

HUMAN FACTORS AND SAFETY AT SEA
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Good afternoon Chairman, ladies and gentlemen. This two-day event has focused upon ships, technology, management and safety related issues; it is perhaps appropriate that this final session, deals with human factors.

For those of you, few I suspect, that do not know of NUMAST, we are the trade union representing over 19,000 shipmasters, officers, cadets and other marine professionals. While we can trace our origins back to 1857, we are very much an organisation for today. We describe ourselves as a 'trade union and professional organisation', looked to by other maritime unions throughout the world to take a lead on safety-related issues.

The terminology 'human factors' or 'human element' in shipping draws attention, and in some cases gives recognition, to important issues affecting seafarers, but rarely if ever are they properly addressed. It is unbelievable that human factors, so long identified as significant in the majority of marine incidents, is not the focus of attention from which all improvements to safety should flow.

Shipping is a high asset value industry. Failure of either a technological or a human kind, causing a single marine incident, has the potential to cause damage to property, loss of life and pollution of the environment on a scale that is unlikely to be equalled in any other sector of industry and almost certainly in no other mode of transport.

The image of what should be a very presentable industry is so often tarnished by incidents that are entirely preventable if there were sufficient attention to the quality of the human element. Naturally, incidents involving loss of life to the travelling public are reported in the press and media. Incidents or potential incidents involving pollution or even just the mere risk of pollution attract considerable media coverage. Incidents involving the loss of seafarers with the absence of pollution rarely warrant mention outside the specialist nautical press.

International shipping suffers from unfair and destructive levels of excessive competition even in times of record freight rates. Inadequate and complex systems of ownership, registration, management, operation, crewing, finance and classification of ships are exploited by unscrupulous owners. Lack of accountability enables those responsible for sub-standard shipping operations to gain unfair advantages over those committed to quality operations. Rarely do these inadequacies come to public attention, other than when faced with an incident causing severe environmental damage.

I prefer to use the term 'incident' rather than 'accident' since 'accidents', 'true accidents' that is, are rare, whereas 'incidents' are all too common. By using the term 'incident' I believe this

directs attention to the preventable aspects of the event. Invariably it is a sequence of adverse events that combine to bring about a serious incident. The magnitude of an incident is dependent upon the type of vessel and the cargo carried. Human intervention or the lack of it may be a crucial factor. Ship design and/or operation are likely to be critical in either minimizing the risk of human failure or the effectiveness of human intervention.

The role of the human element in the management, command and operation within the shipping industry continues to be subject of discussion in national and international fora. The International Maritime Organization (IMO) has considered the human element as an important function in its efforts to provide a 'safer and cleaner regulatory regime' for international shipping. Despite the introduction of the Convention on the Standard of Training, Certification and Watchkeeping 1978, as amended 1995 (STCW95) and the International Safety Management (ISM) Code, policed either through Flag State Implementation (FSI) or Port State Control (PSC), sub-standard shipping continues to blight the industry.

There also continues to be considerable debate concerning present and future manpower shortages. There is no doubt that there is a shortage of qualified and competent seafarers: note carefully I said 'qualified and competent'. In all but a few limited sectors of the industry protected either by national regulation or sensitive to media and public opinion there has, and continues to be, an obsession with obtaining the cheapest, as opposed to the most skilled, workforce. High risk, high value, highly complex assets require quality officers.

The BIMCO/ISF 2000 Manpower Update Report, published in April 2000, is probably the most comprehensive study of the global supply and demand for merchant seafarers to date. It made sobering reading with an estimated shortfall of 16,000 officers or 4 % of the workforce. The projections for officers for the year 2010, dependent upon growth, manning scales, wastage and increased training show, after sensitivity analysis, either an excess around 11% or a deficit of 24%. It expected that a further update would be provided in 2005.

The one thing that you will not be told is that of the 'relative quality' of the seafarers. I suggest that shortages in maritime manpower will not materialize; they will be masked by reduced quality. The quality of masters, certificated and non-officers indeed all seafarers, I suggest, is an important human factor issue.

Human factor issues are complex and should not be confined to analysis of seafarers alone. All those involved in ship procurement, design and operation, need to work together for an optimum solution. Financial considerations play an important role in the influence of the relevant players. With profit as the overwhelming goal, it is difficult to see how in a highly complex international industry with strong competitive forces that safety will never be compromised.

Marine incidents are usually the cause of humans, either by their actions, inactions or inadequacy of those actions. Actions or inactions are determined by a number of factors. While the quality of the individual is a key factor, the quality of the design of the vessel, the quality of the construction of the vessel, the quality of the equipment and the quality of operation are equally important. I suggest that these quality factors contribute to human actions in given situations that influence the eventual outcome.

Frequently it is stated that 80% of marine accidents are attributable to direct human error. However, in case of collision and grounding this is somewhat closer to 95%. I am always suspicious of round figures; one recent report suggested 69% were directly attributable to seafarer error. While it is relatively easy to determine human failings that are directly attributed to those on board, those that are a consequence of a failure of a management regime, or inadequate design and construction are much more difficult to distinguish.

If regulators are included, it could be argued that almost 100% of marine casualties are as a consequence of human failings. While natural disasters could be considered outside human control, adverse weather conditions should never be used as an excuse for the loss of a vessel, including 'abnormal waves'. Human factor issues are therefore complex and need to be carefully analysed, but more importantly, recognized if there are to be any significant improvements in safety at sea.

Humans are involved throughout the life stages of a vessel from procurement to disposal; similarly, throughout the intermediate stages of design, construction, operation and maintenance. This may be an individual, such as a key office holder, or a group of persons. The role and influence of key individuals and/or groups differs widely throughout the industry. The quality of such individuals and groups influences the quality of the decisions and in turn the construction and operation of a vessel. 'Quality factors', like 'human factors', are concepts that are frequently talked about but rarely if ever adequately addressed.

While the role of each 'player' and the relationship between all the players are worthy of examination I will focus initially upon three key players, namely, *owners*, *shipbuilders* and *classification societies*.

Owners - Those responsible for procurement and ultimate disposal of a vessel are rarely the same entity. Lapse of time or as is more frequently the case the ship passes through a number of owners en-route to the scrap yard, or to be more politically correct the recycling plant.

Owners today are more likely, not always, to be some unidentifiably investment entity with little interest in shipping other than seeking the best possible return on capital employed in an allocated span of time. Naturally the competitive nature of shipping in what is arguably a relatively unregulated and unpoliced environment places considerable pressures upon quality shipowners.

The growth of ship managers over two decades has resulted in the divorce of management from ownership. The loss of direct owner involvement permits the masking of blame and responsibility. For example oil majors have chartered in tonnage of questionably quality. Despite widely publicised regimes to ensure the quality of chartered tonnage the practice of using sub-standard shipping continues. However, there is encouraging news that some companies are taking back in-house the ownership and operation of shipping. BP is an example.

Some owners wishing to reduce costs seek out ship managers offering the most competitive package of services. Competition can be constructive or destructive. Ship management

companies can bring about economy of scale and the transfer of good practice. However, competitive forces have adverse effects, including the lack of continuity in the management of a vessel both ashore and at sea that offset any advantages.

Not only has the 'quality' of seafarers been affected but also the 'quantity'. Manning levels on many ships are so low that normal operations are barely achievable, let alone the ability to effectively deal with emergencies. A further consequence of reduced manning levels is fatigue. This is particularly so on coastal vessels operating a two-watch system.

Shipbuilders - Over capacity and fierce competition, together with competitive market forces, has seen a shift from traditional shipbuilding nations to new yards in the Far East, except for some limited specialist and passenger vessel capacity. Some types of vessel have been reduced to little more than functional floating boxes with a very limited life span. It would not be so bad if the prime function was satisfied and they remained afloat.

Bulk carriers have seen scantlings reduced and thousands of tons of steel cut out. This has resulted in boxes that sink- not float. Vessels need to be built to fulfil the prime requirement of carrying passenger and/or cargo to their destination safely.

As I speak there are those who seek to overturn long awaited corrective action with respect to improvements in bulk carrier safety by spurious argument and abuse of FSA methodology. I refer to the attempts by Greece at the forthcoming meeting of the Maritime Safety Committee of the IMO (MSC78) to overturn decisions taken at MSC76. The UK is putting up a robust defence of the planned improvements with respect to new bulk carriers.

Classification Societies - They have taken on additional roles as flag states have delegated or abrogated responsibility, depending on your viewpoint, for work previously undertaken by regulatory authorities. The competitive nature of the industry has seen classification societies competing for business in a cutthroat environment. Public opinion and adverse media coverage have instigated change. The increased awareness and concern for the environment have been and continues to be a key factor in bringing about change.

These three players exist in an environment determined to a large extent by the regulatory authorities.

Regulatory Authorities - The influence of environmental groups and their arguments has not been lost on politicians. The puppets and puppeteers, politicians and civil servants are very sensitive to accusations of not caring for the environment, more so than the loss of human life, especially seafarers. In the natural order of things it appears to be: seabirds, marine life, passengers then seafarers.

Regulators invariably respond to serious incidents and post incident action is common. The independence of flag states and the lack of authority by the IMO invariably bring about solutions that have the widest acceptance but are rarely the optimum or adequate.

An example is the introduction of twin hull tankers; in the United States with OPA90 and then post ERIKA/PRESTIGE at the IMO. The IMO was prompted to act as a consequence of EU threatened action that would bring about greater regionalization diminishing the role of the IMO. Reports of cracking in aging twin hull tankers do not comfort one

FSA methodology, that I referred to earlier, is a means adopted by regulators for optimising solutions to preventable risks. However, this is merely one tool, however useful, and is not a panacea. It has its limitations and alternatives such as model testing may provide a more cost effective and expeditious way of producing safer ships. FSA is usually confined to post-incident solutions, often used as a tactic to delay known improvement measures or abused by incorrect application.

National regulatory authorities are of varying quality. From the long established and well resourced to the recent under-resourced 'brass plate' entrants. Some of the long established are equally under-resourced. What are particularly repugnant are the 'brass plate' registries that seek to provide havens for those that seek to profit from human misery by circumventing accepted internationally agreed standards.

The incestuous relationship between owner – classification society – shipbuilder with the tacit acceptance of the regulatory authorities is, I suggest, a human factor failure. By default a system exists that provides for and encourages human failings that at best provides little help and at worst causes countless misery to untold seafarers. A more perfect system could not have been so devised if had been meticulously planned.

While these players are indeed significant, the ones that often have the most to lose are the seafarers – sometimes with their lives.

Seafarers - They are locked into a system that is very dependent upon them. A ship should be built and operated to adequate standards so as to engender confidence and solicit support from them that achieves both a high level of operational efficiency and a high degree of effectiveness with respect to safety.

This is the one important quality factor throughout the life of a ship, arguably the most important. Seafarers range from the highly professional and skilled to those whose training and qualifications are of dubious nature.

The competitive nature of shipping and the growth of ship management agencies have resulted in cost cutting measures with the casualisation of the established workforce. While one would never condone unprofessional behaviour, human nature as it is, this approach is likely to induce less than behaviour.

Short-term contracts not only result in lack of commitment by a transient workforce, but a workforce that lacks adequate training, familiarisation and experience. Often too much reliance is placed on a few highly skilled individuals in senior positions. Safety requires experience in depth, not only for an individual but from all individuals that form part of ships' crew.

There is a need to adopt a humane approach to what is a very human issue. Concentration on satisfying narrow rules of ship construction and operational training is not enough. The ISM Code, while useful, fails to address the issues relating to human factors. The work of the International Labour Organisation (ILO) addresses some of these issues. However, the division of responsibilities does not necessarily serve the seafarer or the responsible operator.

Examining specific issues, for example, One Man Bridge Operation at Night (OMBON). Despite the decision of the 69th Session of the Maritime Safety Committee of the IMO (MSC69) in May 1998 not to resume the so-called trials, in which the officer in charge of the navigational watch acts as sole lookout in periods of darkness, some countries continue to operate ships in this way. A number of prosecutions following a series of groundings in the United Kingdom have exposed this unsafe practice amongst coastal vessels registered with a number of flag states.

Inadequate manning levels are not confined to coastal vessels. The collision between the NORWEGIAN DREAM and the EVER DECENT on 24 August 1999 showed that a major cruise operator was willing to operate a large cruise liner with just one officer, without a master's certificate and just one rating on the bridge in one of the busiest traffic areas in the world. Company budget holders seek to minimize the manpower costs regardless of the critical nature of the operation. But at what potential cost in human life and environmental damage?

Some responsible operators - yes there are some – seek to protect their corporate name by ensuring a quality operation. This requires not only quality but also quantity, in order to prevent fatigue. However, much is spent on training and regardless of the quality it will be worthless if the person is so tired that performance is impaired. The introduction of the International Ship and Port Facility Security (ISPS) Code will involve additional work for an already over-burdened workforce.

Occupational health and safety is somewhat of a Cinderella in international shipping. A great deal needs to be done to reduce accidents to individuals. Issues of personnel health also need to be addressed.

It only takes one serious incident with either significant loss of life or environmental damage to ruin corporate identity. The benefit of a highly trained and motivated workforce cannot be overstated. I suggest such a crew is better able to deal with difficult situations when they arise and so prevent or mitigate incidents.

A great deal of what I have said today is known. Human factors issues need to be examined in the round and not confined solely to seafarers. However, seafarers are the starting point. Issues that affect them need to be addressed. Seafarers are human, contrary to some reports, and many are well qualified and competent but they need to be treated as such. Above all listen and respond to their concerns. Be this in respect to the ships they sail on, the equipment they have to work with or the training they have to undertake and especially the conditions they have to work under. Then we would truly be addressing human factor issues.

