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Alert!

Effective communication
The key to successful operations

The ability to properly convey information by word of mouth and/or by written communication is important not only to the safety of ships' crews, visitors and passengers, but also to the wellbeing of crews.

It would seem that the standard of English of some seafarers is so bad that they have difficulty communicating not only between themselves but also with agencies outside the ship.

The aim of the IMO Standard Marine Communication Phrases (SMCP) is to get round the problem of language barriers at sea and avoid those misunderstandings which can cause accidents. But, is it used at sea?

The key to improved verbal communication is in the recruitment of seafarers who have an understanding of the English language; in education in the art of effective communication and in the correct use of the English language in the maritime environment; and in a programme of regular testing in their knowledge of the English language.

Today there seems to be more paperwork than ever, in the form of e-mails, questionnaires, procedures and checklists. How many of us have stopped to consider whether the e-mail that we have just sent to about 50 addressees was actually relevant to all of them?

Perhaps the questionnaires and checklists are necessary, but do we need so many? Checklists are not foolproof; if properly used, they can be of considerable assistance as an aide-memoir for ensuring that nothing has been forgotten when carrying out, for example, a safety critical procedure. But, they can lead to a 'tick in the box' culture that, in turn, can breed complacency.

Modern communications are supposed to make life easier for all. Some ship's bridges serve as the communications hub, where can be found not only the communications fit in accordance with SOLAS, but also fax machines, desktop computers, and mobile telephones. All these systems of course make communication easier, but they can also have an effect on the safe operation of the ship. How many ship operators have thought to ensure that restrictions are placed on the use of mobile telephones and desktop computers on the bridge?

But, Communication is not just about talking, reading, writing, procedures etc. It is about exchanging ideas, information and knowledge between individuals, and between crew and management ashore. It is about the provision of telephone communications and email and internet facilities to enable crew to keep in touch with their families.

It is about the dissemination of information through professional journals, company newsletters and noticeboard bulletins to inform the crew of important issues that have an effect on their professional life, health, safety and welfare. It is about recognising, interpreting and correctly reacting to people, incidences or situations that are open to misunderstanding due to cultural differences. It is about empowerment, inclusion, leadership and teamwork.

Effective communication therefore, **is** the key to the successful operation of any ship.

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We seek to represent the views of all sectors of the maritime industry – contributions for the Bulletin, letters to the editor and articles and papers for the website database are always welcome.

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The quality of shipboard documentation

John Kenny, Worldwide Marine Technology Ltd

Whilst many equipment manufacturers do a great job of providing operating and maintenance manuals, a large percentage are still getting away with substandard documentation.

What are the most common deficiencies with vendor documentation? In our experience they fall into the following categories:

- Poorly written in the first place – authored by people familiar with the detailed production of the equipment, but who lack the skills and knowledge of an experienced technical author, or the relevant marine engineering practice.

- Use of generic content – from the vendor's point of view, all the relevant information is contained within and they will have met their obligation. For the end user it can be difficult to work out which bits of the documentation apply to the equipment actually fitted to the vessel.

- Failure to relate to needs of the end user – there is a need to stand in the shoes of the user to see what it is that they will be seeking to get out of the documentation and how to explain it in the simplest terms.

- Poorly published documents – in clarity of layout, order, use of illustrations, and final printing and assembly.

- Poor translation – some text can be pure nonsense because of a heavy reliance on computer translation.

However, costs to the yard or owner can also impact on the quality of the manuals. For example: many yards or owners do not view documentation as having any associated cost. The number of model variants and configurations required by the customer means that there must be allowance for the extra documentation costs if the details are to be specific to the equipment fitted.

When forced to find ways to cut costs, time allocated to producing the documentation will be slashed, as it is the easiest and sometimes only option. Furthermore, a good, marine technical translation service can cost a lot of money and can exceed the cost of putting the original documentation together!

Unless ALL the concerned parties truly appreciate the issues involved in putting good manuals together and then accept the real costs associated with the process, then the overall quality of equipment documentation in the industry will not improve.

Many shipowners now realise that a procedure-based set of ship system operating manuals produced by a specialist company and kept updated are a valuable asset over the lifetime of a vessel. As well as providing essential familiarisation and guidance for the safe operation of a ship's equipment and systems, these types of manuals are very effective tools in assisting communications on a multi-national crewed vessel.

Culture and communication
or the loneliness of a modern ship's master

Captain Fraser Betts, Training Director, Wallem Maritime Training Centre, Qingdao

Chinese culture has developed over many thousands of years but more recently has been mainly influenced by large state run organisations operating within a strongly socialist society. Communication was discouraged unless strictly censored and communication with the outside world was rare. Even in the maritime world, all communication was vetted by a third party.

Today, maritime communication needs have changed as China has leapt into international business; however the internal culture has been slow to adapt and change to meet those needs.

Masters are now expected to communicate with a myriad of organisations from the Company to charterers all the while looking over their shoulders at their 'employer', the crewing agency who still retains an inexorable hold over them. This conflict sometimes brings strange results. The master is confused about his position in the overall scheme of things and can sometimes overreact. This can lead to strange communications to one or other of those organizations. In some extreme cases the master may feel he is being railroaded into making difficult commercial decisions and reacts by sending messages designed to shock or offend as the only defence he knows.

These may be extreme cases but they indicate the mental anguish some people feel when communicating with people from different (business) cultures. The reasons for these reactions may be rooted elsewhere but the resulting frustration sometimes comes through in the many, and varied, messages a master has to send. It is now his only release mechanism or safety valve as he personally feels more and more isolated and takes to the keyboard to express his feelings.

Ultimately the solution is to improve understanding of English both spoken and written.

The situation will be different in the coming years as considerable efforts are put into improving skills not only in English but other important areas of Chinese seafarer training. Effective management, an improved safety culture and commercial awareness together will lead to better communication.

The IMO Standard Marine Communication Phrases - a communicative Survival Kit

Professor Peter Trenkner
Principal author
IMO SMCP

Investigations into the human factor regarding disasters at sea, which focused on communication behaviour, revealed that one third of accidents happen primarily due to insufficient command of Maritime English.

In VTS (Vessel Traffic Service) controlled areas, for instance, communicatively relevant factors contribute up to 40% of collisions involving the human element; most of them caused by failures in radio communication even in routine conversations, but some also through face-to-face communication deficiencies.

Port State Control inspectors often encounter problems in getting elementary information from ships' officers due to their substandard English. Pilots frequently voice their concern in this respect too

and multi-ethnic officer staffs occasionally fail to communicate effectively when managing panicking crowds on board distressed vessels, etc.

More than 86% of all SOLAS vessels are presently crewed with multilingual personnel who, for diverse reasons, are frequently unable to render the Maritime English skills required, risking and even causing damage to lives, property and the environment.

This eventually made IMO re-consider how to minimize Maritime English communication problems. In 2001, IMO adopted the Standard Marine Communication Phrases (SMCP) and via STCW95 they became a mandatory part of the education of officers at all white-listed training institutions.

The phrases provide a sort of Survival Kit; they include all essential safety-related communicative events where spoken English is required. Being trained in the

use of the SMCP, officers will definitely encounter less communication difficulties managing safety-related situations, performing navigational duties, and organising or supervising cargo operations.

The SMCP have been available since 2001. It is therefore understandable that only those generations of officers having graduated after 2001 are familiar with them, and they do not represent the majority of active officers yet.

However, IMO strongly recommends using the SMCP in preference to other wordings; in this way combined with an efficient system of instruction they will become an efficient safety language. At the annual International Maritime English Conferences, for instance, a frequent topic of discussion is the methodology of designing tasks for teaching the phrases in real-life situational contexts. This assists teachers how to draw maximum profit from the SMCP to the benefit of future officers.

Whose culture? The impact of language and culture on safety and compliance at sea

Catherine Logie
Manager
Marlins

Successful teamwork depends on good communication: misunderstandings are often attributed to difficulties communicating in a common language. However, culture is also a contributing factor and has a significant impact on compliance, safety and performance.

Problems with language competence may stem from the status of English in seafarers' home countries and the education systems. Some widespread issues in the provision of Maritime English training at academies include the lack of:

- time allocated to Maritime English

- up-to-date resources integrating Maritime English content with the Communicative Approach to language learning

- time to develop practical skills of listening and speaking (with priority given to learning terminology)

- exam systems evaluating spoken competence

- a standardised qualification for Maritime English trainers

- opportunities for Maritime English trainers to update their knowledge of both subject content and methodology

Seafarers may therefore graduate with an excellent (passive) knowledge of Maritime English but without the practical (active) ability to use the language confidently and fluently in routine and emergency situations.

These issues are being tackled directly by IMO, supported by the International Maritime Training Trust, through the delivery of IMO's Maritime Instructor Training Course (MEITC) internationally, a two-week course to upgrade the knowledge and teaching practice of Maritime English trainers.

Employers have also come to recognise the need to conduct English language assessment, including spoken English testing at the recruitment stage.

By implementing English language testing policies which set out competence levels by rank, companies can set their own standards for global recruitment and training. Where language skills are lacking, assessment enables employers to identify where further language training

is required.

The choice of English language training is critical: as the majority of seafarers now work in mixed nationality crews, effective English language training should focus on developing spoken fluency; understanding English spoken with a range of international accents; and the impact of culture on communication.

Specialist training in cultural awareness is also available separately and helps raise awareness of how and why cultures differ.

National cultures have been defined in five dimensions: when you apply this model to a typical mixed nationality crew, the root causes of misunderstandings become clear. By extending the model to corporate cultures with their emphasis on safety and compliance, we can anticipate when and why deficiencies may occur on board.

The aim of cultural training is to develop strategies for predicting, understanding and resolving miscommunications. As the world continues to shrink in the search for both sea and shore staff, language and communication skills training are essential tools to support effective teamwork and a culture of safety.

The alphabet of effective communication

Alarm System Management

Alarms can be distracting, can cause confusion and be ignored by those who are not aware of their sources and implications. Careful design and management of alarm systems is required.
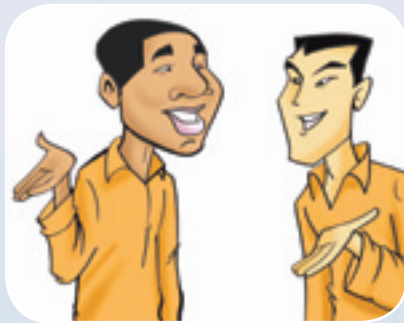
Breakdowns in communication

Can be due to faulty, incomplete, or imprecise information or data, or through failing to interpret a message because of language, social or cultural differences.

Cultural understanding

Recognise, interpret and correctly react to people, incidences or situations that are open to misunderstanding due to cultural differences.

Display

A device or feature designed to provide status, position, or condition information to the operator through visual or auditory feedback.

Effective communication

The successful transmission of information through a common system of symbols, signs, behaviour, speech, writing, or signals, by physical, mechanical or electronic means.

Feedback

Exchanges of ideas, information and knowledge between crew and management ashore.

Gossip, grapevine

An unofficial means of communication, which is normally founded on speculation and rumour; indicates a lack of effective communication.

Handbooks and operating instructions

Ensure that documents that explain how to use, maintain and operate the ship and its equipment are written in the native language of the reader, are not technically complicated, and are easy to understand.

Illustrations

Use imagery, photos, drawings and cartoons to inform and illustrate, in order to reach out to non-native English speakers - 'a picture is worth a thousand words'.

Journals, Newsletters and Bulletins

Professional journals, company newsletters and noticeboard bulletins inform the crew of important issues that have an effect on their professional life, health, safety and welfare.

Keeping in touch

Telephone communications, and email and internet facilities enable crew to keep in touch with their families.

Language barriers

Some seafarers may be unwilling to admit their difficulty in understanding and communicating because the commonly used language onboard is not their native language.

Management seminars

A means of bringing together seafarers from different ships and shore management, to exchange ideas, information and knowledge.

Noticeboards

For the display of important information to the crew, such as watch and station bills, safety notices, company bulletins, social events etc..

Orders, instructions & procedures

The 'what to do' and 'how to do it' of safe ship operations. All should be clearly defined, easy to understand and in a working language or languages understood by the ship's personnel.

Paperwork

An abundance of correspondence (both paper and electronic), statistical reports,

and questionnaires and checklists can sidetrack the seafarer (especially the master or the chief engineer) from his primary purpose of working the ship, if it is not carefully controlled.

Questionnaires & checklists

Usability and quality assurance questions that require a 'yes' or 'no' answer. Checklists, if properly used, can be of assistance to ensure that nothing has been forgotten when carrying out a procedure. Can lead to a 'tick in the box' culture that in turn can breed complacency.

Rule of the Road

The International Regulations for Preventing Collisions at Sea. A form of silent communication requiring vessels to take positive action to avoid the risk of collision, by standing on, altering course or adjusting speed, backed up by sound and light signals. Otherwise known as the Collision Regulations or Colregs.

SMCP

Standard Marine Communication Phrases. A comprehensive standardized safety language, covering all major safety-related verbal communication, including phrases to cover the more important safety-related fields of verbal shore-to-ship, ship-to-shore, ship-to-ship and on-board communications.

Telephony

Active management policies should be put in place to ensure telephones (especially mobile telephones) are not used to call the master or crew at inappropriate times, eg when navigating in busy or confined waters or when resting and in a substantially different time zone from that of the caller.

User feedback

Seeking the input of those who live and work aboard ship in order to improve the design of the ship and its systems, in terms of its habitability, maintainability, workability, controllability, manoeuvrability and survivability.

Visual signals

The use of flags, signs, symbols, hand signals and gestures to inform, direct and communicate especially to those who have difficulty in understanding and communicating because the commonly used language onboard is not their native language.

Working language

English shall be used on the bridge as the working language for bridge-to-bridge and bridge-to-shore safety communications as well as for communications on board between the pilot and bridge watchkeeping personnel unless those directly involved in the communications speak a common language other than English.

Effective communication at sea

Valerie Short
Marine Director
AustralAsian Maritime Education Services Ltd

For communication to be 'effective', the adjective indicates whether the meaning of the spoken or written word has caused the expected reaction, result or effect.

In the seagoing context, and where English is a first language, there should be no difficulty; however, where English is a 'Foreign' or 'Second' language, the subtle adjective, 'effective' may be understood as meaning 'strong' or 'emphatic', not that it means 'complete understanding'.

For example, in face-to-face on board communication, when instructions are given to a non-English speaking crew member, the response may be an agreeable facial expression, or nod indicating understanding, even a polite "yes sir". However, should the instructions not be carried out properly, 'effective' communication is unlikely to have taken place.

Existing international regulatory codes should ensure that, at sea, communication in English is not a problem; STCW 95 contains guidelines for watchkeepers stipulating that standards of English are 'adequate' to use charts and other nautical publications; understand meteorological information and messages etc. and to perform the officer's duties also with a multi-lingual crew. The ISM Code also requires that crew should work within a common language environment.

Yet the STCW Code does not provide indications of English proficiency levels to be achieved, despite the existence of an excellent oral examination modelled on the internationally recognised IELTS (International English Language Testing System), and adapted for examining seafarers – a system which appears to be unknown to maritime examining authorities.

Teachers of Maritime English would benefit from using IELTS as a training tool. It would upgrade oral English communication training generally, and would go a long way to establishing a common working language on today's multi-lingual crewed vessels.

It is appropriate that the STCW 95 Code is to be thoroughly reviewed. Those sections concerning Maritime English proficiency must be given a full airing. Many of us involved in this training would be happy to assist with rewriting this important section.

However, since the 1995 version was unable to ensure English communication at sea is 'effective', an improved version may also have little effect, especially if training emphasises technical and practical subjects, leaving insufficient time or resources for English communication training. Also, unless examinations for oral and written proficiencies in English are standardised and monitored, improvement is unlikely.

In the same way that competency certification for watchkeepers has been agreed internationally, so also should English training and examinations, ensuring communication proficiency is achieved. Certificates of English proficiency should also be recorded in the Seaman's Record book similar to the Certificates of Competency for watchkeepers.

Time would be needed for international agreement, to train teaching staff, introduce new examination procedures, and provide monitoring processes to prevent fraudulent certification.

Yet unless new procedures are implemented, 'effective' communication is unlikely to occur at sea while miscommunication will continue to put lives and ships at risk

A Nautical Briefing by Valerie Short, titled Maritime English - valuing a common language can be downloaded from: www.he-alert.org/documents/published/he00620.pdf

How to get signage right

Thomas Koester, FORCE Technology, Denmark

Signs are used to communicate important messages to passengers and crew – e.g. escape routes, mustering stations, warnings against hazards and location and use of safety equipment.

It is therefore very important that signage should be perceivable, understandable, distinguishable and unambiguous:

Perceivable: The sign should be of a size and at a location where it is visible without any obstructions. Signs hanging from the ceiling can cover each other when seen from different angels. The colour will often follow standards (e.g. green for escape routes and yellow for warnings and dangers). The surrounding colours are at least as important as the colour of the sign. It can be difficult perceiving a green sign on a green bulkhead!

Understandable: Signs often show symbols which are standard for the industry. Some symbols are universally understandable, while others such as that for 'mustering station' are more difficult to understand intuitively. It is therefore important to inform and train crew and passengers making sure that they understand symbols of vital importance. Passengers can be trained through safety videos and brochures.

Distinguishable: Different objects having the same name appear to be associated e.g. 'mustering station A is located on deck A' or 'staircase A will take you to mustering station A'. Use different denominations such as numbers, colours, names etc. to avoid this type of confusion.

Unambiguous: The classical example of ambiguous signage is the 'emergency exit' sign together with the 'no entrance' sign on the same door. It is difficult for some people to act against the authority of the 'no entrance sign' – even in an emergency situation. Another example is the escape route symbol pointing both left and right. Some people will have problems deciding which route to take. The solution could be electronic signs showing only 'emergency exit' on the door and only one safe and unblocked escape direction.

Captain Jarek Augustyniak

I am the 34-year old master of an Isle of Man registered 22000 cbm gas carrier which is managed by Dorchester Atlantic Marine; I have been with the company for 10 years, having joined as a Deck Assistant in 1997. I was promoted to master in 2006. My last crew comprised of 8 Polish officers and 9 Filipino ratings, although we also employ some Latvian officers, and the company is also starting to take Filipino Cadets.

The working language onboard is English. The Polish officers and the Filipino crew speak quite good English and have no difficulty in communicating with one another. Our standard of English is checked by the crewing agency before we join the company. For the officers, this is done in our crewing agency, Baltic Marine, which is a part of Dorchester Atlantic Marine, but based in Gdynia. The test consists of a simple program of questions and answers lasting about 30 to 60 minutes; after that, the training manager will give us the results, which are also checked and approved by the personnel director.

The ISM Code is important for the working of the vessel. There may be times when it is difficult to implement, and of course, there is more paperwork, more procedures and checklists; but, I think that if this leads to better safety, then it can only be good. If the Chief Mate, for example, has to go through five or six checklists at the start of the working day, then so be it; checklists are important for our safety, for everyone onboard and should be done in a proper way.

How do I check that he is doing it correctly? The only answer that I can give is that onboard ship we work as a team and we have to trust one another. I trust my Chief Mate and I trust all my people. The Company has a 'no blame' culture; it is a culture that is built on trust and it means that if there is any accident,

> *If the Chief Mate, for example, has to go through five or six checklists at the start of the working day, then so be it; checklists are important for our safety, for everyone onboard and should be done in a proper way*

incident or near miss onboard, then it will be reported by the Safety Officer to the Master and Safety Committee, it will be fed back to the Company and the DPA who in turn will pass the details to the whole fleet by way of Safety Bulletins.

We have safety meetings about every four weeks, at which the Safety Bulletins will be discussed. Of course, not everyone attends the safety meetings, so the Bulletins are made available in the messrooms, in a file, which is easily accessible by every member of the crew. If there is a Safety Bulletin that is extremely important for the ship, I will discuss it at my briefing with the crew, which I normally hold after the weekly safety drills.

We have an onboard safety and security training program covering drills, training, and lectures required by international conventions, and a number of table-top exercises in, for example cargo operations. At the end of each drill, safety videos are shown in the day room using Videotel's VOD box - 'Video on demand'. It is a new computer-terminal, connected to the vessel's TV system which provides a number of video training programs and is a very useful training aid. In the addition to the above the Company supplies vessels with training presentations and quizzes regarding safety and security matters available for all crewmembers.

Most of the officers' training outside of the ship is done at the Marine Academy or Maritime School in Gdynia and are sponsored by the Company. Deck officers do, for example, Bridge Resource Management Courses and senior officers

> *Training programs, safety committees, reporting systems, 'no blame culture', regular meetings on board and seminars ashore, free e-mail access and telephones - all these elements create effective ship communication*

also go to the manned model facility in Ilawa, Poland for shiphandling experience on 'ride on' scale models of ships. Dorchester also runs its own courses in chemical and gas safety and in effective leadership in the Baltic Marine Office in Gdynia.

Company seminars are also regularly held - in the case of the officers, twice a year in Poland. These three-day seminars provide an opportunity for us to get together with the management to exchange ideas, information and knowledge. At each seminar we have feedback forms for each lecture so that the management team know what was useful. It is also a social occasion because our immediate families are invited. The evenings spent socializing with our friends and colleagues and their families are just as important as the more serious business that we cover during the day.

We have a company newsletter *Vapours and Dusts*; the articles inside are written for and by our crew and our managers – everyone is encouraged to write for the newsletter, which is published on a three-monthly basis. The Company pays corporate subscriptions to professional institutions like, for instance, the Nautical Institute so that we get the magazines, which everyone is encouraged to read.

Although the master only has access to the internet, there is no problem with any member of the crew who wishes to send an e-mail to his family at any time, free of charge. We have a special 'e-mail box' where they can put their e-mail messages which will be sent with the next data transmission. Also telephone bases using pre-paid cards are available for the crew.

Training programs, safety committees, reporting systems, 'no blame culture', regular meetings on board and seminars ashore, free e-mail access and telephones – all these elements create effective ship communication, thereby continuously improving our safety and management on board and ashore and a belief that we are ONE team.

Accident Investigation Reports

Grounding of a woodchip carrier during pilotage through incorrect use of helm

This report features the grounding of a 40,360gt woodchip carrier, during a pilotage, and highlights a number of examples where communication was not effective. The helmsman was steering the ship as instructed by the pilot, and the master and third mate were on the bridge. The pilotage progressed as intended until a turn to port at a critical part of the passage was being executed, during which starboard instead of port helm was applied for approximately one minute. By the time the error was detected and maximum port helm applied, grounding was inevitable.

The report deduces that the master/pilot information exchange prior to the departure of the ship from harbour was minimal. After the exchange, the pilot instructed the helmsman to inform him if he had any doubts about any orders the pilot gave, or in the event of any steering malfunction, however minor. The pilot had stated that to build rapport he had a 'one to one communication' with the helmsman. According to the report: *"while the purpose*

of the 'one to one communication' may have been to encourage 'challenge' by the Filipino helmsman, the lack of cultural awareness by the pilot made it ineffective. The rank and nationality of the helmsman made it unlikely that he would ever challenge a pilot's order."

Other than the brief pre-departure information exchange there was little or no communication between the pilot, the master and the third mate until the grounding was imminent. The report concludes that inadequate communication led to responsibilities being undefined, and did not encourage an atmosphere for 'challenge and response'. The helm orders were, for the most part, the only communication that took place. This led to inadequate monitoring of the pilotage passage, and resulted in 'single person errors' occurring and not being detected in time to prevent the grounding.

The master and third mate stated that the pilot did not always 'close the loop' with his helm orders, nor did he consistently use the 'midships' order. Furthermore, he did

not normally use hand signals to enhance the communication of helm orders to a helmsman.

The report also concludes that the pilot's use of a mobile telephone in the time before the grounding was inconsistent with good navigational practice and may have been a distraction. It quotes an Australian Marine Guidance Note which concludes that: *There is a compelling need for clarity of purpose when conducting the safe navigation of a vessel which endorses the requirement for an active management policy for the use of mobile phones on the bridges of ships at all times, but especially when navigation risks are higher.*

Note: The purpose of this summary is purely to highlight certain human element issues arising from this incident. Those who are involved in the management and operation of ships and of ports are strongly advised to read the whole report which can be downloaded from: http://www.atsb.gov.au/publications/investigation_reports/2006/MAIR/pdf/mair227_001.pdf

Reports & Studies &

THE HUMAN ELEMENT - THE IMPORTANCE OF EFFECTIVE COMMUNICATION
David Squire, Editor, Alert!

A presentation to the Maritime Communications & Technology Conference held in London in June 2006. The presentation discusses the importance of effective communication to the human element of ship operations - that is, *the seafarer.*

Downloadable from: www.he-alert.org/documents/published/he00615.pdf

USER FEEDBACK IN SHIP DESIGN
D A Joiner, Massey University, New Zealand

The author describes some of the techniques which are used successfully to capture user feedback for the design of land-based buildings and facilities, some of which have potential for the ship design and construction industries and for the owners and operators of ships.

Downloadable from: www.he-alert.org/documents/published/he00625.pdf

HUMAN FACTORS GUIDANCE FOR MAINTENANCE
D J Pennie, N Brook-Carter, Greenstreet Berman
W H Gibson, RSSB & University of Birmingham

This paper introduces the issue of maintenance error, considers the issue of HF in maritime maintenance and inspection, describes the HF guidance package developed for the rail industry and then discusses how such an approach might be of benefit to the maritime sector.

Downloadable from: www.he-alert.org/documents/published/he00630.pdf

WHY SHIPS *REALLY* COLLIDE
Captain Michael Lloyd

An article from *Seaways*, based on the experiences of a shipmaster approaching 50 years at sea with 35 years in command, having been master of ships of every type including passenger ships, bulk carriers, ice class vessels, container ships, coasters, heavy lift, in sizes from ocean going tugs to 300,000 dwt OBOs.

Downloadable from: www.he-alert.org/documents/published/he00635.pdf

METHODS AND MEANS FOR ANALYSIS OF CREW COMMUNICATION IN THE MARITIME DOMAIN
Robyn Pyne, Thomas Koester

This paper describes an analysis of a number of maritime accident reports in which a failure of effective crew communication played a central role in the causal chain. It discloses the structure of problems related to maritime crew communication and problems related to different cultures and languages.

Downloadable from: www.he-alert.org/documents/published/he00640.pdf