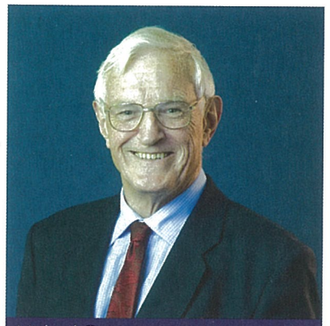
Dockgate

by Michael Grey MBE



Michael Grey

The remote engineer

Some years ago I attended a conference at which a representative from an engine manufacturer bravely suggested that if ship operators handed over all their maintenance to him, everyone would gain from the arrangement. He was not exactly laughed to scorn, but there appeared to be the deepest scepticism among the audience, largely composed of technical superintendents.

It was suggested, none too politely, I seem to recall, that this was just a plot to milk more money out of hard-pressed shipping companies, already squeezing their shipboard chief engineers to reduce their budgets from everything from piston liners to engine room rags. Give the engine manufacturers the luxury of a maintenance contract and they would be ordering up entire replacement engines before the existing ones were barely run in.

There were pointed questions, about the status of the manufacturer's on-board engineer and the sort of authority he would be given as part of the contract. Would he "outrank" the Second – even the Chief – with powers of veto over the employment of the dayworkers? Who, asked a superintendent from a particularly parsimonious shipping company, would pay for his food? Would the Chief have any oversight of the messages flying from the ship to the engine manufacturer?

I suppose the message that this representative of the manufacturer received was not so much hostility but suspicion and the suggestion that these ideas were somewhat ahead of their time. There may have been residual memories from other, earlier maintenance contracting, such as were found in the offshore industry in the early days of the North Sea, where drilling, rather than machinery maintenance, was the object of intense focus, money was no real problem and machinery was just run until it wore out, whereupon a representative of a machinery manufacturer would helicopter in, take an order for a huge new pump or genset and fly off again. Mind you, their comfortable life or regular product replacement was severely frightened by a Scottish owner of semi-subs, who refused to play by the book and employed real marine engineers to fix the machinery, rather than tip them over the side when they broke.

Well, we have come a long way since that exhibition of scepticism, not least in the data handling and communication technology that enables sensors in the machinery to tell its manufacturer exactly how it is performing, in real time. So we maybe should not be surprised at the contract signed recently between Carnival and Wärtsilä to maintain and monitor machinery aboard no fewer than 79 ships in the Carnival fleet.

Make no bones about it – this is a huge deal - a 12 year contract to look after around 400 engines aboard the cruise ships operated by the world's biggest. It will be based upon the engine manufacturer's existing system, which is described as "Dynamic Maintenance Planning" along with condition-based maintenance systems. It might be described as "Big Data" writ large and is a function of this new ability to stream all the relevant data from every engine in real time, so that it can be constantly analysed. We have advanced in leaps and bounds from systems that required people in boiler suits to monitor temperatures, take levels and use their native wit and training to ensure that an engine was running optimally. Such an arrangement is also made more viable by the fact that there are fewer makes of equipment floating around – at least in a modern cruise fleet, so if things are not yet standardised, the necessary expertise can be assembled under the Wärtsilä roof. All sorts of savings are promised, from fuel that will not be wasted in machinery that is under-performing, to the opening up and digging around that will not be performed on the crude basis of running hours.

The deal is said to be worth around €900m, which seems a lot if you pile up the notes one upon another, but if you consider the number of engines and ships over time, it might appear less frightening a figure. You might also suggest that it, in some way, answers the criticism that machinery is getting too clever for its own good, or is beyond the capabilities of ship staff. Will the job satisfaction of the shipboard engineer be diminished as a result of these changes? Might the number of engineers aboard ship be hacked back as a result of the ability to monitor so much more remotely? We will have to wait and see, but they need some people in gold braid to dance with the passengers. Sorry, that was unworthy.

Attitudes have also changed since that conference all those years ago and clearly neither side would have entered into such a contract unless each believed that it was to their advantage to do so. We are informed that there will be financial incentives "based on outcomes", so there will be pressure to deliver in a way that the customer continues to think it is worthwhile. And I suppose somewhere in the small print it will be detailed what ships' staff are expected to do and the responsibilities of the engine-builder's shore squad. They will not, in these days of Big Data, be concerned about whether the occasional trouble-shooter has to pay for his own food, as was voiced by those sceptical superintendents, all those years ago.

Being very afraid

Scarcely a day goes by without some terrifying warning about our vulnerability to cyber-crime. It perhaps should not surprise us that most crime these days involves criminal facility with computers. Why would any ambitious criminal stoop to violence, when they could sit comfortably at a keyboard and fire off beguiling messages that bring in ten times the reward? I'm now in such a worried state that I have so many security devices on my laptop that it takes so long to fire up that I will have forgotten what I was going to say.

I guess Carnival and Wärtsilä will have cracked the problems of hackers and cyber criminals (a teenager in a bedroom simultaneously shutting down 400 cruise ship engines doesn't bear thinking about), but the shipping industry in general, we are told, needs to take all this more seriously. The Steamship Mutual P&I Club recently went to the trouble of commissioning a DVD for its members and others that can be guaranteed to frighten all but the most blasé.

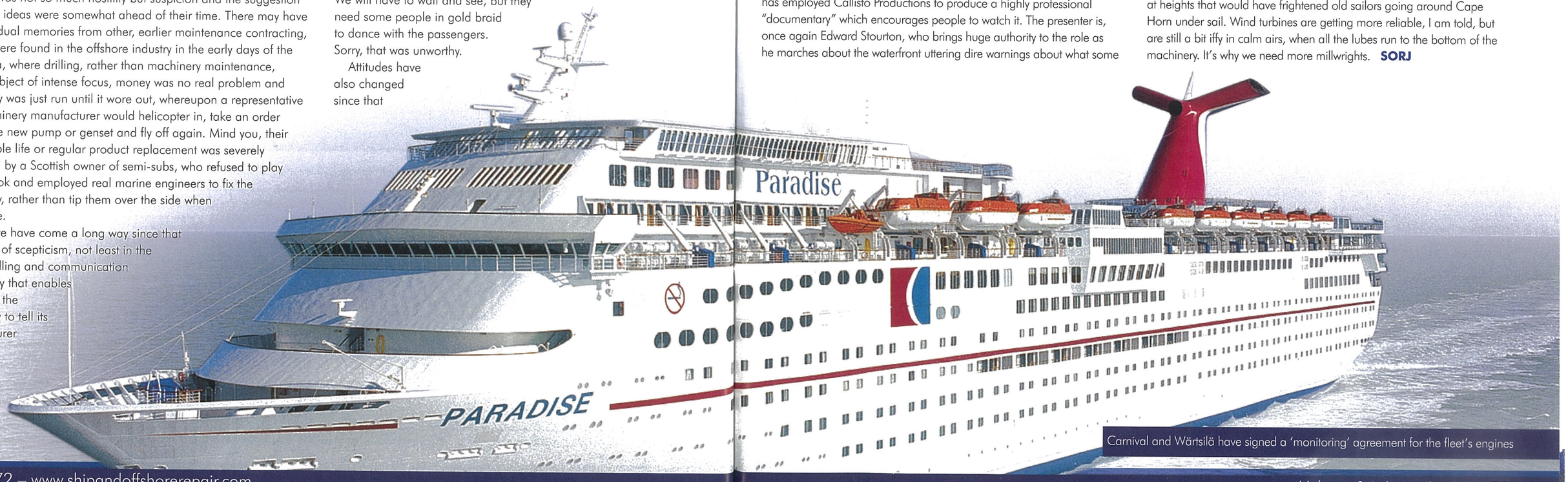
"Cyber Security Smart, Safe Shipping" it is entitled and the inference is that the industry is a long way from this desired outcome. The Club has employed Callisto Productions to produce a highly professional "documentary" which encourages people to watch it. The presenter is, once again Edward Stourton, who brings huge authority to the role as he marches about the waterfront uttering dire warnings about what some sinister chap at a keyboard (they are, for some reason, always shown wearing a 'hoodie') is doing to bring mayhem to the ordered maritime world.

It is sensible, practical advice. Get the experts on board. Make sure the CEO is attuned to what is at stake. And make sure everyone knows what costly chaos the most mundane actions, such as charging a smartphone or other device aboard a ship, can cause. Nobody who has been aboard a modern merchant ship ought to be unaware of what exactly is at risk from the criminals, the careless and the thrill-seeker who are intruding into cyber space. The sheer number of items of ship equipment now vulnerable to cyber-interference is staggering, with both the navigation and engine-management systems all depending on timing and computers for so many vital functions. That's before we start on the cargo.

The messages are all sensible. Don't rely on one source of information. Be aware of the risks and observe proper protocols and procedures. And above all, remember that this is a threat that won't go away. And for repairers, although it doesn't mention it, they should be aware of the risks of both importing and exporting something horrible from hyperspace as a ship comes into dock. I can recall listening to an offshore trouble shooter telling us that every time he came ashore he would physically chuck away his laptop and buy another, such was the level of risk of "infection". It's frightening stuff, but that is probably what we need.

Flossing the mill

Years ago there used to be millwrights, who would tour the country fixing broken down wind and water mills. We have yet to so rename the engineers who take their lives in their hands, clambering to the top of wind turbines in exposed offshore arrays. Increasing numbers are able to "walk to work", thanks to the gyro-stabilised gangways that are being installed on maintenance and installation craft, but they still have to be comfortable at heights that would have frightened old sailors going around Cape Horn under sail. Wind turbines are getting more reliable, I am told, but are still a bit iffy in calm airs, when all the lubes run to the bottom of the machinery. It's why we need more millwrights. **SORJ**



Carnival and Wärtsilä have signed a 'monitoring' agreement for the fleet's engines