



Tony Davis

# Big ships small crews

*Modern deep sea cargo ships are getting bigger and more powerful than ever before, but today's crew levels are only a fraction of what they were just 40 years ago. Bramson Bean looks at who does what on board a freight ship today and explains some of the reasons for the decline in manning levels.*

It probably goes without saying, but there really are just three reasons for having a crew on board a commercial ship. The first and most important is to be able to deal with emergencies. The second is to operate what has become quite a complex floating machine and third, to maintain this machine against normal wear and tear and also from the attacks of the most hostile environment for a complex machine based on ferrous metal – the sea.

Since World War II, and certainly since the mid 1960s, the face of shipping has

changed radically both at sea and ashore, affecting the numbers of people required to operate ships, the skills they need and their lifestyle. Indeed, ships today are bigger, faster and technologically more complex, but ironically, the number of crew who sail in them has actually dwindled by 60 or even 80 per cent in some cases.

A news report in this magazine (Waterfront news, Jan 07) commenting on a manning level of well under 20 seafarers to safely operate the then world's largest container ship, *Emma Maersk*, triggered a

reader response from a seafarer who had swallowed the anchor, coming ashore two decades ago from a far smaller ship with a crew of almost 50. The reader was curious as to why ships's crews have diminished in number. The answer is complex and lies in a host of factors including operations as well as bridge and engine room technology. Interestingly however, in one or two areas the trend towards reduced manning has actually reversed.

**'GOOD OLD DAYS'**

Pre-containerisation is perhaps the best benchmark of shipping's 'good old days', not only because the introduction of ISO standardised containers affected the business of ships, but also because it coincided with most of the other changes that would affect manning, such as the advance of electronics. And, if nothing else, it certainly showed ship owners the financial benefits of thinking outside the box – no pun intended.

Modern intermodal freight using universally standardised metal containers is usually credited to the American Malcom Purcell McLean. Often known as 'the father of containerisation', McLean got his start in 1934 hauling empty tobacco barrels in his second-hand pick up truck. For his later development of containerisation, the Maritime International Hall of Fame named

**TOP:** Modern ships such as the container ship *Eleonora Maersk* (2007) and the bulker *New Irene* (1997) carry far more cargo than their predecessors and operate with comparatively small crews.

**LEFT:** The bridge of P&O's 2001-built 'Super Ferry' *Pride of Hull* showing the huge amount of electronics installed on the bridge of modern ship.



Iain Wakefield ref: 080123

him 'Man of the Century'. A distinctly different view was expressed on 26 April 1956 when the converted tanker, *Ideal X*, left Newark for Houston laden with 58 of his 35ft containers. A senior official of the International Longshoremen's Association who was there, when asked what he thought about it all, replied somewhat candidly; "I'd like to sink that son of a b\*\*\*h." A view probably held by many UK union representatives at the time.

Emotion aside, it was certainly difficult to argue with the dollar and cents of moving cargo in containers. Until then, US costs for hand-loading a break-bulk ship were \$5.86 a ton. Using containers it would cost only 16 cents. In terms of people employed (or unemployed as the unions saw it), during break bulk days 11,000 tons of cargo could be moved by 126 dock workers in 84 hours while, with containerisation, the same cargo could be handled by just 42 dock workers in only 13 hours.

Within a year of *Ideal X* first sailing for Texas as a CTBB (cobbled-together box-boat), the first fully -cellular container ship, Sealand's *Gateway City*, was trading between New York and Texas via Florida. And the rest was history.

It was not long before heavy lift, once characterised by traditional-looking vessels



Newall Dunn collection

listing alongside the dock as their ponderous Stulken derricks strained in unison to lift a locomotive over the bulwarks, began to give way to ro-ro ships and eventually semi-submersibles.

And where decks were once cluttered with catwalks, derricks, kingposts and booms and all the associated wires, shackles, blocks and runners, now if they are cluttered

with anything, they are piled high with containers that do not require painting as all the aforementioned items once did.

It is interesting to look at the numbers of a ship's crew then and now. Of course, the number would vary from company to company, but at the end of World War II a merchantman might carry 50. In addition to her master, there was a chief officer with 2nd and 3rd mates and sometimes a 4th (plus perhaps four cadets or apprentices), the boatswain and 16 or 18 seamen.

In the engine room, at least five engineers could be maintaining a 24-hour watch system. The chief engineer did not usually stand the watch but oversaw the 2nd, 3rd and 4th who did, along with six or seven greasers/wipers (and two pump men in tankers) plus an electrician. Then there might be two radio officers along with a purser and the carpenter or 'chippie'. In the catering department, there would be the chief steward, a 2nd steward and three cabin boys with two cooks, a galley, or pantry boy and one or two mess men.

**HIGHLY SPECIALISED**

Today a vessel's crew might consist of only her master, chief officer and two mates (who might be qualified also as engineers). Although the 24-hour engine room watch is mainly gone, there is still the chief engineer with a 2nd and 3rd plus an electro-technical officer, whose title speaks volumes on what has changed aboard ships today. The boatswain is still needed with at least three AB's as well as two wipers for the engine room (these people, by the way, may be made up of a five person group of general purpose crew who work both topside and in the engine room, when not on watch). Catering has become a much lonelier department, with perhaps just a cook and steward on duty. So where did those 30 or so extra hands from the 'good old days' go?

To begin with, a vessel's Flag State mandates her minimum crewing level

**ABOVE:** When new in 1974, the 120,00dwt Canadian Pacific bulk carrier D. C. Coleman would have had a crew level of around 35. Today, a similar sized vessel would go to sea with a crew of 20.

- emphasis on 'minimum' - which is documented in the ship's respective 'Safe Manning Certificate (SMC)'.

The SMC is effectively just the minimum needed to deal with all emergencies and to safely dock and undock the ship - and it used to require at least six just for that. "It does not take into account all of the other things a ship needs to do," says Captain Colin Waugh who first went to sea with the Royal Navy during World War II in the County Class cruiser HMS *Berwick*. After hostilities he joined Shell, going to sea in *Spondilus*, a 9,000 gross ton tanker. Before he retired from Shell, his last and largest command was the 328,000dwt tanker *Lima*.

Former ship's officer Alan Chivers agrees; "Most companies actually exceed the safe manning certificate, for example, safe manning would require only a single cook and that would be it". Chivers went to sea in 1962 with Silver Line. His first ship was the 12,000 ton bulk carrier *Silver Weir*. His final tour at sea was as 3rd officer with United Baltic before coming ashore to join Shell in personnel, recruitment and training. Chivers also observes that before he retired, Flag States, like the UK's Maritime and Coastguard Agency, seemed to be taking a more understanding and commercial attitude to vessel manning which has also had an effect on safe crew levels.

Cliff Davies went to sea in 1975 as an engineer officer cadet with Canadian Pacific Ships in *W. M. Neal*, a Capesize bulk carrier, one of the first to call at Baton Rouge to lift grain. The vessel at that time had a crew of 34, comprised of 12 officers, 18 ratings and four cadets. Three years later, he signed on the same vessel where the crew had already been reduced to 26. Today a similar vessel would be expected to operate with a crew of

19. Now the chief technical officer with one of the largest ship management companies in the Isle of Man, Davies is responsible for 40 ships including container ships, bulk carriers ro-ros and tankers.

He says; "Minimum safe manning levels are those determined by the Flag state as being the number of competent crew required to safely operate a vessel, and are based on a number of factors, the degree of machinery and equipment automation being just one. As far as the machinery operation is concerned, there should always be a sufficient number of competent engine room crew available to take over in the engine room should the automation fail, and that means manning three watches".

**FULLY AUTOMATED**

He also points out that technology has allowed machinery operation and monitoring to be fully automated and is so reliable that with the widespread use of Unmanned Machinery Spaces (UMS), modern vessels could actually sail with even fewer in the engine room, but for the requirements of Minimum Safe Manning.

And then at the risk of sounding a bit insulting to one of today's hard working seafarers whose time in port is now measured in hours not days, frankly there is just not that much heavy physical work done by ships' crew any more.

Mooring lines made of natural fibre gave way to lighter materials. Transverse thrusters reduced the need for tugs which required the skilled, but very dangerous, job of handling the associated lines.

Much of the manhandling of cargo went with the demise of derricks, kingposts and booms, to be replaced, if at all, by a hydraulic crane operated by one seafarer.

Hold hatches are no longer sealed with huge boards, each one requiring two men just to put them in place and many more to cover them with unwieldy tarpaulins held in position by heavy steel hatch bars. Today, large steel hatch covers slide into place over the cargo at the push of a button.

Another major contributor to lower manning levels in the engine room and on the bridge is electronics. Certainly something that would be considered revolutionary in the 'good old days' is UMS



**LEFT:** Loading and unloading cargo ships in pre-containerisation days was extremely labour intensive, with goods being man-handled many times on the dockside before actually going on board a vessel. Here the 1947-built *Salaga* receives cargo watched by an audience of officials wearing trilby hats and gabardine raincoats.



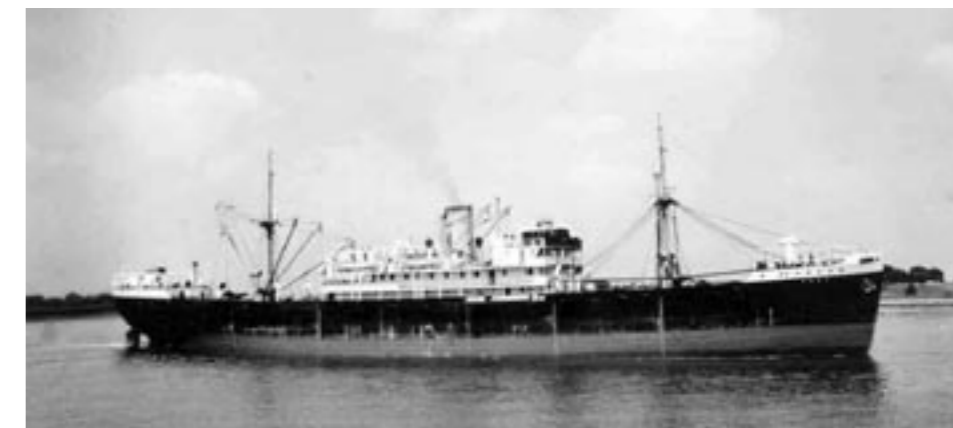
**ABOVE:** Converted from a C5 cargo ship, Sealand's *Gateway City* made her first voyage as a fully-cellular container ship in late 1957 when she carried 226 35ft containers between New Jersey and Miami.



**ABOVE:** A young pantry boy in Ocean Vanguard's galley. The 7,174gt cargo ship was torpedoed and sunk in 1942 shortly after this photo was taken.



**ABOVE:** A radio officer at work in the 1954-built *Elizabeth Holt*. Modern satellite communications and the internet have made this post redundant.



**ABOVE:** *Sobo's* crew would have included a ship's carpenter, a skilled wood worker whose duties also included replacing the glass in broken ports and taking soundings of the ship's tanks.

for the engine room.

The working practice in a ship's engine room is very different today. Captain David Cowell first went to sea in 1952 with Elder Dempster in the general cargo ship *Sobo*. Built in 1938, the 5,000gt *Sobo* was 378ft (115.21m) long and had a crew of 30. Cowell recalled that she had five engineers; the chief, 2nd and 5th working one shift 4-8; the 3rd working 12-4 and the 4th working 8-12. "Compare that", said Cowell, "with a typical modern unmanned engine room where the engineers can lock the engine room door at 1700 and open it back up at 0800 the next morning because the main and auxiliary engines are remotely monitored and alarmed".

On the bridge where the rules still state that there must be an efficient lookout at all times, the traditional ship's wheel is nonetheless gone, having been replaced by a joystick or small yoke-shaped helm. Up to three Global Positioning Units (GPS) now plot the ship's position with an error smaller than the width of the vessel's bridge, while Automatic Radar Plotting Aids (ARPA) and Automatic Identification Systems (AIS) take the worry out of being close to other ships.

So where once there was once the Officer of the Watch (OOW), together with a helmsman and a lookout on the bridge of a cargo ship, today the daylight OOW is often on the bridge alone and only joined at sunset or in low visibility by a lookout. The advent of Global Maritime Distress and Safety System (GMDSS) similarly spelled the end of the ship's radio officer, who has packed up his Morse code and gone home to be replaced by this automated ship-to-shore distress alerting system which uses satellite and terrestrial communications links.

Following the radio officer down the gangway was the purser. Better communications now enable what is on board a cargo ship to be tracked from a shore-based office. Ironically, with containers, it has been argued that the crews now never really know what cargo is in the boxes on board their ships.

Incidentally, this is one of the areas where the trend may have been reversed, if only slightly. Several years ago, as the administrative burden of ships' masters saw them spending more time gazing into a computer screen than looking outside their bridge, there were rumours that radio officers were being recalled to help with the ever mounting paperwork.

With the passing of all the traditional cargo handling hardware that quickly rusted away out on deck, the need for endless chipping, red leading and painting is mainly a thing of the past. Coatings – the fancy name for paint – have vastly improved so that steel does not need painting so often. As for painting over the side in port, masters now complain that it is often difficult to get permission to paint in port today.

### FAREWELL CHIPPIE

Remote sounding of tanks and the lack of wood in modern ship construction spelt the end of the traditional ship's chippie or carpenter and down in the engine room, maintenance when under way on a modern ship is minimal. Today a ship's crew is meant to operate the ship, not maintain her, and there is certainly there is not a lot of time for cosmetics like paint.

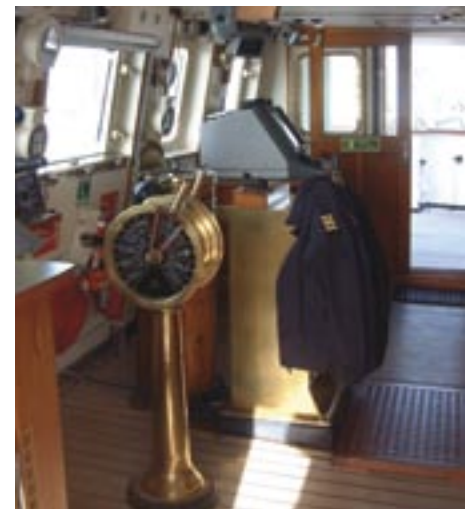
Improved engine technology now means a ship's machinery does not need so much maintenance as back in the 'good old days'. Back then for example a piston in a ship's main engine would needed changing after 6,000/8,000 hours, or approximately six weeks. Today, 30,000 hours life for a marine piston is common.

The department that has taken the biggest hit for job losses is probably the catering department. The mere semblance of 'silver service' in the officers' mess no longer exists on ships today, which of course reduces the need for waiting staff. And of course reduced manning elsewhere in the ship has a knock-on effect, as fewer people on board mean fewer people to clean for.

Ships make money only when they are carrying cargo, not while lying in a dry dock

undergoing repairs. While a reduced level of crew results in on board maintenance being reduced whilst a ship is in service, that does not necessarily warrant the vessel spending more time laid up. Ships have extra accommodation for 'riding-squads' of six to 12 workers who come aboard, sometimes with an extra cook, to undertake maintenance while a ship is under way. However, riding squads do not count as permanent crew.

The good news in respect to ship manning is that contrary to what might have been expected with the advent of containers, better paint, electronics, satellites, GPS, CCTV and auto pilots, the totally unmanned ship is a long way off. More significantly it would seem that manning levels have gone about as low as they can go. However, with greatly reduced manning levels aboard each ship today, one would think that employment queues would be crowded with seafarers looking for a berth, but with the current shipping boom and tighter regulations to observe, there is actually a current world-wide shortage of certified seafarers. **SM**



ABOVE: Although some ships' bridges, such as that on Hebridean Princess, still maintain a classic look, all are fitted with the latest electronic aids.



ABOVE: Modern machinery spaces, such as Fjord Norway's engine room, are regularly patrolled for safety, but main control and monitoring is done remotely.



ABOVE: A typical air-conditioned engine control room from where a ship's main engines, generators and on board systems are monitored and controlled.