Keeping a Lookout – Photochromic Lenses, Polarised Lenses and Dark Adaptation

This fact sheet advises operators, masters/skippers and seafarers on precautions to be taken by those with lookout duties, particularly at night.

Background

As part of their investigation into the loss of the sailing yacht *OUZO* and her three crew, the United Kingdom's Marine Accident Investigation Bureau (MAIB) commissioned a report from University College London's Institute of Ophthalmology on photochromic lenses, as these were worn by the lookout on the large ro-ro passenger ferry that was also involved in the incident. Photochromic lenses are those which darken with exposure to strong light and lighten in dark surroundings. They are commonly known as "transition" lenses, reflecting their ability to vary according to the conditions.

The University College's report demonstrated that the light transmission of these lenses is significantly reduced as compared to ordinary coated and uncoated lenses, which would have decreased the likelihood of the wearer detecting navigation lights.

The report also asserted that an insufficient period of dark adaptation is likely to have been a significant factor in the lookout's failure to see the yacht earlier. It identified significant white light pollution in the wheelhouse which would have reduced the lookout's night vision.

On the basis of these findings, the MAIB recommended that photochromic lenses should not be worn for lookout duties at night. Accordingly, the International Maritime Organization released the document MSC.1/Circ1280 Night-time lookout – *Photochromic lenses and dark adaptation*.

Dark Adaptation

With respect to taking over the Watch, STCW A/VIII Part 4, Paragraph 20 states:

"*The relieving officer shall ensure that the members of the relieving watch are fully capable of performing their duties, particularly as regards their adjustment to night vision. Relieving officers shall not take over the watch until their vision is fully adjusted to the light conditions*" .

No suitable period for dark adaptation is stated, but research indicates that this period is typically 10 to 15 minutes. This needs to be taken into account when determining the watch-keeping regime for the vessel.

On some vessels, crew with lookout duties alternate periods on the bridge with periods of safety checks and fire watches in other parts of the vessel, some of which will be brightly lit. On fishing vessels, the deck lights may be very bright, and crew may come off the deck to take a watch. The same period of dark adaptation will be required every time the lookout returns to the bridge. In addition it is important that dark is maintained on the bridge – making full use of blackout procedures, ensuring that radars and console lights are dimmed appropriately and avoiding contamination from residual light and surrounding uncurtained areas.

Photochromic lenses

As well as being unsuitable for lookout duties at night, it should also be noted that photochromic lenses darken due to exposure to UV light and, since UV light is also filtered by ordinary glass, they may not darken enough by day within an enclosed wheelhouse.

Photochromic lenses also react to temperature and do not achieve full sunglass darkness in very hot weather; but get very dark in cold weather.

Polarised lenses

Polarised lenses filter out reflected glare and facilitate a lookout, in the direction of the Sun, including improving the ability to see shoal water ahead, but again polarised sunglasses must not be worn at night as they restrict vision.

Mariners are advised to discuss their optical needs with their examining doctor or optician.