Up Top in Operations

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FYI on EPIRBS

(From the August 2000 Newsletter of the Radio Technical Commission for Maritime Services)

The United States Coast Guard (USCG) has submitted a proposal to the Federal Communications Commission(FCC) to discontinue the certification of classes A and B Emergency Position Indicating Radio Beacons(EPIRBS) which sent alert signals in the 121.5 and 243 MHz bands.

The reason for this proposal is that in the past three years the search and rescue (SAR) authorities in the United States have received over 350,000 false alarms from these units. These beacons do not transmit any identification data to support life saving efforts. SAR facilities are launched for false alerts as well for real alerts.

The Coast Guard stated that there are over 55,000 of the newer 406 MHz EPIRBS in service in the United States. These largely overcome problems associated with the 121.5/243 MHz EPIRBS, The cost for the 406 MHz units has been steadily dropping.

The international agency that operates the system that processes EPIRB satellite signals (Cospas-Sarsat), states that it will stop equipping satellites with 121.5/243 MHz and will establish a date after which any remaining processors or active satellites will be turned off. The International Maritime Organization (IMO) and the International Civil Aviation Organization have recommended to Cospas-Sarsat that it terminate processing signals no later than 2008.

The CG has proposed to the FCC that certification of new class A, B. and S EPIRBS cease, and that sales of these devices cease on 01 February 2003, and that the operation of these devices cease on 31 December 2006.

This article was brought to your attention as a matter that should be monitored and, if enacted, immediately brought to the attention of the boating public.

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A Simplex Alternative to the Duplex VHF Repeater

Questions related to the setup of a VHF radio repeater are popular among those directed to the Telecommunications Division. This is quite understandable in that VHF is the mode of choice for Auxiliary operational communications, which fact in itself is easily understood, given the characteristics of radio waves in the VHF frequency spectrum.

A duplex repeater (DR) is simply a receiver and a transmitter combined to simultaneously receive and retransmit radio signals using two different frequencies, hence the term "duplex". When established in the clear at a high elevation, it allows the range of a VHF radio transmission to go from a few miles to many

miles, the actual range depending upon the elevation of the repeater. The line-of-site nature of a VHF radio signal being transmitted can be directly compared to that of a light beam from a lighthouse.

Unfortunately, the cost of establishing a reliable repeater runs upward of $2000, to say nothing of the problem, and possible costs, of securing a satisfactory high-level site. The equipment must be rugged enough, and installed in a manner, to withstand whatever climatic conditions might arise. A repeater that will operate at temperatures well below zero or above 100, depending upon location, does not come cheap.

Obviously, nothing can replace a properly setup and running duplex repeater designed to operate 24/365. However, there are times when, for a limited time, and where appropriate, a simplex repeater might well be called for.

A simplex repeater (SR) consists of a radio, which may be a handheld, and a black box, such as the MFJ-662, which costs less than $90 and acts like a telephone answering machine. Simply connecting the radio microphone input and receiver output to the box produces the repeater. In operation, a signal is received by the radio and recorded by the box. As soon as the incoming signal ceases, the box causes the transmission just received to be retransmitted. The application of the term "simplex" arises from the fact that only a single frequency is involved.

The obvious drawback is that it takes twice as long to complete a radio transmission as when using a duplex repeater. Additionally, a single transmission is limited to 30 seconds or so. The flip side is that the box can be used with most any radio, and, of course, the price is right. Additionally, most anyone can assemble such a repeater and put it in service. The repeater site can be any readily accessible location given that the power source is batteries and that the size/weight of the repeater is no more than that of the radio plus a box that readily fits in one's pocket.

A word of caution: in theory, most any appropriate radio may be used, but in practice not everyone will perform satisfactorily. Although most anyone can connect the box to a radio, it should be done by someone who can verify that the package is indeed performing properly, with special emphasis to make sure that both input and output audio levels are correct. Failure to do this can result in distorted, if not unreadable, transmissions in violation of technical standards.

The SR is a viable alternative to the DR and is being used by SAR and other organizations to extend the range of low power radios. Admittedly, having to listen to one's own transmission being rebroadcast is a turnoff. On the other hand, operating a SR does wonders for improving one's ability to follow the communications' dictum of "brevity consistent with clarity and conciseness". Needless to say, one also quickly discovers the proper use and value of the pro-words "OVER" and "OUT".

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For Better Boating Safety

FOG

Fog can occur in any season of the year. It develops when the air temperature drops to the dew point, where the moisture in the air condenses. Advection fog is formed when relatively warm moist air passes over a colder surface and is cooled below its dew point. It is the type

of fog most likely to be encountered on the water. Radiation fog and steam fog usually occur over the land and small quiet ponds and is usually shallow. It can form when cold moist air passes over a warmer surface. Whatever the type of fog, it can be a problem for the navigator. The inability to see navigation aids, obstructions, and other vessels can confound the best vessel operator.

In these days of electronic marvels many recreational vessels are equipped with RADAR which can make navigation safer in limited visibility With the addition of a good depth sounder and LORAN or G P S the navigator can proceed underway to his desired destination. Proper use of RADAR however requires some training and practice. One good exercise is to operate the RADAR on a clear day and compare the display on the RADAR screen with what can be seen visually. This will show the significant differences typical of RADAR displays. Some experience with working maneuvering board problems will make understanding what is displayed on the RADAR screen much easier. Having RADAR on board without a knowledgeable operator will not guarantee a safe passage. Understanding relative motion and the limitations of RADAR is essential. When fog engulfs those vessels not equipped with Radar extreme caution must be exercised. Such a vessel underway and making way through dense fog is inviting a disaster. The navigation equipment on any vessel, no matter how limited, should be in good working order and properly calibrated. If the only equipment is a magnetic compass, the operator should know the deviation to be expected on each heading. It will then be possible to follow a reasonably accurate course to a safe anchorage away from areas of heavy traffic. This would be especially true if the vessel is in a ship channel when the fog descends. Anchoring and waiting for the fog to lift is in most circumstances the most prudent thing to do. Whether at anchor or underway, proper sound signals in accordance with the Navigation Rules should be made . The vessel operator should also keep a sharp ear out for the sound signals of another vessel . Adhering to the Navigation Rules, exercising caution, and using common sense will reduce the dangers that fog can create.

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