

Cut collision risk

When cruising couple Jeff Robbins and Deirdre Schleig set sail from the United States seven years ago, one of their biggest worries was being run down by a freighter. **Lindsay Wright** learns how they went about reducing the risk.

“We’d been thinking about going cruising for a few years – we even moved from Colorado to Seattle so we could be nearer to the sea,” says Jeff. “We chartered boats in various places and used a time-share boat for a while – and when our favourite time-share boat got sold we were forced to buy a boat of our own.”

After some extensive research, Jeff and Deirdre (both software developers), settled on a fibreglass Nordic 40 cutter, designed by Bob Perry to withstand the rigours of ocean cruising.

The pair spent a couple of years refitting the 11.9m boat (*Vesper*) to become their off-shore cruising home. They installed a 54hp Isuzu diesel and spent time cruising the inland waterways from Seattle to Alaska and British Columbia.

“All the time we were getting ready to move off-shore,” says Deirdre. “We often spoke about what our greatest fears were – one of us falling overboard while the other was below sleeping – or being run down by a ship.”

Not long before, in November 1996, a 14m American yacht, *Melinda Lee*, had been run down off the north New Zealand coast, killing Michael Sleavin and his children Benjamin (9) and Anna (7). Their wife and

mother, Judith Sleavin, clung to a lifebuoy until she was washed ashore hours later. After an intensive investigation, Han Sangyoon, second officer of the bulk carrier *Pan Grace*, was convicted in a Korean court of law for “neglect of safety measures”.

“Like most cruising people,” says Deirdre, “that was our worst nightmare.”

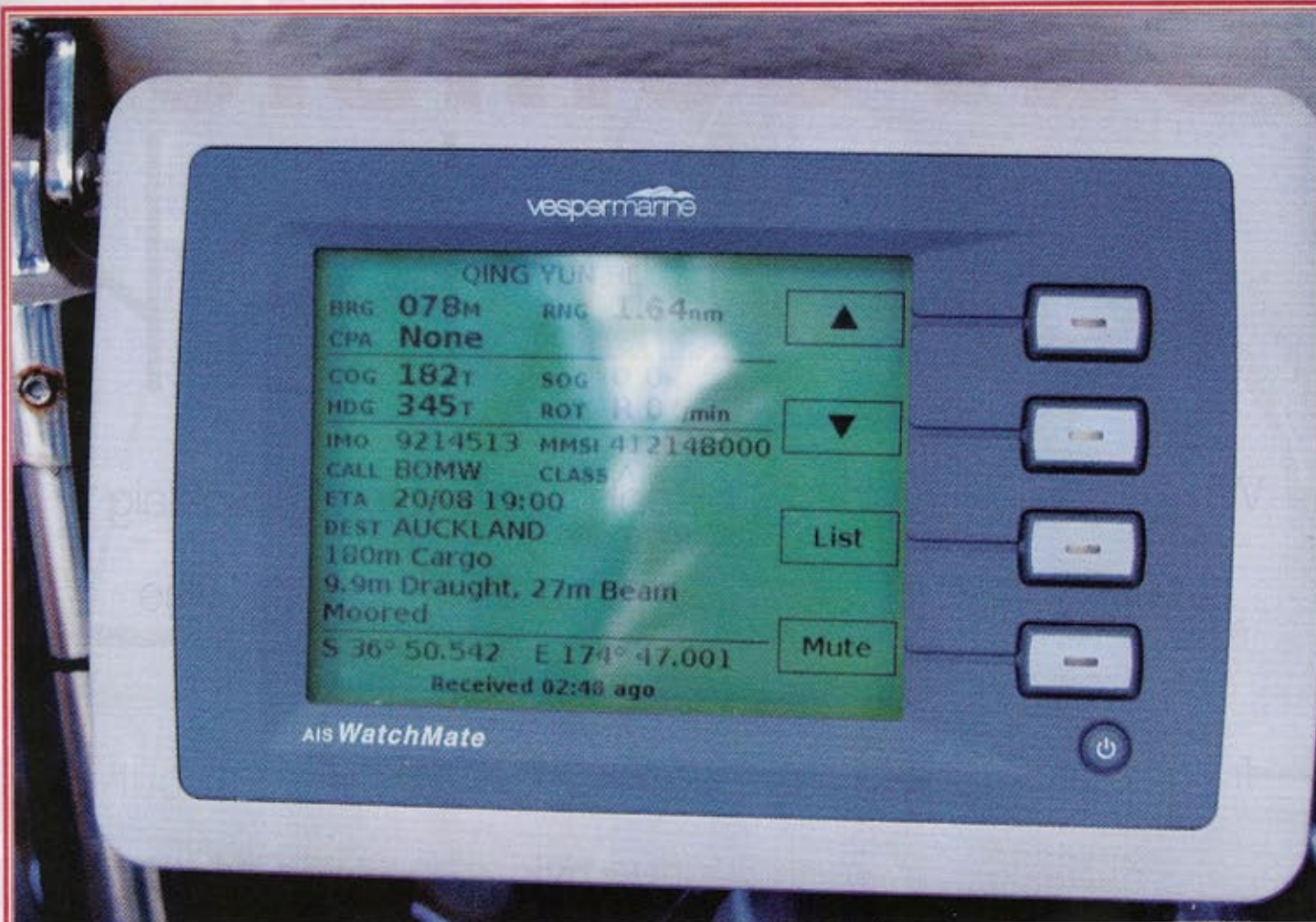
Two friends accompanied the couple for their first ocean passage, a 600Nm (1100km) voyage down the wild US north-west coast from Port Townsend to San Francisco. From then on they were on their own.

“The reality of it is that most cruising sailboats have two people – a couple – on board. So they rely on whoever’s on watch to see any ships – or ships’ watchkeepers to see them,” she says. “If the weather’s bad, whoever’s on watch is likely to be huddled in the cockpit sheltering and a small fibreglass boat doesn’t show up on radar that well in big seas.”

Jeff and Deirdre bought man overboard transponders (kept in a pocket of their PFDs) in case one of them fell overboard. When triggered by the person in the water, the transponder sounds an alarm on-board to wake the sleeping shipmate.

“We tried a radar detector to reduce the risk of being run down – but it wasn’t that successful,” says Jeff, “and then we heard about AIS – and it seemed the perfect system.”

Automatic Identification System (AIS) transceivers



have been mandatory on all vessels over 300 tonnes since 1999. They enable watchkeepers to plot every ship in the vicinity by name, MMSI (Maritime Mobile Ship Identification number), type of vessel, its course, speed, position, closest point of approach (CPA), and time until they reach that point (TCPA). The data is transmitted every two seconds over a dedicated digital marine VHF channel and is combined with GPS information.

"So we went out to buy an AIS unit – but all available AIS systems led to either buying an expensive plotter or interfacing it through a laptop and leaving it running all the time – both of which have high power usage."

Meanwhile the couple had cruised the Central American coastline as far south as Panama and were ready to head out across the Pacific. The Galapagos was the first port of call, then Gambier and the Tuamotu Islands in French Polynesia, Tahiti, Moorea and Bora Bora. Meandering their way south-westward, they called in at Suvarov in the Cook Islands, Apia and the Vava'u archipelago in Tonga, before arriving in New Zealand in October 2003.

By then *Vesper* was in need of a refit, and Jeff and Deirdre were still thinking about an anti-collision system.

"AIS is definitely the way to go for collision avoidance," says Jeff, "but nobody makes an AIS for cruisers – they're all meant for big ships.

"So we started developing the software. Cruisers need a low power device that can be left on 24/7, is easy to use and totally weather- and shock-proof. Most cruisers just need something that will sound an alarm when there's a ship in the vicinity and tell them it's CPA.

"So we built one – and kept refining it."

The refining process continued while *Vesper* was back in Tonga for winter 2004 and the following year the pair were granted New Zealand residency.

"By then we had the Vesper Watchmate pretty well sorted out – we had an opportunity to help deliver a friend's boat from Panama – so I took the Watchmate along," Jeff recalls. "There's not a lot of shipping across the central Pacific – but it was amazing to see it picking up all the ships in Panama."

The Watchmate will show signals from 128 simultaneous targets and sort them so that the ships with the closest CPA and shortest TCPA are at the top of the list. Current draw is about 100 milli-amps and there is an idle mode that shuts down the display but sounds an alarm as soon as another AIS-equipped vessel encroaches within pre-set parameters.

Jeff won't say how many of the Vesper Watchmates have been sold, but word-of-mouth in the cruising community is his main advertising medium. He is selecting dealers in New Zealand and Australia and has had an offer from a major chandlery in the USA.

"I make most of the sets myself – using circuitry made by a factory here in Auckland," he explains. "Deirdre does all the testing and verification."

One buyer flew across from Australia and asked where they were made.

"I told him 'here...' and he wouldn't believe me. 'You guys actually make this?' I'm sure he still thinks we were pulling the wool over his eyes."

Most of winter 2008 was spent refitting *Vesper's* interior in Auckland and an extended spell of house

sitting has enabled the two-person production line to get into full swing.

The Watchmate uses filters to eliminate false alarms and receives AIS safety messages and signals from aids to navigation.

“Before AIS, if you saw a ship heading close by, you wouldn’t know who to call on the radio – but with the Watchmate, its name and callsign just pop up on-screen – there’s no confusion.”

In keeping with international maritime convention, AIS stations will be established at major landmarks and aids to navigation on the New Zealand coast, so mariners can receive distance and bearing information from them. One is already working on the Auckland Harbour Bridge.

Currently, the AIS transceivers are divided into Class A (primarily for large commercial vessels), and Class B, which are low-power (12.5 watt), low-cost units intended for smaller pleasure and commercial boats. The Watchmate uses both. Some ports and maritime authorities have made them mandatory on all vessels and the United States Coastguard is pushing a plan to make them compulsory on all boats worldwide so they can better monitor coastal traffic and arrivals/departures in the US. The US coastal system already tracks vessels to 200Nm (370km) off-shore and a satellite-based system with 2000Nm (3700km) coverage is planned.



“There’s definitely no plan to make AIS mandatory on all vessels in New Zealand – but it won’t be long before they’re commonplace on pleasure vessels over 30 metres,” says Maritime New Zealand recreational boating manager, Jim Lott.

“AIS adds hugely to safety at sea and I think they’ll become the norm over the next few years...they’re a great self-defense system. It wasn’t so long ago that radar was rare on pleasure boats – but now it’s quite common. The same will happen with AIS.”

The Vesper Watchmate (\$940 + GST) may just be the home grown solution to many sailors’ safety concerns. ↓

AIS – the evolution

AIS was derived from the pioneering work of a Swedish inventor named Hekan Lans, who developed a technique for spontaneous, masterless communication in the 1980s. It permitted a large number of transmitters to send data bursts over a single narrowband radio channel by synchronising their data transmissions to a very precise timing standard.

By the mid 1900s AIS was helping to keep track of shipping in the world’s busiest shipping lane – the English Channel – and the IMO legislated that all commercial ships over 300 gross tonnes and passenger vessels had to be AIS-equipped. By 2004 the compulsory AIS requirement had been extended to all ships.

There is already a case being promoted for a third AIS channel utilising satellite communications for vessel tracking – many shipping companies and port authorities already do this and maintain websites so that they can check on the positions of their ships and update ETAs. Satellite systems would also automatically apply corrections and updates to electronic charting software.

China has 150 automated coastal AIS stations and 50 computer servers to connect shore users to ships in transit and service 25 vessel traffic separation schemes. AIS transponders are also being employed overseas in lighthouses and aids to navigation to forewarn seafarers of their location and light characteristics. ↓

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