

Vision enhancer combines cameras and laser light

A Canadian marine camera system offers multiple benefits of enhanced vision in adverse weather, including early automatic detection of small pirate craft

It is impossible not to warm to the enthusiasm and drive displayed by Doug Houghton, president of the Canadian night vision company, Current Corp. Although it is only natural to push ahead with product development, Mr Houghton says that inspiration for the latest addition to the Night Navigator marine camera series came directly from a 2004 rescue undertaken in appalling conditions, for which Les Palmer, a veteran coast guard officer, was awarded Canada's Cross of Valour, a high and rare honour. Mr Palmer's story can be found at www.waggonerguide.com/lespalmer.html and is worth 10 minutes of anyone's time.

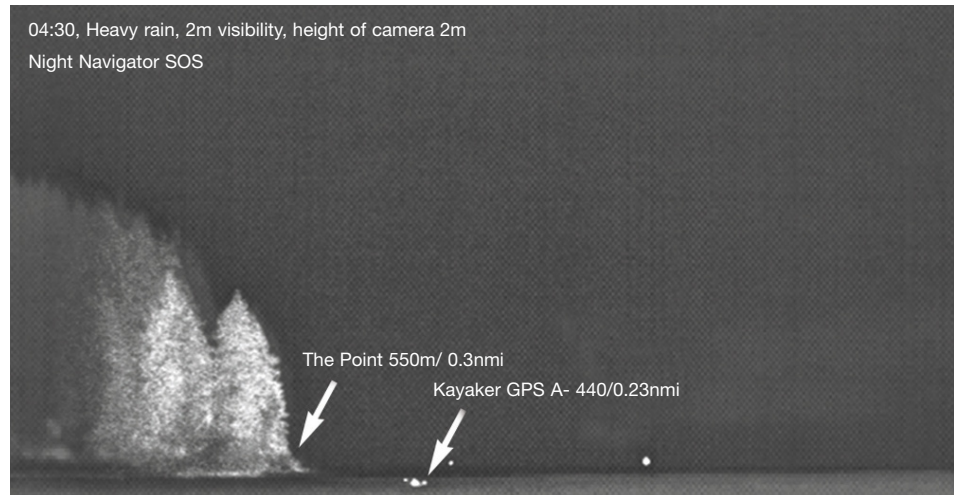
Notwithstanding Mr Palmer's extraordinary display of bravery, determination and endurance, Mr Houghton realised that luck had inevitably played a significant part in locating the survivors and their subsequent recovery. Darkness, winds gusting to 100 knots, driving snow and plummeting temperatures reduced visibility – almost to zero at times.

Mr Houghton noted that no commercial enhanced vision system available at the time could have offered any meaningful assistance, and so he set out to build one that could. This was no small ambition; nothing less than a system that could see not only in the dark, but in all conditions of reduced visibility would fill the bill.

Six years on, his vision has been translated into a working design. A demonstration production prototype is expected to be up and running by mid May, with commercial delivery likely to begin in 2011.

The new system is trademarked as the Night Navigator SOS. In this context, SOS stands for Safety on Seas, and Mr Houghton says this perfectly reflects Current's aim of developing the best possible products to save lives and property at sea.

SOS incorporates a number of elements contained in a rugged, gyro stabilised unit. To begin with, there is a high definition day



The Night Navigator SOS clearly picks out this man in a kayak during heavy rain at night

camera. Mr Houghton notes that this can be very valuable for detecting small pirate craft and can also be employed to gain more information about small targets detected visually or by radar. Gyro stabilisation makes it more effective than binoculars in this respect.

The real magic however, he says, comes from the active system delivered by the combination of an image intensification (II) camera, a high resolution thermal imaging (TI) camera and a pulsed laser light. The pulsed laser light is claimed to be substantially unaffected by meteorological and atmospheric conditions; thus the II and TI cameras are able to see laser illuminated targets.

SOS provides a fused image derived from the output of the two cameras. The laser generates invisible light that conforms to relevant eye safety standards (in the US, CFR 21 Section 1040.10).

The design brief was to see absolutely everything on the water up to a minimum range of one kilometre, in total darkness, through smog, fog, snow, driving tropical rain and sea spray. Mr Houghton says SOS exceeds this wish list with one caveat – fog has such a variable nature that SOS delivers two or three times the prevailing visual range. However, he says that this exceeds the performance of all other commercial systems.

SOS automatically adjusts to provide the best performance for the prevailing conditions, and it also has a manual override with settings of fair, snow, rain and fog.

MEC has seen impressive SOS trials

footage, which certainly appears to confirm its capabilities in respect of heavy rain, and Current Corp says that industry insiders are so impressed by the field trial results that the company is already taking orders.

Mr Houghton reports that when he discussed SOS with Dr Rolf Skjong, chief scientist at Det Norske Veritas, Norway (classification society and worldwide standards and approval body) at IMO in London last year, Dr Skjong was sufficiently impressed to say that he would like to work towards the goal of having SOS regulated to be on every commercial ship.

Despite this innovative system's performance and potential, it may as well not be there if – as with much other bridge equipment – no one is taking any notice of the information provided. The SOS display software deals with this problem with its automatic detection capability.

Targets detected generate a surrounding box – similar to arpa – and an alarm to alert watchkeepers. Mr Houghton says this will be of great benefit in an anti piracy context, since with the best will in the world, it is difficult to concentrate exclusively on a monitor for extended periods.

There will also be an active system intended to help maintain observer alertness, especially at night; the operator has to press a button at intervals to keep clearing the image. SOS also incorporates an instant replay function to allow a review of the previous five or 10 seconds of imaging simply by pressing a button. **MEC**