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EMERGENCY WRECK MARKER BUOY LIGHT BEACON VIEWING TRIAL

1. INTRODUCTION

A viewing trial was carried out on the evening of 11th March 2003. The purpose of the trial was to assess the suitability of three different flashing beacons for use with a wreck marker buoy. Beacons to be viewed were set up on Bembridge Down (NGR SZ621863) in the back of a van. Personnel in attendance were I. Tutt and S. Stotesbury. The viewing point was in the lower car park on Brading Down (NGR SZ600868), some two kilometres to the west southwest and level with the site on Bembridge Down. Observers were Captain D. Glass (Director of Navigational Requirements) and D. Heath.

2. EQUIPMENT UNDER TEST

Details of the three beacons were as follows:

- 2.1. Sirena LampAllarm Blue Xenon, 7Joule, with quick flash character (65 single flashes per minute)
- 2.2. Sirena LampAllarm White Xenon, 2 Joule, with ultra-quick two flashes every second (2 flashes 65 times per minute).
- 2.3. Tideland Signal single yellow DA-65 Diode Array in a MLED-120 beacon with an ultra-quick character (171 single flashes per minute)

3. TEST CONDITIONS

All three beacons were levelled and each beacon was exhibited in turn. Once observations had been carried out, the beacons were tilted through an angle of six degrees and exhibited for observation. The beacons were then tilted a further four degrees, making a total tilt angle of ten degrees, and further observations were made. Finally, the beacons were returned to level and, once again, exhibited in turn.

On completion of these tests, the observers requested both the blue and yellow beacons be exhibited at the same time. This exercise was carried out initially with the beacons approximately 30cm apart. A similar trial of these two beacons was then carried out with a separation of approximately one metre. The flash characters of the two beacons were not synchronized.

Observations began at dusk and continued until dark.

4. OBSERVERS' NOTES

4.1. Beacons Level

beacon 1 (blue xenon) - very noticeable but sometimes appeared white

beacon 2 (white xenon) - barely noticeable

beacon 3 (yellow LED) – quite noticeable but more yellow than amber (observer 1)

4.2. Beacons Tilted at 6°

beacons 1 and 2 - remained the same

beacon 3 (yellow LED) – much less noticeable than when level

4.3. Beacons Tilted at 10°

beacons 1 and 2 - remained the same

beacon 3 (yellow LED) – slightly less noticeable than at 6°, much less noticeable than when level

4.4. Further Observations

The double flash of the white xenon beacon 2 was difficult to distinguish; the flashes were so close together they looked like a single flash. The yellow beacon was very similar in colour to the sodium street lighting emitted from a nearby town.

5. CONCLUSIONS

5.1. When viewed individually, none of the beacons exhibited was suitable as a conspicuous wreck marker beacon. There was risk of the blue and yellow beacons being confused with white. Furthermore, even without that risk, the yellow beacon alone would be indistinguishable when viewed at night against the backdrop of nearby street lighting. The white (2 Joule xenon) beacon was not bright enough to be considered.

5.2. However, when the blue and yellow beacons were viewed together, the risk of colour confusion was considerably reduced and conspicuity was greatly enhanced. There was some confusion however, when both yellow and blue lights flashed at the same time. Increasing the separation between the beacons lessened this confusion.

- 5.3. Beacon 2 (blue 7 Joule xenon) would continue to be effective regardless of the tilting motion of the buoy, whereas beacon 3 (yellow LED) would not due to its narrow vertical divergence.

6. RECOMMENDATIONS

It is recommended that a two colour light system be used on an emergency wreck marker buoy. The two colours should be yellow and blue. Both lights should be synchronized to flash alternately or arranged so that flashes do not coincide.

The colour blue does not feature in current IALA recommendations. CIE recommend its use only at short distances to avoid colour confusion. Therefore, blue lights should only be used in a two colour light system as indicated above. The IALA Recommendation for the Colours of Light Signals on Aids to Navigation, December 1977, should be consulted for the appropriate yellow chromaticity region, whilst CIE S 004/E-2001 (Colours of Light Signals) should be consulted for the appropriate blue chromaticity region.

7. MANUFACTURERS' DETAILS

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8. DOCUMENTATION

Project Brief:	BB/1/1174N]	Dev. File Ref.	DEV/9]
Project Number	P396	User File Ref.	
Documents on disk	G:\Technical Reports\Information Sheets\Draft\INF_SHT-124-IT-03-01.doc		
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