

The Manning Problem

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This paper discusses the current manning situation of ships at sea today, starting with four examples of manning levels and their implications across a range of ship types. The principles of safe manning are examined, including how the numbers are determined, and some shipboard duties that are generally overlooked during this exercise are highlighted. Finally, the paper looks at the international perspectives of manning, particularly the use of English as a common language, and the strain that is caused when the officers' or crews' use of English is poor or passable when relaxed, but garbled when excited or panicked.

Four examples of the manning situation on ships today

Example 1



Figure 1 - Crossing the North Atlantic on a 288grt vessel

Recently I crossed the Atlantic, in winter, on a 200ft long 288grt vessel with a safe manning certificate that required the ship to have only the following onbaord:

- Master

- one deck officer
- two engineers
- two deck ratings
- Cook.

I wondered how the industry had arrived at this point, where the manning regulations permit this level and yet international regulations require a lookout to be on duty 24 hours a day while the hours to operate the ship must still comply with the hours of work regulations that are designed to prevent fatigue.

“Contracting Governments undertake, for each of its national ships, to maintain or, if it is necessary, to adopt, measures for the purpose of ensuring that, from the point of view of safety of life at sea, all ships shall be sufficiently and efficiently manned”

- IMO

The hours of work requirements in MSN 1767 state:

Every seafarer must be provided with not less than 10 hours rest, in total, in any 24 hour period provided that:

- The 10 hour period may be divided into not more than two periods one of which will not be less than 6 hours
- the interval between consecutive periods of rest will not exceed 14 hours
- the minimum hours of rest will not be less than 77 hours in any 7 day period.

It is obvious to any professional seafarer that two men could not possibly fulfil the obligation of keeping lookout, even if a watch system was established consisting of 6 hours on 6 off. With the need for meal breaks, fire patrols, statutory safety exercises, etc, even without taking in to consideration the various other essential duties that need to be carried out.

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The same problems will also affect the two officers in the engine room. The assumption is that the duties the officers will undertake are purely those of watch keeping. However, as well as the required duties listed for ratings, the officers have additional duties now imposed on them by ISM. This shows that current safe manning requirements do not appear to address the regulations for both watch keeping and fatigue.

In this example it was impossible to comply with the regulations requiring a safe lookout to be kept, so it could be interpreted that the safe manning allowed by the flag state contravenes the lookout regulations.

Example 2



Figure 2 – 3000 grt multi purpose ship
(Portpictures.nl DSC_1295z.jpg)

On the trading pattern to Northern Europe, the Mediterranean and Great Lakes, a 3000grt multi-purpose ship with movable bulkheads is typically manned with a safe manning certificate that requires:

- Master
- 2 deck officers
- 3 seamen
- 2 engineers
- Cook.

For mooring operations (an operation that has its fair share of accidents) the officer is there to

supervise and ensure that all the procedures are carried out correctly. If the correct procedure is carried out the ship must be secured by two men at one end and one man at the other. Obviously one man cannot possibly secure the ship, so the officer will have to join the crew, taking away his supervising capacity. Either way, the operation is endangered by the manning of the ship.

Example 3



Figure 3 – Bulk Carrier

A 150,000dwt bulk carrier on a worldwide trading pattern, manned with a Captain and a deck department of three deck officers and five seamen.

The ship is normally moored with four lines and two springs at each end. However, in high winds, this number is increased to eight lines at each end. This creates the situation where two

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seamen try to secure a 300 metre ship with eight lines. The windlass ends up being driven by the officer, who is again unable to properly supervise the mooring operation.

The correct procedure for mooring this type of vessel, particularly in difficult conditions, is that at the same time as two headlines are being made fast a spring is also passed out. On this ship the procedure is and was impossible. In this case there was the assistance from one man from the engine room, but he was not trained as a seaman and was therefore working unsupervised in a dangerous environment that he was not trained for. This is very common on this type of ship. Since the time the manning levels for this ship were established, new security regulations require the gangway to be manned. The ship has nine holds that have to be prepared for cargo and, on completing cargo, requires all the coamings to be cleaned and secured before departure. Once this has been done the ship will set sail and proceed to sea, where the men are on watches. The fatigue regulations cannot possibly be followed in this circumstance.

Example 4



Figure 4 – North Sea Standby Vessels

Standby vessels in the North Sea could claim to be over-manned, generally they are small

vessels with a normal complement of twelve crew. Due to the nature of the tasks carried out by these vessels the crews are cross trained in the secondary skills of medical and boat work and are among the best trained personnel in the Merchant Navy.

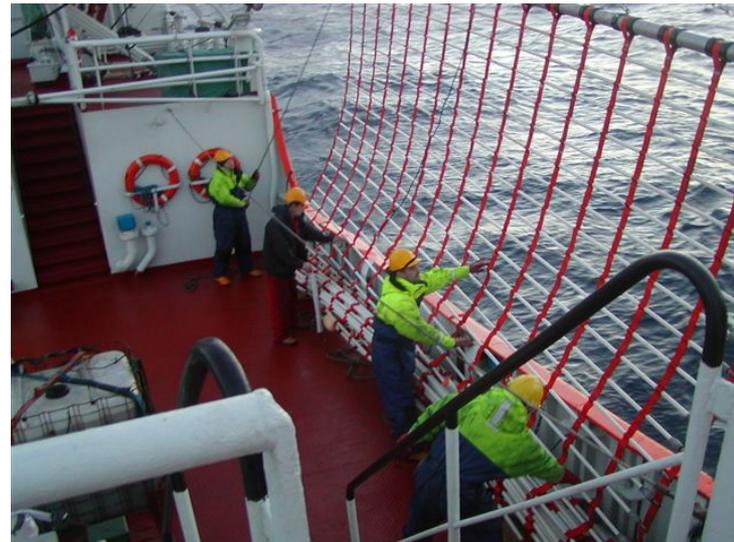


Figure 5 – Standby vessel crews are trained and drilled well

To be ready to cope with major emergencies they must be capable of manning the following:

- Two rescue boats - 6 crew
- the bridge, navigation and ship handling - Captain
- maintain communications and records -2nd Officer
- hospital - Medical Assistant plus one
- engine room – Chief Engineer
- deck operations – Chief Officer plus who?

This adds up to 12 men, even though the deck cannot be run with just the Chief Officer. In addition, they are also required to perform triage on any survivors received on deck, where necessary transport them on stretchers to the hospital, prepare the helideck for helicopter transfer and have lookouts on the bridge. This is not possible to achieve, although the safe manning certificate issued and approved claims it can be.

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The above examples show different problems occurring on different ships, none of which are unusual to those working at sea on such vessels.

How the manning scale is decided

The guidance notes issued by the MCA states the following;

The owner or operator of a UK registered ship is required to make an assessment of the numbers and grades of personnel necessary for safe operation. These should be sufficient to ensure that:

1. The required watchkeeping standards can be maintained and that personnel are able to obtain sufficient rest
2. Personnel are not required to work more hours than is safe in relation to the safety of the ship
3. The master and seamen can perform their duties in accordance with the framework of operational guidance in section A-VIII of the STCW Code
4. The master and seamen are not required to work hours or under conditions that may be harmful to their health and safety.

This is all in order as far as it goes but there is no mention of the most important consideration from the IMO resolution on the principles of safe manning, ie:

'the number of qualified and other personnel required to meet peak workload situations and conditions, with due regard to the number of hours of shipboard duties and rest periods assigned to seafarers'.

The IMO does state that their guidance notes should be considered in conjunction with these resolutions, although there may be quite a

number of owners and managers who conveniently let that slip by. Bearing in mind the importance of the statement referring to peak workloads and conditions and its influence on the present manning considerations, it is surprising that this statement is not included in the guidance notes. The MCA goes on to say:

'The responsibility to ensure that ships are safely, sufficiently and efficiently manned rests with the owners and managing operators'.

Inadequate manning affects safety, fatigue levels and watch keeping and is the catalyst for many problems at sea, yet responsibility is in the hands of the owners and operators. While many undoubtedly are responsible, there are also those who will take advantage of such a situation. If there is to be any concerted effort to address the manning problems, I cannot see that happening if the responsibility is left with the owners and operators.

Before owners and operators submit their manning proposals to the MCA, the following advice is given:

'In order to avoid possible problems at a later stage, owners and operators are recommended to consult with seafarers and the MCA on the proposed manning when a new ship is at the design stage and in advance of registering existing ships in the UK'.

This wording suggests that the recommended consultation is not for professional advice, but to avoid any union dispute over working hours and practices. If the unions are being consulted, then consultation with the Captain and officers of the ship prior to a manning certificate being issued should also be expected. The problem is that, at the time the certificate is issued, there are probably no officers yet appointed or available to consult. It is also not clear who should be consulted in the companies that do not recognise any

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seafarers' representatives. The unions are very rarely consulted except by the ferry companies, with whom they have good relations. If neither the unions nor the Captain and officers are consulted, nor is there a professional panel they can turn to for advice on the differing types of ships and trades, then the system is reliant on the MCA as follows:

'The Administration requires a company to amend a proposal for the minimum safe manning level of a ship if, after evaluation of the original proposal submitted by the company, the Administration is unable to approve the proposed composition of the ship's complement.'

The Administration should only approve a proposal for the minimum safe manning level of a ship and should issue a minimum safe manning document if it is fully satisfied that the proposed ship's complement is established in accordance with the principles, recommendations and guidelines contained in the resolution. It must be adequate in all respects for the safe operation of the ship and for the protection of the marine environment.

When a manning proposal is submitted to the MCA, it is examined by a Master Mariner and Chief Engineer. While they do all they can to ensure that manning is adequate, it is carried out on the basis of the information supplied by the owner or operator. There is no ship visit or manning inspection required and these two officials will often have no knowledge of the ship type, trade or operation it is engaged upon.

If the ship already has a manning certificate:

'Similarly, in the event of any change in the equipment, construction or use of the ship, that may affect the safe manning level, the owner or operator should make an application for the issue of a new safe manning document.'

It is possible to see the owners and operators applying for a new certificate if there is a chance that they can reduce the manning levels, but can they seriously be seen applying to raise them? Once again everything is in their hands. This is strange as the primary reason for the introduction of the ISM code was that it had become apparent that many owners and operators could not be trusted to operate their ships properly. SOLAS became the convention for safety equipment for the same reason. If it is not possible to depend on companies to properly carry out their responsibilities without outside governance, then why is the manning of ships left out of the equation?

Considerations that are often overlooked

Another discrepancy is that, while changes in equipment, construction or use of the ship are described, there is no mention of the case of a change in operational requirements.

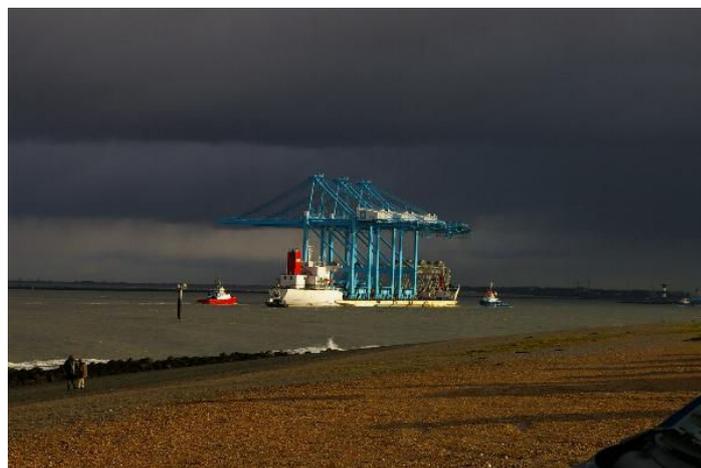


Figure 6 – Ship carrying container gantries (Portpictures.nl IMG0474.jpg)

An example is a ship that is used for transporting machinery on deck, where the charterers now require that machinery being transported must be maintained and painted while on passage. Obviously more working hours are involved, which should mean an increase in crew numbers to cope. However,

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there is no requirement to upgrade the manning as this is only an operational change. If the owners or operators are not required to upgrade the manning, the workforce and hours for this change will tend to come from one place, usually the bridge lookout requirements.



Figure 7 – Continuous gangway watch is a strain on manpower

Similarly, the new security requirements require ships to keep a gangway watch, often for 24 hours a day. On a ship with only a few deckhands this is an enormous change to the working hours as the ship, in addition to the normal work to be carried out, the ship now has to provide three men, each working 8 hours a day, just for gangway security.

It is difficult to gauge how many companies have voluntarily requested an upgrading of their manning certificate, have been required to do so by the MCA, or had their manning certificates withdrawn. However, there is provision for this:

'The Administration may withdraw the minimum safe manning document of a ship if the company fails to submit a new proposal for the ship's minimum safe manning level when changes in trading area(s), construction, machinery, equipment or operation and maintenance of the ship have taken place which affects the minimum safe manning level'.

Mr N.Ellis in his report 'Safety and perceptions of risk' (2005) said that the underlying issues affecting fatigue include:

- The extra burden of paperwork
- international burden of ship and port security
- safety concerns due to reduction in crew sizes.

Considerations for smaller vessels

Ships on international voyages (cargo ships of 500 grt or more and all passenger ships) are required to hold a safe manning document.

If there was ever a regulation or resolution driven by economics rather than safety, it is the idea that ships below 500 grt do not need a manning certificate (or that they can sail across oceans with only two officers and two ratings for bridge watch keeping). A ship under 500 grt can still be over 70 metres long and capable of 15 knots and is certainly capable of colliding with and sinking a much larger vessel but it is impossible for this type of ship to comply with the regulations for keeping a proper lookout. The regulations do not take into account any differential for a vessels gross tonnage.

The same criteria relate to coastal or middle trade vessels. These ships can be the most arduous of all as they are constantly under way, usually in the busiest traffic conditions, and when they are not under way there are short bursts of even more frantic activity in ports. Once again it can be seen that many of these ships are allowed to sail with two officers and two ratings for bridge watch keeping.

The centre for occupational and health psychology at Cardiff University conducted a thorough research programme into seafarers fatigue. 1,856 seafarers took part with two thirds of them working on UK ships from a variety of sectors. Of relevance to smaller

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ships is the following excerpt from their summary:

Mini-bulkers arguably represent the worst case scenario, in terms of an environment on a ship that is conducive to fatigue, as evidence is gathered from subjective and objective testing. The combination of negative factors on this type of ship includes:

- ***Frequent ports turn arounds***
- ***short port stays***
- ***changing cargoes***
- ***in many cases only two watch keepers***
- ***long periods of pilotage.***

The most disturbing findings in the report were:

- A high proportion of those asked reported having been in a collision with either ships or objects
- nearly half of those asked considered fatigue to be a key factor in reducing collision awareness
- one in four watch keepers, particularly those on longer watches, reported that they had fallen asleep on watch
- almost all watch keepers were required to multi-task while on watch
- those engaged in multi-tasking were more likely to fall asleep while on watch.

The most common suggestion for helping to provide more effective watch keeping was to improve the manning.

The manning levels we base our own requirements on are established in Annex C of MSN 1767, but it must be emphasised that these are guidance tables showing the appropriate manning levels.

The manning guidance for a near coastal vessel of between 500 grt and 3000 grt is the Master and one other. If the vessel is under 500 grt then for near coastal it is the same, but it does not require a manning certificate. It is

difficult to understand why unless commercial pressure allowed a differential to be suggested between near coastal and unlimited, trading small ships.

The TNO report (Houtman et al 2005) on fatigue in the shipping industry highlighted that the priority measure to reduce fatigue was to replace the two watch system with a three watch system, with the provision of an additional watch keeper.

Section 94 of the merchant shipping act states that a ship is ***'dangerously unsafe' if, having regard to the nature of the service for which it is being used or intended, the ship is,ny reason of the matters mentioned in subsection (2) below, either –***

- (a) unfit to remain at sea without serious danger to human life, or***
- (b) unfit to go on a voyage without serious danger to human life.***

Subsection 2 then declares that one of those matters is under-manning.

In a review of the international literature on seafarer's fatigue, one of the main messages is:

'Evidence shows that seafarers' shift and work patterns are often conducive to fatigue. Having only two bridge watch keepers may be a particular problem.'

In the Marine Accident Investigation Branch bridge watch keeping safety study of 2004 it was concluded that watch keeper manning levels are one of the causal factors in collisions and groundings. The report recommends that:

'In general vessels over 500grt should have a minimum of a Master and two watch keeping officers on board'

If the Master is part of the watch keeping of the ship, who is in charge or supervising the operation of the ship? The system was

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designed to be based on watch keepers and a Master who is on call at all times so that if the ship enters fog or any other problematic situation, the Master is available to double up the bridge, increasing vigilance and safety. Instead the ludicrous situation now exists where large vessels are proceeding through confined waters in restricted visibility, with just one officer on the bridge as the Master is sleeping after his watch.

International perspective and a common language?

In 1999, the IMO adopted Assembly Resolution A.890 (21), The Principles of Safe Manning. It stated:

The minimum safe manning level of a ship should be established taking into account all relevant factors, including the following:

1. Size and type of ship
2. Number, size and type of main propulsion units and auxiliaries
3. Construction and equipment of the ship
4. Method of maintenance used
5. Cargo to be carried
6. Frequency of port calls, length and nature of voyages to be undertaken
7. Trading area(s), waters and operations in which the ship is involved
8. Extent to which training activities are conducted on board
9. Applicable work hour limits and/or rest requirements.

The principles of safe manning are sensible and, if followed, should provide a robust foundation to help determine the manning level. The resolution goes on to list the functions on which the safe minimum manning levels should be based, including:

- Moor and unmoor the ship safely
- Maintain a safe navigational watch in accordance with the requirements of the STCW code

- The number of qualified and other personnel required to meet peak workload situations and conditions, with regard to the number of hours of shipboard duties and rest periods assigned to the seafarers.

To make the situation worse, in recent years there has been a considerable influx of crews and officers of other nationalities who have English as their second language.

“Paragraph 4 requires English to be used as the common language on the bridge of all SOLAS I ships unless a common working language has been established on board and between ship and shore. The working language on the bridge of UK-flagged ships will normally be English. Under Section 51 of the Merchant Shipping Act 1995, UK ships may be detained if crew members cannot understand orders given in English and there are no arrangements for giving orders in a language which they understand”

- The MCA, commenting on the SOLAS regulations

“The Company should ensure that the ship’s personnel are able to communicate effectively in the execution of their duties related to the SMS”

- MSC /Circ1014 6.7 Annex

When English is spoken slowly and clearly it can be understood by the majority of those serving on British Flag vessels. However, when UK regional accents are present difficulties increase. Normal conditions should not be the communications basis on which these are dealt with but instead the ‘peak workload situations and conditions’ referred to in the IMO resolution on safe manning should be used. The criteria of testing must be based on certain conditions. In other words, can English be understood when using portable communication devices or when wearing fire suits and masks? Can those working on deck understand English above the noise of the wind and sea?

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If these criteria are used as they should be very few standby ships in the North Sea would be allowed to sail. Taking this a step further, a considerable number of other vessels under the British Flag would also have to replace a proportion of their crew.

The reason language is included in the subject of manning is that it all adds to the workload of those on board. In some instances, rather than continuing to explain to a crew member whose English is poor how something needs to be done, it is easier to either use one of the remaining English speaking crew or to not have the job done.

“It is important that management recognises potential problems stemming from the employment of multi-national crews on the same vessels, a practice that might lead to language barriers and social, cultural and religious isolation all of which may lead to safety problems”

- MSC Annex/Circ1014 6.7 Section 4.3.1

Any Captain or officer with experience of multi-national crewing will categorically state that it does affect the safety of many tasks being undertaken. As a result, the safety of the ship is affected, particularly at the present time when severe shortages of crew ensure that the ability to communicate efficiently in English often takes second place to sailing the ship.

Closing

It is impossible to separate fatigue from under-manning as general fatigue on a ship is directly caused by the manning problems. Regardless of the size of ship or flag, the under manning problem is universal in its effect. There is overwhelming evidence that fatigue is the cause of many accidents at sea and in port, in addition to the general reduction in safety and additional accidents caused by under manning.

If this problem is coupled with the increasing diversity of crew and language difficulties, together with the poor basic training that both the officers and crew are now receiving under STCW'95, it is understandable that many seamen are deeply concerned about the situation on their ships. As skilled professionals walk down the gangways at the end of their careers the same skills are not coming back up.

There is a tendency for those at sea to blame the MCA for some of these problems. However, while the MCA certainly know the problems, manning is by international agreement. If our government has agreed to an international manning system it is the MCA's function to enforce that, not to arbitrarily decide what changes to make. They certainly could make recommendations that changes should or could be made on British Flag vessels, but here they walk a fine line. If too many additional requirements are imposed on British Flag vessels two problems are caused. One is that some owners will change the flag of their ships, particularly when there is already a worldwide crew shortage. The second is that an additional burden is placed on those that remain that their competitors do not have to meet.

There is a duty to make our own opinions clear about the situation and to urge our government to make the required changes within international shipping organisations in support of the problems of fatigue that plague so many ships today.

With the above in mind it is clear that the two watch system is not conducive to safety at sea, regardless of the size of ship and certainly not on ships with heavy trading patterns.

The rules that allow ships to be manned by the wishes of the operators and owners should also be ended, even though this means the

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good owners and operators will be penalised by the behaviour of the bad. Manning certificates should be required for all commercial ships regardless of their gross tonnage and these must be issued by a government authority after a physical inspection of the ship and discussion with professional officers who have experience of these types of ships and their trades.

For adequate watch keeping and compliance with lookout regulations, three watch keeping officers and three ratings should be recognised as the minimum bridge watch keeping requirement, regardless of the size of ship. Again, the difficulties of establishing this regime must be recognised. In the EU zone alone there is a requirement for at least 3000 extra seamen at a time when there are already shortages. There is also the problem that a ship may have insufficient accommodation for such additions. But these difficulties should not prevent a policy being established or the EU working towards an international agreement that ensures all future manning certificates reflect these watch keeping obligations. For existing ships that, for reasons of the lack of available crew or a shortage of accommodation, exemptions could be granted with clauses included on hours of work and hiring of extra labour in ports to ease the problems.

If the regulations on hours of work were adhered to it would considerably assist the fatigue problem and the ports have a responsibility to assist the ship in this compliance. There must be resolutions made for the ports to either set aside berths for ships to rest before proceeding to sea, or allow them to remain at their existing berths for the required rest hours.

While there is an established guideline for officer manning there is not one for ratings, which should be decided on the basis of a

minimum of three ratings for lookout requirements. There is already insufficient regard for the IMO recommendations establishing the manning on board and it is a guideline that has been ignored for too long. There is now a need to establish a systematic review of all manning certificates issued to our flag vessels to determine if they meet the guideline. The opinions of those working onboard the vessels would be a valuable start for such an evaluation. As an example, a national requirement could be that officers must "only" be in a supervisory capacity during mooring operations. Too many mooring accidents occur because the officer in order to alleviate the manning situation on board a ship is working alongside the crew, and so cannot properly oversee what is a potentially dangerous operation.

It is a strange anomaly to consider that the owners and operators were not trusted to manage their ships without a regulatory framework so the ISM was established in the name of safety, yet manning was not included. This has proven to be a major contributor to accidents at sea.

Changes can only be made if it is accepted that there is a problem that in the interests of safety must be overcome. The combination of lower training standards, poor manning and language problems means that many ships and the crew on them are facing what can only be described as a crisis. It is our duty to do what we can to ensure that those at sea, particularly those now inheriting our positions, have the support to operate their ships in a safe manner. Political and economic compromises must be made and actions taken to rectify the root causes.

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