceptance that there are better, safer, quicker ways of providing distress alerting and location using modern lightweight technology. OSRs already mandate the carriage of such equipment dependant on category. In addition liferaft standards mandate the carriage of pyrotechnics as part of the minimal required equipment when it is supposed that they might have a use.

However, while OSR may be amended so that alternative means of distress alerting and location are acceptable without the carriage of additional pyrotechnics, this will not negate the need to carry pyrotechnics where national flag state rule require their carriage.

Before making submissions, it is recommended that the OSR subcommittee consider whether the carriage of non-pyrotechnic methods of distress alerting that conform to COLREG Annex IV appropriate to race category and a robust non pyrotechnic means of indicating location provide an adequate level of safety and are acceptable.

If accepted, compulsory flag state carriage requirements might mandate the carriage of pyrotechnic but that should be a matter for the person in charge not OSR.