LADDER — Lookout Awareness of Distractions

The creation of a Distraction Evaluation Ratio

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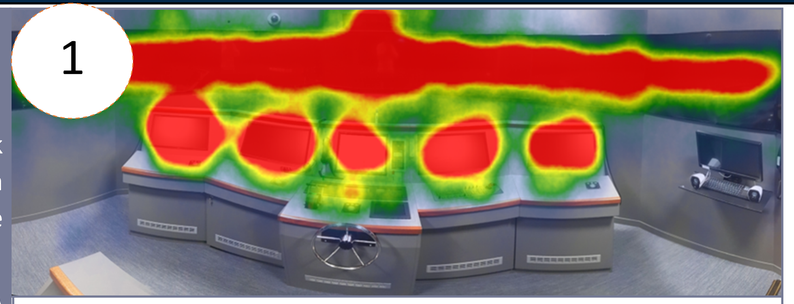
The Issue

- 65% of ship collisions result from improper lookout.
- The root cause of underlying issues appears to be a lack of definition of the term 'proper lookout' leading to a lack of appreciation for the shortfalls that need to be addressed to improve watchkeeper behaviour.
- Multifunction Displays (MFDs) e.g. ECDIS, Radar/ARPA etc also appear to be stealing watchkeepers' time from their primary function of maintaining a lookout.
- Watchkeepers need to overcome the MFD distractors through an effective scan pattern that can be used for optimised visual searching which will assist in MFD caused distraction.

1



'Proper Lookout' Defined

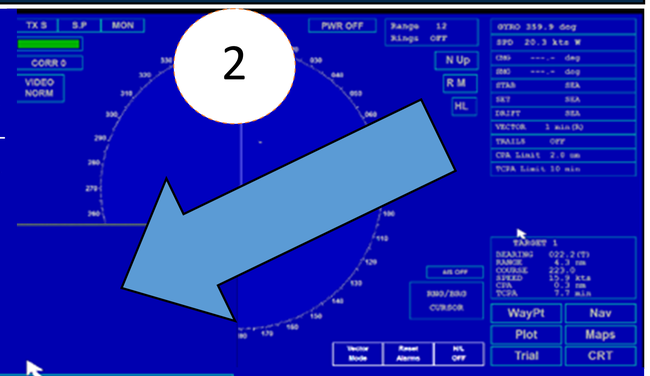
The application of due diligence to improve situational awareness by:

- Sight - through systematic visual search scans of the environment around own vessel.
- Hearing - through a quiet wheelhouse with access to outside sounds.
- All available means such as Radar, AIS or other bridge equipment.

Centre Console Display (CCD)

86.6% of the 67 experienced seafarers considered Radar/ARPA as the most important equipment for collision avoidance.

2



Radar/ARPA display and other MFDs show information that is not required at all times. This can be temporarily turned off through the CCD Concept to reduce MFD distractions.

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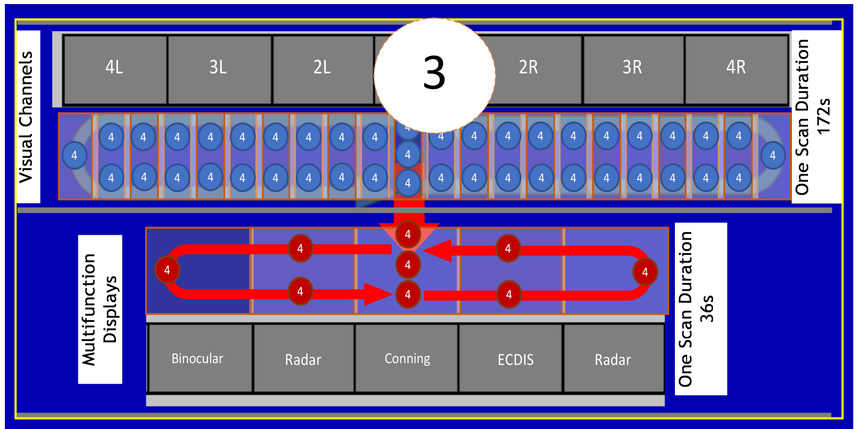
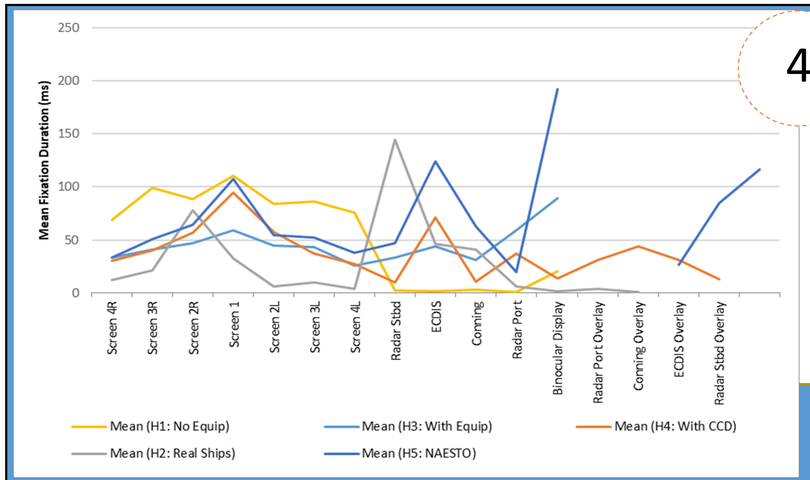
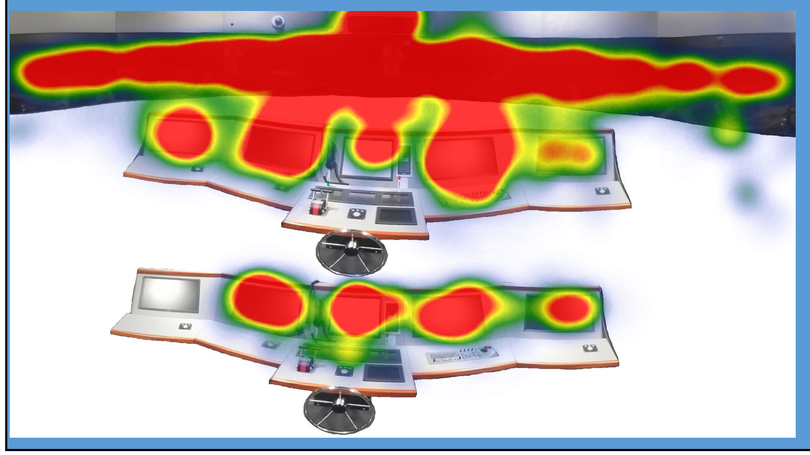


Window Wiper Scan

1. Commence the scan in the visual field's central block.
2. Move eyes towards the port side of the vessel, focusing for a period of no more than 4 seconds on each 10° block.
3. After reaching the last block on the port side, resume the towards the centre, spending no more than 4 seconds in each 10° block.
4. Repeat this scan across the starboard side and then back to the centre ensuring no more than 4 seconds are spent in each 10° block.
5. After the scan of windows, switch to the instrument panel following the same sequence as for windows i.e. commence in the middle, then scan to port with the same 10° block approach that was utilised to look out of the windows.





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DER as a Tool to Assess 'Proper Lookout'

Aviation pilots split their lookout time 3 seconds on MFDs for every 18-20 seconds looking outside (UK CAA) giving a Distraction Evaluation Ratio (DER) of 6:1 for time on looking out vs. on MFDs. In a bridge simulator with no MFDs, the observed DER was 17.6:1 when no distractions were present. On a real ship, the observed DER was 1:2, far lower than the UK CAA standard. With guidance to participants on Scan Pattern and the CCD concept, the DER 2:1 was achieved. A lower DER can be an indication of the need to increase manning level on the bridge to maintain a proper lookout.

Night Lookout Issues

Seafarers are not taught about the science behind dark adaptation, particularly the adverse impact of light pollution on maintaining a proper lookout at night. The Window Wiper Scan and CCD concept is likely to alleviate most of these issues and help improve situational awareness.