



By Peter Burge

Are you 'lost at sea'?

An overview of maritime safety laws

The sea can be a hard and unforgiving place and many people who venture into this environment fail to recognise and respect its power, ferocity and the danger it poses.

All maritime accidents have an underlying human element. The basic constituents of a maritime accident are essentially the same as those in a road accident: human error and equipment failure, or a combination of both. 'Equipment' covers a broad range of things, including a vessel's structural strength and integrity; propulsion and service machinery; safety and communication equipment and navigational aids. The human element, however, is much more difficult to measure, define, regulate and manage. It is 'people' who build, operate, maintain, navigate, load and refuel vessels and it is how competently and conscientiously these tasks are carried out that ultimately determines how much of a risk a

vessel and its operation poses.

Importantly, the laws, Acts and rules governing the maritime industry necessarily differ from those that apply to road, rail and air transport, as they have been developed over time to suit this unique environment.

Over centuries, ship and boat design and building methodology have evolved as different vessel uses have arisen and new materials, technologies and techniques have become available. Alongside significant technical changes, design rules and standards have become established and been constantly refined as circumstances alter, to address such issues as vessel stability in various loading conditions, buoyancy, minimum structural strength and vessel safety requirements.

Along with the new technologies and the standards regulating them, the human component has been addressed by the development and introduction of universal training and qualification requirements, equipment maintenance regimes, more accurate weather forecasting and monitoring, navigation 'rules' and marine safety management systems. But, to an extent, the improvements in management techniques have lagged behind the commercial dictates and rapid technological changes affecting the vessels themselves. For example, an 'off-the-shelf' aluminium runabout can achieve speeds in excess of 50 knots or 90 kilometres an hour and be driven legally by a novice operator in rough conditions in a crowded waterway, while a 50,000 tonne bulk carrier, which would once have had a crew of 40 to 50, can now be crewed by only 10 to 15 persons.

Locally and internationally, the focus has been primarily upon commercial maritime operations, where regulation and insurance aspects are quite stringently applied. However, pleasure craft and their operators are faced with exactly the same set of challenges and, in fact, this sector is where many of the accidents, injuries and deaths occur.

MARITIME STANDARDS, RULES AND REGULATIONS

The vessels themselves

Official concern for maritime safety has commercial rather than social origins, in that traders were suffering financially because of the loss of cargo in unsafe ships carrying out hazardous journeys with barely trained or unqualified officers and crews.

Lloyds Register of Shipping, 'LR', a maritime classification society and independent risk management organisation, owes its name to an 18th century coffee house in London owned by Edward Lloyd whose customers were mainly merchants, marine underwriters and others, all associated with shipping.

In 1760, the coffee house customers formed the 'Register Society' and in 1764 the Society printed the first 'Register of Ships' in order to give both underwriters and merchants an idea of the condition of the vessels they insured and chartered. Vessels were graded using a lettered scale or 'class' which considered the hulls and the ship's fittings. For example, ships' hulls considered by LR inspectors or 'surveyors' to be of the highest standard are classified with a lettered scale with 'A' being the best, while the ships' fittings are graded by number, with '1' being the best. The expression 'A1' is derived from this practice which survives, with additional 'notations', to this day.

For consistency and clarity, LR developed a set of 'Rules' which are derived from the principles of naval architecture and marine engineering that govern safety and operational standards for numerous merchant, military and privately owned vessels.

Over time, a number of other similar, independent and not-for-profit, classification societies have become established in several maritime nations, which are similar to and the equivalent of LR. These include Class NK in Japan; the American Bureau of Shipping, 'ABS'; Det Norske Veritas 'DNV'

in Norway; Germanischer Lloyd 'GL' in Germany; and Bureau Veritas 'BV' in France.

These societies co-operate closely to ensure that there are no unacceptable inconsistencies between their Rules. Class Rules govern such categories as:

- materials used for the construction of a vessel;
- ship structural requirements and minimum sizes of structural components;
- operation and maintenance of main and auxiliary machinery; and
- operation and maintenance of emergency control systems.

In order to gain classification status, vessels and certain other marine structures must comply with the initial survey requirements and inspections prior to and during their construction and then at regular intervals during the life of the ship or structure. If vessels are found to be non-compliant during such survey inspections, class status can be suspended or revoked. Failure to meet class standards may result in a vessel being denied insurance coverage which affects the 'bottom line', as shippers need to insure their valuable cargoes against loss and damage.

Classification society rules are recognised by all governments as being the international 'standards' governing the safety and operations of a vessel itself. The rules are stringent, but depend upon human beings for their successful implementation, assessment and regulation. They are not perfect. Class requirements are applicable to most >>



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ships, oil rigs, specialised vessels and larger vessels trading internationally, and many trading within a particular country.

In Australia, the states, territories and Commonwealth have also developed and adapted a standard that governs commercial vessels specifically operating within and between states and territories. Developed through a consultative process and implemented in 1991, this standard is known as the Uniform Shipping Laws ('USL') Code. The USL Code is referenced in all of the applicable Commonwealth, state and territory marine Acts and regulations.

In recent years, the USL Code has been substantially superseded and replaced by the updated National Standard for Commercial Vessels (the 'NSCV'). These standards address many of the technical requirements for vessels, as well as setting the minimum training and qualification levels for the officers and crew of commercial vessels operating within Australian states and territories. The NSCV also has a small section providing brief guidance on the safety-related features of recreational vessels.

The Australian Standard generally reflects the technical Rules of the various Classification Societies but, in many instances, the NSCV and the USL Code are not as demanding and their requirements are not as costly to implement and maintain as Class Rules. Vessels having Class status with one of the recognised societies are generally exempt from local government technical inspections because the societies have their own independent inspectors, known as 'marine surveyors' who operate throughout the world. Class surveyors are usually highly qualified marine engineers or naval architects.

In respect of non-commercial vessels, the 'Small Pleasure Boats Code' (Australian Standard – AS 1799-1992) addresses many of the general and specific technical requirements for power boats, yachts and inflatable craft. The requirements set out in this Standard are far less demanding and onerous than the requirements for commercial craft and, unless a vessel is involved in an accident which requires the intervention of state or local authorities, these requirements are rarely applied, evaluated and enforced. In the author's experience, very few small boat-owners and operators are even aware that the Standard exists, let alone the responsibilities it places upon them.

Operational and navigational protocols

In the modern era, nations have recognised that the best way of improving safety at sea is by developing international regulations that are followed by all shipping nations. From the mid-19th century onwards, a number of such treaties have been adopted.

The Titanic disaster in 1912 forced a review of the passenger ship trade and led to the creation of a number of new safety regulations that ultimately evolved into the first international safety of life at sea – SOLAS – convention in 1960. SOLAS has been amended on many occasions in response to changing conditions and is still the most important international treaty addressing maritime safety.

The SOLAS convention requires that a compliance certificate is carried aboard a vessel to show that it has been

inspected and has met the required standard. The 1974 SOLAS convention states that: *'the officer carrying out the control shall take such steps as will ensure that the ship shall not sail until it can proceed to sea without danger to the passengers or the crew'*. In Australia, marine surveyors employed by the Australian Maritime Safety Authority ('AMSA') regularly conduct such inspections and will detain a vessel if they consider it to be in a dangerous condition.

Although it was proposed long ago to establish a permanent international body to promote maritime safety more effectively, it was not until the United Nations itself was established that these proposals were realised.

A specialised United Nations agency, the International Maritime Organisation ('IMO'), to which Australia belongs, is responsible for the safety and security of shipping and the prevention of marine pollution by ships.

Through an intergovernmental consultative process, the IMO has developed minimum operational and qualification standards for seafarers, which include the Safety of Life at Sea ('SOLAS') convention, the International Regulations for Avoiding Collisions at Sea or in other navigable waters ('the Colregs' which are an attachment to SOLAS), the International Convention for the Prevention of Pollution from Ships ('MARPOL') and the International Code of Safety for High Speed Craft.

In 1987, the British-flagged Roll On-Roll Off ('RoRo') passenger ferry, *Herald of Free Enterprise*, capsized and sank shortly after leaving the Belgian port of Zeebrugge, resulting in the deaths of 193 passengers and crew. The Court of Inquiry into the loss found that there were a number of design shortfalls that contributed to the sinking (which led to the development of new regulations) but, most importantly, found that this shipowner, and probably many others, had inadequate communications systems and management systems in place.

After World War II, the emerging Japanese manufacturing industry had developed a system of ongoing process reviews and modifications in order to improve production efficiency. This philosophy is known as Quality Assurance or 'QA' and has since been refined and made into an International Standard, the ISO 9000 series.

The QA philosophy was examined as a potential means of addressing maritime management system shortcomings and was subsequently adapted in principle by the IMO for use in commercial shipping and boating operations, where it is known as the Safety Management Code.

The Australian states and territories have since mandated the use of Safety Management Systems ('SMS') in commercial marine operations where more than 8 to 12 fare-paying passengers are carried.

The NSW Maritime Safety Management System (SMS), which was incorporated into the *Passenger Transport Act 1990* (NSW) in January 2004, is based on the IMO Safety Management Code but has also included elements taken from Occupational Health and Safety (OH&S) legislation requirements, the Australian Standard for OH&S Management systems AS4801:2001, environmental protection legislation and standards, and from the *Passenger Transport Act* itself.

The New South Wales SMS framework requires passenger vessel operators to review their operations and to develop, implement and maintain formal procedures for all shipboard tasks. For example, every company must produce a safety and environmental policy, develop a set of instructions and procedures to ensure the safe operation of their vessels, define levels of authority and lines of communication between and among shore and shipboard personnel, develop procedures for reporting accidents, identify potential risks and prepare risk mitigation policies, to prepare for and respond to emergency situations and to conduct internal audits and management reviews at specified periods.

Differences in marine safety regulations between the Australian states and territories

The roles and responsibilities of vessel designers, builders, owners, masters, officers and crew members are set out in the various international codes and conventions. The Australian Commonwealth, state and territory Acts and regulations incorporate or make reference to the IMO conventions and codes. The codes are binding upon all vessels and parties involved in maritime operations anywhere in the world and include foreign-flagged vessels operating in Australian waters.

The Commonwealth, states and territories' legislation generally resemble each other, but may also provide guidelines and regulations for specific inland waters and areas of special concern, such as the Great Barrier Reef, and other potentially hazardous or environmentally sensitive areas.

The NSW *Marine Safety Act* 1998 and the Marine Safety (General) Regulation 2009 (under the Act) are applicable to all vessels operating in NSW waters, and are typical of the Acts and regulations in other states and territories. This regulation covers such diverse subjects as:

- Safety of navigation (including the Colregs);
- signals and lights on vessels;
- the conduct of persons on board vessels;
- provisions relating to the operation and securing of vessels such as speed restrictions;
- engine power-rating limitations;
- requirements when towing or pushing a vessel or object;
- kite-surfing and sail-boarding;
- the obligations of vessel operators in respect of navigation in fairways and channels;
- navigation-markers and lighting;
- lighthouses;
- the minimum safe distances to be kept between vessels;
- special provisions relating to jet-skis (personal water craft);
- loading of vessels; requirements for vessel-builders;
- Marine safety (special event) licences;
- vessel registration;
- boat-driving licences;
- safety equipment for recreational vessels;
- lifejackets and safety equipment;
- hatches and doors;
- alcohol and drug-testing; and
- penalties for various offences under the Act.

In respect of recreational vessels, each of the states and territories requires boating licences for those in command of

most powered vessels and jet-skis (personal water craft, or 'PWC's').

The maritime authorities in all states and territories have produced booklets or guidelines phrased in plain English which reflect the applicable international codes, practices and regulations. These guidelines are primarily intended to assist boating licence candidates to understand such things as:

- the statutes and regulations;
- skippers' roles and responsibilities;
- types and uses of safety equipment;
- how to identify and cope with dangerous situations;
- how to react in emergency situations; and
- the need to maintain their vessels and equipment in a sound and seaworthy condition.

Importantly, these guidelines place a particular emphasis upon the Colregs or 'the Rules' and the serious responsibility these allocate to a boat skipper. These include very clear explanations of the following:

- the requirement to travel at a 'safe speed' and what 'safe speed' means;
- how to operate a vessel in poor visibility conditions;
- how to operate a vessel when in close proximity to other vessels;
- to identify and be aware of navigation hazards; and
- to keep a good and proper lookout at all times.

NSW and Western Australia have also conducted high-profile campaigns under the title 'You're the Skipper – You're Responsible.' These campaigns stress the overall responsibility a boat skipper has towards the safety of his or her vessel, its passengers and to other vessels and people who might be affected by the manner in which a vessel is operated.

CONCLUSION

There are standards, rules, codes, conventions and regulations in place which require vessels to be strongly built, adequately maintained and safely operated, but these safeguards all depend on them being effectively and conscientiously applied.

Despite all of these well-intended impositions, marine accidents in most instances result from a 'human factor' failure. Occasionally, vessels are operated when they are in an unsafe state; skippers and crew members sometimes fail to keep a good and proper lookout; vessel masters, officers and crew may take unnecessary risks; and vessels might be operated at speeds that are unsafe in the prevailing circumstances. The list of human shortcomings goes on and, while it does, people will unfortunately continue to be injured or killed. ■

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