Blue Lights! Are You Serious?

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A few years ago, the writer met with lights experts from the General Lighthouse Authority (GLA) Research and Development (R&D) Department on the Isle of Wight, in the south of England where they were based. It was a cold and wet evening, but visibility was good, no moon, therefore suitable conditions for a lights viewing trial.

Recent developments in technology, at that time, provided new light sources for aids to navigation, using Light Emitting Diodes – LED. These were capable of being powered by solar energy in self-contained sealed units, and it was variations on this theme that were now available for viewing from a navigational requirements perspective.

Research on this technology and equipment had already been carried out by certain members of IALA, as well as by the GLAs, and had proved to be a successful advance as an aid to navigation light source. However, there were concerns over the colour of such lights as seen by the user, questioning whether certain colours fell within the correct part of the spectrum as recommended by IALA for use in the Maritime Buoyage System.

The viewing trial on this occasion was planned in order to observe and evaluate white, amber and blue LEDs. It was thought that white light from this source had a distinct blue tinge and may not be suitable as an aid to navigation. Amber or orange had not been used in aids to navigation as such and is so close to yellow in the spectrum that it may be unsuitable for use.

Blue lights have not been formally used as an aid to navigation, although marking of navigable bridge spans has been successful using this colour, but it is not included in the IALA Maritime Buoyage System. It was thought that blue LEDs quickly turn to white to the eye and thus was considered unsuitable for use at sea.

So the viewing trial was prepared in order to consider these issues and carried out by means of the viewing team (both of us), with vehicle, taking station in a car park on a hill, while the lights team of three, operated from the back of a van parked in a gateway into a field with its rear doors facing the observers, on another hill one mile away!

Various colours, flash characters and options were exhibited and recorded with two-way radio contact throughout. Good results were noted with the white LED exhibiting a very crisp clear white light with little or no blue tinge. The conspicuity of these LEDs to the eye is significant when you are used to filament lamps flashing at you. However, the blue LED did indeed look almost white after a few flashes and our opinion was forming that this would prove unsuitable as an aid to navigation, even after only a short period of observation, as it could be confused with white which is used extensively.

Then, purely by chance, the lights team, when changing from a flashing blue LED to an amber one, let both of them flash at the same time. The effect was startling, even for just the few seconds that we could see blue and amber flashing together. Both lights' colours appeared stronger and clearer and held their colour, than they had done on their own, especially when they did not coincide and flashed alternately.

The radios crackled into action and blue and amber were set up, one over the other about one metre

The Trinity House Rapid Intervention Vessel Alert deploying an emergency wreck marking buoy in the aids to navigation trials area off Harwich on the east coast of England. Other emergency wreck marking buoys are to be seen on the vessel's working

apart, it is amazing what R&D guys can achieve in the back of a van, and, albeit flashing at different rates, the visual effect was indeed distinctive.

A little later the viewing trial concluded, participants met and discussed the findings, and the report that would emanate from R&D at the East Cowes Depot in due course, and a late ferry carried the writer back to the mainland to journey home.

Following this trial consideration was given to the effect of the amber/blue flashing phenomenon and whether there was a manner in which this could be developed as an aid to navigation to assist the mariner. The answer came with the sinking of the Tricolor, subsequent collisions with the wreck and numerous near-miss reports. Clearly the mariner was not seeing the danger ahead of him, in due course surrounded by cardinal marks, in accordance with the Maritime Buoyage System – all flashing white - in an area of heavy traffic and with a number of other cardinal marks already established close by as existing aids to navigation. This surfeit of white flashing lights was not indicating to the mariner that danger existed in a manner that removes doubt and tells him what action to take to maintain safety.

Marking a new wreck or danger to navigation with amber/blue flashing lights – not so different from police or emergency vehicles ashore – in the first instance would heighten awareness that there is an emergency, that danger exists and the mariner must keep clear.

The GLA R&D Department constructed an amber/blue LED array and fitted it to a trial buoy. This was deployed at the Trinity House Aids to Navigation Trials area off Harwich. A viewing party, made up of our Examiners, representatives from the Commissioners of Irish Lights and Northern Lighthouse Board together with representatives from IALA, embarked in THV Patricia for the short voyage to the buoy trial area. It was a wet and wind night, yet again, and the trial was not very satisfactory due to the buoy lying to wind and tide at an acute angle. It could be seen, though, that the alternate amber/blue was eye-catching and distinctive against the background light of Harwich and Felixstowe. At the conclusion it was decided to proceed to a further trial with a more stable platform with yellow/blue alternate flashing LEDs of greater intensity. Subsequently the amber LED was changed to yellow, this being made to evaluate the effect, noting that yellow was already established within the IALA Buoyage system and colour spectrum.

The second trial, wet with snow showers and a strong wind, (Why is the weather always foul for viewing trials?) was carried out from THV Patricia and was most successful. Using a more stable buoy the yellow/blue alternate flashing light was really eye-catching. In fact both

Des feux bleus ... C'est sérieux?

Cet article du Commandant Duncan Glass, président de la Commission de l'AISM sur la gestion des aides à la navigation (ANM) souligne la nécessité de rendre le balisage des épaves plus évident et plus compréhensible. En effet, les couleurs et les marques utilisées par le système de balisage maritime de l'AISM auront besoin d'être réétudiées, un grand nombre d'épaves ayant été heurté par des navires. L'auteur présente les essais effectués par Trinity House avec des feux bleus et blancs, et des feux bleus et orange. Le nouveau bateau d'intervention rapide de Trinity House Alert porte des bouées équipées de feux bleus. Des essais similaires ont été effectués par l'administration de sécurité maritime de la République populaire de Chine. ◆

colours appeared enhanced to the eye and the flashing blue has the ability to draw the observer's eye to the light, given normal peripheral vision. Our lights experts can explain this but it is far too complex to include in this brief account of events.

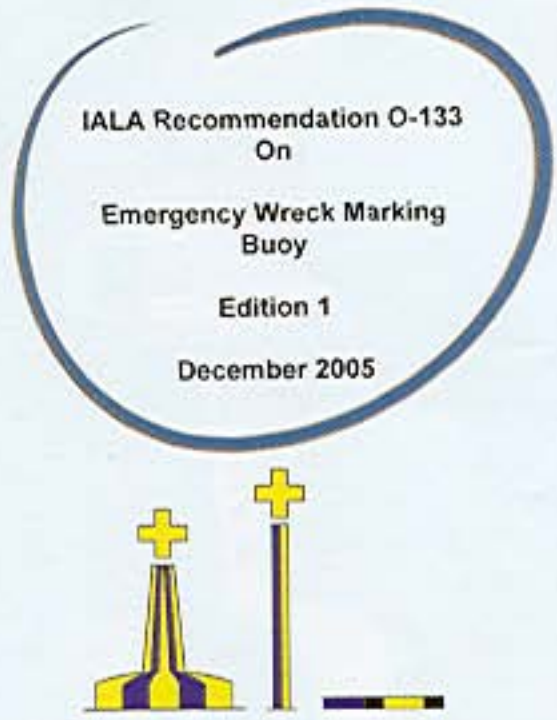
The next steps left the Lights Team to develop the concept further and explore the most effective flash/eclipse period and other technical aspects, while the writer's task was to take a draft proposal to the IALA Aids to Navigation Management Committee (ANM) where the prospect of using yellow/blue alternate flashing lights for emergency wreck marking could be debated by the membership. This typically includes about thirty maritime nations/aids to navigation authorities. The aim being to reach agreement on the use of such an aid and, if agreed, prepare a Draft Recommendation on an Emergency Wreck Marking Buoy and submit same to the IALA Council for approval.

The task was not underestimated. There have been no changes to the IALA Maritime Buoyage System for more than twenty years and Council approval can only be granted if the twenty-plus nations who form this august body reach agreement on Recommendations and Guidelines submitted by the Committees.

Undaunted, the ANM Committee drafted the Recommendation on this new buoy, helped greatly by concluding the draft paper during their meeting in October 2005, held at the U.S. Coast Guard Training Centre at Yorktown, Virginia where the Coast Guard kindly deployed a buoy with the flashing yellow/blue light, kindly provided by Tideland Corporation in order that the members could attend a viewing trial. It was cold and wet, of course, but it was a success. The whole Committee supported the draft paper going forward to the Council. Pharos Marine provide a buoy for classroom training in the UK.

The buoy on trial with the United States Coast Guard at the time the ANM was meeting in Yorktown, Virginia

The Draft Recommendation was considered by IALA at their Council meeting in December 2005, and following lively debate was approved 'in principle' although issues over further trials and matters of liability surrounding the use of a new aid to navigation are work-in-progress to be resolved. The promulgation of the Em.Wk.By. can now proceed with IMO and IHO and national authorities of those maritime nations wishing to use this emergency risk control measure and, of course, to the mariner.



This drawing from IALA Recommendation O-133 illustrates the colours of the buoy body, superstructure and topmark.

It is firmly believed that deployment of this new colour combination and character – especially the highly conspicuous yellow/blue flashing light – will enhance safety in the high-risk period of a new wreck having occurred. The light can be made even more distinctive when a suite of such buoys are deployed around a wreck site and the flash characters are synchronised to all show the same flash/eclipse cycle at the same time by utilising the newly available integral GPS timing that LED units now have available.

Trinity House and the GLA Research Team, having been instrumental in this emergency aid to navigation and have prepared four such buoys for carriage in their new Rapid Intervention Vessel. THV Alert now that she is in service. ■

Luces ¿azules?

El artículo escrito por el Capitán Duncan Glass, Presidente del Comité de Administración de Ayudas a la Navegación (ANM) de la IALA hace referencia a la necesidad de que las ayudas para la señalización de naufragios sean más visibles, considerando el hecho de que los colores y el equipamiento usado por el Sistema de Balizamiento Marítimo de la IALA puedan requerir una revisión y, que un número considerable de naves ha colisionado con restos de naufragios. El autor analiza la gran cantidad de pruebas llevadas a cabo por Trinity House con luces blancas y azules y, luces azules y ámbar. La nueva nave de intervención rápida Alert de Trinity House transporta boyas de luces azules. Se tiene información de que en la República Popular China la Administración de Seguridad Marítima también ha realizado pruebas similares. ◆