

FISHING VESSEL SAFETY—A New Approach

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SUMMARY

Standards for fishing vessel safety tend to be lower than for other similar vessels worldwide. While in Australia the difference is not as great, the fact remains that standards differ without logical explanation. Over the last decade, there are changes in government policy and community expectations that are challenging some long held beliefs and practices in the fishing industry.

This paper looks at the safety record of fishing vessels in Australia. It then considers the impact that Occupational health and safety legislation has on the fishing industry and how that interacts with traditional pro-active safety certification schemes. The role of minimum required standards is considered. Proposed standards for operational practices on vessels are discussed. Finally, the paper suggests that there is no longer a place for different standards to apply to fishing vessels compared to trading vessels.

INTRODUCTION

In terms of numbers of vessels, the fishing sector represents the largest proportion of the total fleet of commercial vessels in Australiaⁱ; see Figure 1. These vessels range in size from small tinnies of only a few metres in length up to trawlers over 35 metres and even a floating abalone farm of 120 metres. While most people would say that Australia has a relatively satisfactory record for maritime safety by world standards, there can be no room complacency in the fishing industry. Past studies have shown that the fishing industry has had one of the highest rates of fatal injury of any working group in Australiaⁱⁱ. For many years, injuries and fatalities in the workplace were often accepted as being part of the job. Changes in community expectations and government policy are altering the way we look at workplace injuries and fatalities. Inevitably, these changes impact on the fishing industry, just as it has on industries on land.

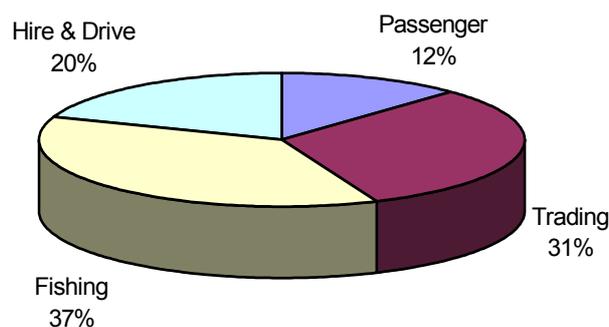


Figure 1—Relative proportions of vessels by sector in the Australian domestic commercial vessel fleet

ARE FISHERMEN MORE EXPENDABLE?

In terms of safety, crews on fishing vessels have traditionally been treated as second class citizens. Worldwide, standards for safety on fishing vessels have generally been significantly lower than for passenger or trading vessels.

To illustrate this contention, consider the following examples:

International standards applicable to vessels. The SOLAS Convention (Safety of Life At Sea) explicitly excludes its application to fishing vesselsⁱⁱⁱ. SOLAS has 146 signatory countries and is in force internationally, while the fishing vessel equivalent, the Torremolinos International Convention For The Safety Of Fishing Vessels has only 9 signatories and has not yet had sufficient support to be adopted^{iv}. This is despite the standards required in the Torremolinos Convention being lower than those required for the equivalent cargo vessel under SOLAS.

Similarly in the United States of America, standards for fishing vessels have been lower than those for other commercial vessels^v. Fishing vessels are “uninspected” while most other commercial vessels are “inspected”.

Australia too has differences in standards applicable to the safety of fishermen. Since the introduction of the Uniform Shipping Laws Code, the differences are not as marked as in some other countries. However, within the current standards contained in the Uniform Shipping Laws Code and the marine safety legislation of the various jurisdictions, fishing vessels are treated differently. For example, life-saving equipment^{vi}, fire safety^{vii}, standards for watertight and weathertight integrity^{viii}, the protection of personnel^{ix} and measures to protect against overloading^x are lower for fishing vessels in the USL Code than specified for other vessels. Likewise, certain sectors of the fishing industry have been excluded from the need for certification under regulation, for example, sheltered water fishing vessels in NSW^{xi} and fishing vessels of less than 10 metres length in Queensland^{xii}.

Why have fishing vessels been treated differently? Some possible reasons include:

- a) a historic acceptance by the fishing industry and society as a whole that fishing was a risky occupation for which human injury and death were inevitable;
- b) many owners of fishing vessels also operate the vessel resulting in a voluntary assumption of risk. Owner/operators tend to take comfort in the perception that they are in control of the situation, well prepared and able to anticipate, face and overcome the risks of their profession;
- c) the perception that if a fishing boat gets into trouble, it is because of a lack of judgement or skill of a particular individual rather than a failing of the vessel, its safety systems or its management;
- d) crews on fishing vessels frequently have had a direct economic stake in the success of the venture and so they, too, have been prepared to accept greater risks than might be accepted by someone on a wage;
- e) concern that safety standards applicable to other vessels are not practicable on fishing vessels and that the economic impact of imposing those standards would be disastrous to the economic viability of fishing operations; and
- f) a lack of interested third parties such as cargo shippers and insurers. The safety of cargo vessels has a direct bearing on the risks associated with the carriage of valuable cargoes owned and insured by others. The cargo of fishing vessels does not involve a third party until it has been delivered and sold.

Another possibility of course is that fishing vessels have characteristics that make them in some way safer than other vessels and so they do not justify the same standards. This supposition requires further investigation.

HOW SAFE ARE FISHING VESSELS?

There are similarities and differences in hazards and risk factors faced by fishing vessels compared to passenger vessels and trading vessels.

First compare fishing vessels with passenger vessels. Generally, fishing vessels operate with relatively small numbers of persons on board, unlike passenger vessels that can carry large numbers. Moreover, unlike the passengers on a passenger vessel, those on board a fishing vessel should be reasonably able-bodied, and should generally have had some training, knowledge, competence and possibly qualification that will help them to anticipate, face and overcome the dangers that might arise. It would probably be fair to say that, if it were not for appropriate controls, passenger vessels would be less safe than fishing vessels. Thus, taken overall, safety standards to control risk on passenger vessels are justifiably higher than those of other vessels including fishing vessels.

Next let us look at fishing vessels compared to trading vessels. What sort of hazards and risks are likely with both, what are the similarities and what are the differences in risk? Table 1 shows the author's interpretation of typical comparative risks associated with cargo vessels compared to trawlers. The comparison may vary for other trading and fishing vessel types. While trawlers are unlikely to carry large quantities of dangerous goods, their loading during a passage is much more variable due to the luck and timing of the catch. Furthermore, a good catch, particularly one obtained early in a voyage provides a strong incentive for overloading. Large overturning moments may arise from a snagged net, both when it occurs and during attempts to recover the net.

Table 1—Comparison of risks between trawlers and cargo vessels.

| Nature of hazard | Suggested comparative risk |
|---|----------------------------|
| Exposure to heavy weather and seas | Equivalent |
| Grounding | Equivalent |
| Collision | Equivalent |
| Dangerous cargo or stores | Trading>Fishing |
| Loss of stability due to initial loading | Equivalent |
| Loss of stability due to changes in loading during voyage | Fishing>Trading |
| Excessive overturning moments | Fishing>Trading |
| Overloading | Fishing>Trading |
| Fire | Equivalent |
| Exposure to personal injury of persons working on deck | Fishing>Trading |
| Fatigue | Equivalent |

Note that the above table is reasonably conservative in its highlighting of differences in risk. The table suggests that exposure to heavy weather and seas is reasonably equivalent for trading and fishing vessels; however, the NOHSC assessment of work-related boating fatalities between 1992 and 1998^{xiii} indicated that fishing vessels tend to

operate in more severe environmental conditions than many other vessels. The report suggested that in order to make a living, fishermen must often be prepared to work in less than ideal conditions.

The table serves to show that there is no clear reason why trawlers are any less likely to suffer from exposure to risk than cargo vessels. It is suggested that the same holds true for fishing and trading vessels generally.

As can be seen, for some hazards, the risks would appear to be reasonably equivalent. Safety standards to control such risks should therefore be similar for both trading and fishing vessels. On the other hand, where exposure to hazards varies significantly between the two vessel types, it is suggested that standards to control risks should be customized to meet the particular risks associated with the type of vessel and its operation.

Notwithstanding the foregoing analysis, there are other indicators that can be used to determine the relative safety levels of fishing vessels. Fatality and injury statistics provide a useful source of data.

IMPROVING SAFETY RECORD, BUT IS IT GOOD ENOUGH?

Studies of fatality data in the years 1982-84, 1989-92^{xiv} and 1992-98^{xv} indicate that fishing vessels have significantly higher rates of fatality compared to many industries, see Figure 2. The NOHSC reported that in 1982, the fishing industry had one of the highest rates of fatal injury of any working group in Australia. Furthermore, the same report stated that for the 1996-97 financial year, fishing industry workers had an incidence rate for non-fatal injuries and disease of 33.1 per 1,000 workers, about 50% greater than the all industry rate of 22.8 non-fatal injuries and diseases. Certainly, the suggestion that fishing vessels are intrinsically safer than other vessels finds no comfort here.

However, while there is cause for concern, Figure 2 also illustrates some good news. The data indicates that, over a 16 year period, significant progress has been made reducing the average rates of fatality of persons in the fishing industry. Thus, the average for 1992-98 was only 40% of that for 1982-84. This very significant reduction indicates that real progress is being made in safety within the fishing industry.

Probable reasons for the improvement include:

- a) technological advances in equipment, especially that of navigational and communications equipment.
- b) the establishment of minimum standards for fishing vessels in the Uniform Shipping Laws Code during the 1980s. In particular, these standards impact on fishing vessel stability, construction, machinery and watertight integrity. While the standards were introduced in the 1980s, it took time for the benefits to be felt as new vessels incorporating the requirements were built to join the fishing fleet.
- c) improved training of fishing vessel operators through the minimum requirements for qualifications set within the USL Code.
- d) the introduction of EPIRBs and improved emergency response infrastructure, and
- e) advances in the medical treatment of persons reducing the incidence of death being the consequence of the incident.

Notwithstanding the improvement in the safety of fishing vessels, the record of the industry still falls far below the all industry average that in 1989-92 was 5.5 per 100,000 persons. While at one time this might have been accepted as an inevitable consequence of being involved in a hazardous industry, changes in public policy are making such considerations irrelevant.

Before exploring this last statement further, it is worth noting that recent research conducted on behalf of the NMSC found the main incident events in the deaths of fishermen were: person overboard, sinking of the vessel, capsize and being trapped within/under the vessel. The main contributing factors were: hazardous conditions, errors of judgment, unsafe work practices and failure to wear a PFD in circumstances where, in the opinion of the Coroners, it would have saved life^{xvi}.

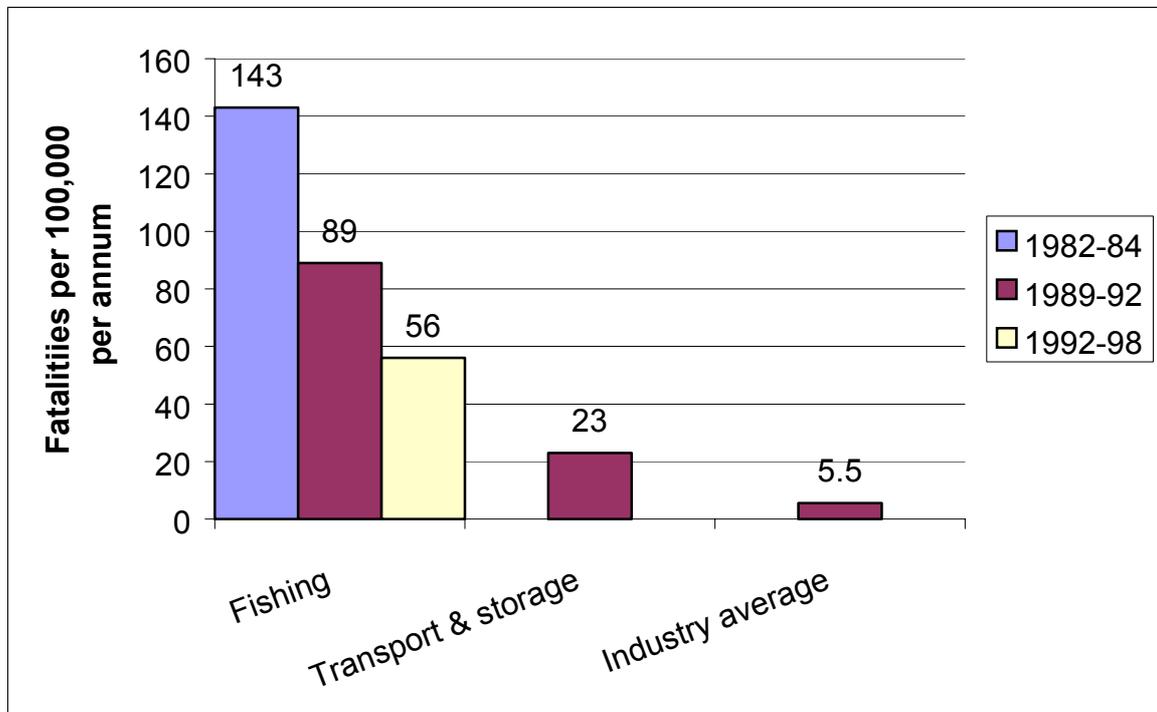


Figure 2—Rate of fatality data for the commercial fishing industry compared to other industry sectors

OCCUPATIONAL HEALTH AND SAFETY

Since the Uniform Shipping Laws Code was first published in 1979 there have been significant changes in the way that safety is administered in the workplace. Occupational Health and Safety Laws have been enacted that place a general obligation for safety on a wide range of persons in the workplace. A fishing vessel is included within the definition of a workplace. Modern OH&S law tends to be performance-based in nature, and arose out of the realization that it is impracticable and economically inefficient to attempt to establish a regime that provides prescriptive solutions to address every hazard and risk that might be in the workplace. The legislation provides that persons who have control over safety in a workplace have a general obligation to identify hazards, analyse the risk of these hazards and control the risks to ensure they don't exceed acceptable levels, at least to the extent of their control. Persons who have control over the safety of a fishing vessel not only includes operators, but also the designers, builders, equipment suppliers and owners.

While the concepts of performance-based occupational health and safety law have been on the agenda since the 1980s, it is only since the 1990s that they have been incorporated into the law of the States and Territories of Australia. In NSW, the legislation was promulgated in September 2000^{xvii} and after a two year implementation period, the

law will be fully enforced for small businesses from September 2003. How does the new legislation impact on the fishing industry?

The law requires that risks are managed, i.e. hazards are identified, risks arising from those hazards are assessed, and measures implemented to eliminate or control risks that would otherwise be unacceptable. There are provisions requiring appropriate training, instruction and supervision of personnel and consultation between employers and employees on matters of safety. Proof of compliance will include a documented risk assessment. Inspectors will have the power to view the documentation. How do these new laws sit with the Certificate of Survey of a vessel?

WHAT ROLE DO CERTIFICATES OF COMPLIANCE PLAY?

In 1997, the Australian Transport Council approved a National Marine Safety Strategy to shape the reform of marine safety administration in Australia. That strategy identified a series of strategic actions to be followed in revising standards applicable to commercial vessels, which included:

1. Incorporate recognized & relevant national & international standards
2. Encourage professional competence
3. Incorporate performance-based approach
4. Facilitate approval of new technologies
5. Incorporate OH&S principles
6. Encourage recognition of duty of care.

The incorporation of Occupational Health & Safety principles is specifically listed in action 5. A number of the other actions also have relevance to the OH&S regime including the adoption of performance-based approaches, recognition of duty of care and the encouragement of professional competence.

The approach adopted by the National Marine Safety Committee has not been to duplicate OH&S law in the marine safety legislation and standards of the jurisdictions. Rather it has been to modify marine safety legislation and standards to complement the new OH&S law. The new standards have been written to focus on the safety outcomes rather than specific solutions. Prescriptive requirements are still included as deemed to satisfy solutions, describing one means of achieving the safety outcomes that is both widely applicable and good practise. Guidance is given on applicable hazards and risks that are being addressed by the standard. Most importantly, a framework has been created that sets out the limits of the minimum standards specified for the issue of a certificate of compliance. The framework eliminates any confusion that mere compliance with minimum standards for a Certificate of Compliance is sufficient to discharge all safety obligation under OH&S law.

To illustrate this last point, consider Figure 3. The left hand column represents an industry without pro-active certification such as that provided by a Certificate of Survey. OH&S law places the entire obligation for meeting appropriate levels of safety on these that control safety. The law requires that the risk assessment must also be documented. The law may or may not contain prescriptive solutions that are deemed-to-satisfy some of the requirements of the law. However, in no case are such prescriptive standards sufficient to preclude the industry stakeholder from being obliged to fulfil the general safety obligations under the law. In the absence of prescriptive laws or standards, industries are encouraged to develop safety solutions in the form of Industry Codes of Practice that provide guidance of how an individual might meet their safety obligations. Compliance with an Industry Code of Practice can be used as evidence in defence of a prosecution under the OH&S legislation.

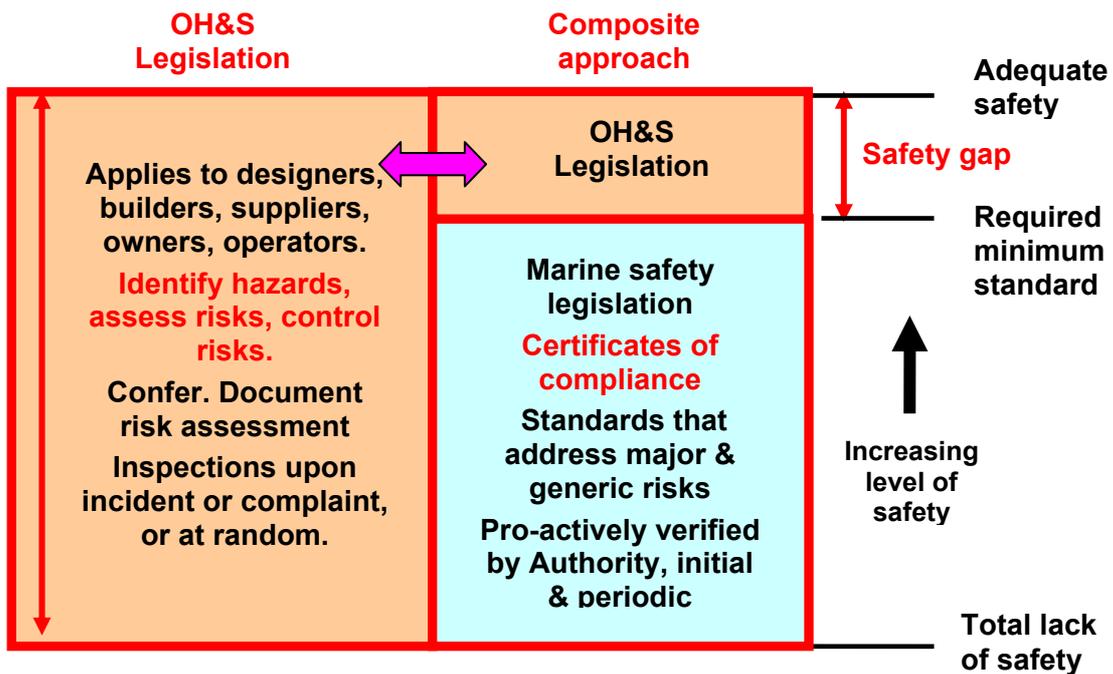


Figure 3—The place of certificates of compliance in OH&S

Consider the right hand column in Figure 3. A certificate of survey attests to compliance with statutory minimum standards. Those standards do not, indeed cannot, cover every type of risk on every type of vessel for every situation. They are intended to control major risks that tend to be generic across the industry. However, those minimum standards go a long way toward achieving adequate safety under OH&S legislation. In the past, many in the maritime industry had the perception that once the vessel acquiring a Certificate of Survey, a relevant stakeholder (be it designer, builder, owner, etc) had discharged their full obligation for safety. While such a contention was not supported by judgements of various Courts, nonetheless, it persists to the present day. The illustration shows the minimum required standard for statutory certification may be less than the level of safety required as adequate for the purposes of performance-based occupational health and safety legislation. There is a safety gap between the two.

The safety gap comprises hazards and risks that are not addressed by the standards for the Certificate of Survey (for example, the strength of the rig of a vessel, or work practices on board), or they may be hazards and risks that might not adequately addressed for a particular vessel, such as the environmental conditions experienced by a rescue vessel or special training needed to operate specialized machinery on a vessel.

To the extent of their coverage, the standards specified for a Certificate of Survey serve a similar purpose to an Industry Code of Practise with the added advantage that compliance is independently verified on behalf of the Marine Authority. The framework of the new National Standard for Commercial Vessels clearly states that the mandatory standards contained within for the purposes of certification are minimum required standards. The new Part A of the NSCV provides guidance on the safety obligations that need to be addressed. These safety obligations go beyond mere compliance with the standard, falling within the scope of the safety gap. The safety obligations are based on OH&S concepts. However, they have been expressed in terms relevant and reasonably familiar to those in the maritime industry.

WHO SETS THE MINIMUM REQUIRED STANDARDS?

An important question to be considered in a composite approach to the safety of vessels is to what level should the minimum required standard be pitched. In the past, it was largely determined by government policy, balancing available resources against political expectations and pressures. A major driver amongst those political pressures were the calls for reform that would inevitably result from the occasional high profile tragedy. Direct involvement by industry stakeholders was frequently minimal.

The current reform process requires the NMSC to adopt a much more inclusive approach. Both the National Marine Safety Strategy and COAG Guidelines require the NMSC to consult much more widely with industry stakeholders and the public at large in its work reviewing standards and legislation. This provides industry with an opportunity to influence the scope, application and content of standards for certification of vessels and competencies to assist with their fulfilling broader safety obligations under OH&S. So what does this really mean to the fishing industry?

With the introduction of OH&S legislation, the previous calls for a reduction in the burden of certification that has been voiced by some sectors of industry becomes a double-edged sword. Such a reduction in minimum required standards just leaves an increase in the safety gap to be dealt with by the industry itself. A disadvantage of this is that unscrupulous elements of the industry may risk non-compliance with OH&S obligations for financial gain, disadvantaging law-abiding operators. A statutory minimum standard that is pro-actively verified provides for a more level playing field within the industry.

Industry participation in the review process allows industry to influence:

1. the magnitude and type of risks that are left in the safety gap to be dealt with by industry;
2. the extent that the minimum required standard provides a level playing field;
3. the extent to which statutory minimum standards help fulfil OH&S obligations; and
4. the nature of deemed-to-satisfy solutions specified by the standards to ensure that they are workable, economically efficient and represent good practise.

OPERATIONAL PRACTICES—AN OPPORTUNITY OR A THREAT?

A good example of such an issue that the fishing industry needs to consider is the proposed new Part E of the National Standard for Commercial Vessels that would provide standards for operational practices.

Most people would agree that operational aspects are an essential element of the safety of a vessel. Virtually every safety system on a vessel relies to some extent on an assumption that there will be appropriate operational responses by the vessel's crew. This holds true for machinery, life-saving equipment, navigation, fire safety, stability and so on.

The current USL Code standards contain a number of provisions pertaining to operational duties. The entire Section 15—Emergency Procedures contains requirements for drills. Likewise, design and construction provisions throughout the USL Code contain isolated requirements pertaining to the operation of vessels; such as the requirement to recharge portable fire extinguishers^{xviii}, the keeping of log-books and record books^{xix}, prohibitions on taking a passenger vessel to sea^{xx}, requirements to maintain watertight integrity^{xxi}, etc. In addition to the expressed operational requirements in the USL Code, there is an implied

requirement that if a item of safety equipment is fitted to a vessel, then someone on board should know when and how to use and maintain it.

There are two main problems with the current arrangement of operational requirements in the USL Code.

1. Operational requirements are distributed throughout the Code, hidden in Sections that owners and operators are unlikely to read.
2. The operational requirements are frequently not pro-actively enforced by the Marine Authorities as part of their pro-active system of certification.

Considering the first of these, in preparing the framework of the NSCV, an objective was to make the standard easy to use. One of the approaches adopted was to divide the standard into user defined parts: Part C would be design and construction, Part D would be crewing and competencies and Part E would be operational practices. That would mean that designers and builders could refer to Part C, training providers and owners to Part D and operators and owners to Part E. As the various sections of the USL Code have been reviewed, orphan-type clauses that relate to persons not normally likely to read that section have been relocated in the appropriate part. In time, a series of existing operational requirements have been distilled to form the basis of a new draft Part E. These essentially fall into two types of clauses:

1. clauses that pertain to operational preparedness, and
2. clauses that pertain to emergency preparedness.

Considering the second problem with the current arrangement of operational requirements, a number of reasons have been suggested for why operational provisions have not been enforced. These reasons include limited resources available to the jurisdictions for verification, impracticality of requirements and even sometimes a failure to realise that the relevant clauses exist.

In accordance with the Marine Safety Strategy, the content of Part E that had been distilled from various parts of the USL Code was then reviewed in the context of relevant national and international standards (which included the ISM Code^{xxii}), performance based approaches, duty of care, etc. The result is a standard for operational practices where previously there appeared to be nothing.

How should the fishing industry react to such a document? On one side it looks like a new regulatory imposition, something that would need to be complied with that was not required before. On the other hand, many of the requirements are already an integral part of safety systems installed on their vessels. There are now also the broader obligations under OH&S to consider. Operational and emergency preparedness are likely to be essential to fulfilling the owner's and operator's safety obligations under OH&S. Not to have a documented system in place with evidence of compliance could make it very difficult for an owner or operator to prove compliance under OH&S law.

It is suggested that the proposed creation of Part E provides the fishing industry with an opportunity to establishing an important tool for satisfying their OH&S obligations, in much the same way as an Industry Code of Practice under OH&S law, but with the advantage of independent verification. By means of the review process being adopted by the NSCV that provides the opportunity for public comment and participation in reference groups, the fishing industry can influence the form, scope and application of Part E to best suit its needs under OH&S.

CAN DIFFERENT STANDARDS FOR FISHING VESSELS BE JUSTIFIED?

As was stated earlier, there are some standards for fishing vessels are lower than those for trading vessels without the difference being logically justified on the basis of risk. Given the above analysis of the safety record of fishing vessels and the impact of OH&S, should such distinctions between fishing vessels and trading vessels be maintained in the future?

The focus of the NSCV is safety outcomes rather than specific safety solutions. Artificial distinctions between types of vessels that cannot be justified on the basis of safety outcomes undermines the very basis of the performance-based approach.

Furthermore, there are increasing numbers of vessels with dual certification; i.e. Class 3 and Class 2 survey. Is it reasonable that a Class 3B cray boat that is used for Class 2C or 2D charters should be required to upgrade safety standards, even though the Class 3B boat operates hundreds of miles from a safe haven?

As an example of an artificial difference in standard between trading and fishing vessels, consider the matter of fire safety. The current USL Code retains significant differences in fire safety requirements between fishing vessels and trading vessels. In particular, trading vessels are required to be fitted with structural fire protection of the machinery space if they are 12.5 metres in length and greater. However, no such requirement is applied to fishing vessels regardless of length. Similarly, while the USL Code specifies the fitting of a fixed fire extinguishing system for the engine room of a trading or fishing vessel of length 12.5 metres or more, some jurisdictions have given exemptions from this requirement to certain fishing vessels.

A study carried out by the NMSC of fire incidents on vessels between 1985 and 2001^{xxiii} indicated that, while fishing vessels were not having more fires than other vessel types, a greater proportion of those fires resulted in major consequence or worse, Figure 4

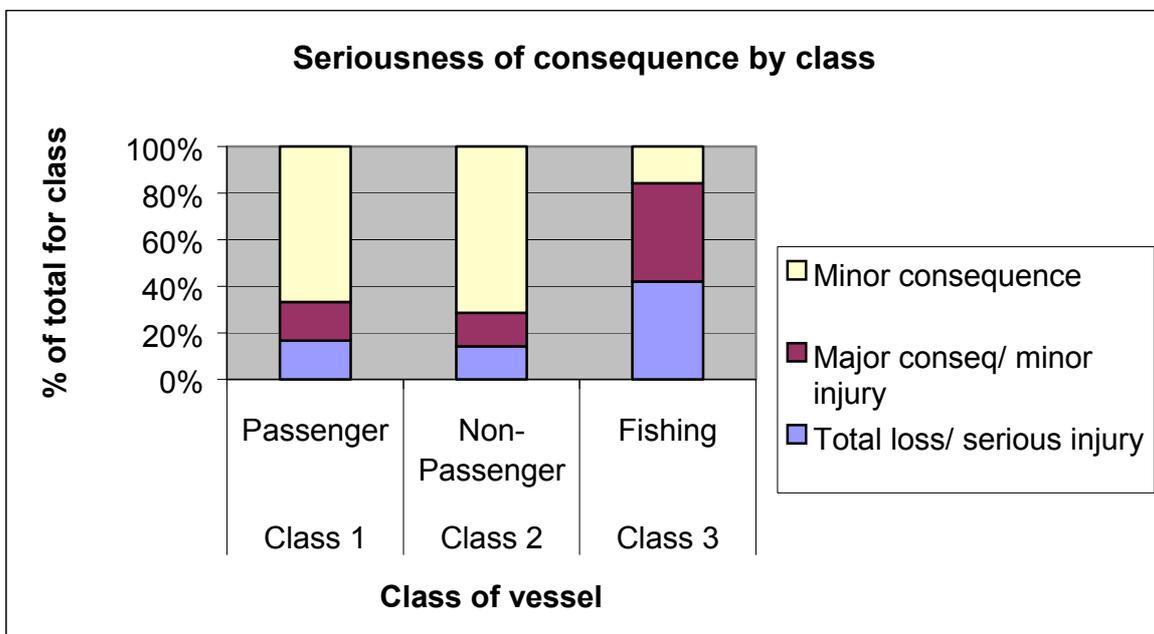


Figure 4 Seriousness of consequence by class

The study confirmed that the most likely source of fire was fire the machinery, followed by electrical fires, Figure 5. Hence machinery spaces continue to be the spaces of highest fire risk on a vessel.

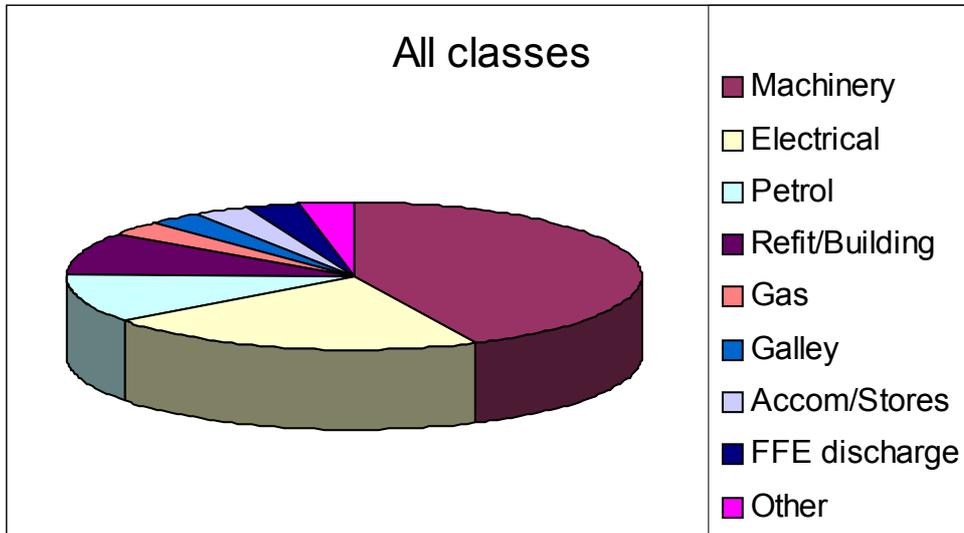


Figure 5—Source of fire

The effect of a fixed fire extinguishing system on the severity of a fire in the machinery space was assessed. From Figure 6, it can be seen that the fitting of a fixed fire extinguishing system has a very significant effect on the consequences of a machinery space fire in that the frequency of total loss of the vessel is significantly reduced.

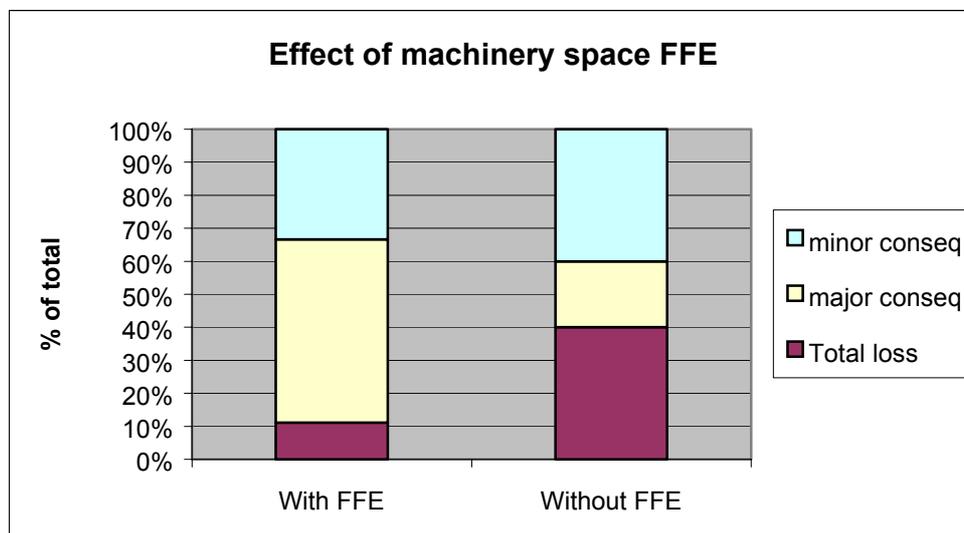


Figure 6—Effect of machinery space FFE

Based on the above analysis, it would be difficult to justify differences in standard between the fire safety systems in the machinery space of fishing vessels compared to trading vessels. However, that does not necessarily mean that the trading vessel standard is pitched at the correct level and should always prevail. There may be cases where standards for trading vessels are higher than they need to be, especially given that sometimes they are based on SOLAS, which is intended for ships engaged in international voyages.

A draft fire safety standard is being prepared that proposes to remove the differences between fishing and trading vessels. While for some matters, it is proposed that fire safety standards for fishing vessels be increased, there are also proposals to reduce fire standards for certain trading vessels, based on an analysis of risk. The draft will soon be available for public comment, providing an opportunity for individuals and organizations in the fishing industry to express their views on the concept. Persons from the fishing industry will have the opportunity to participate in the reference group that will meet to review the public comment.

CONCLUSIONS

Fishing vessels form a very significant sector of the Australian domestic commercial vessel fleet. The safety record of fishing vessels, though improving, still makes fishing a relatively dangerous occupation.

Changes in community expectations for safety as reflected in OH&S legislation have placed a general obligation for safety on those in the fishing industry, including designers, builders and suppliers as well as owners and operators. That general obligation is over and above the obligations set by pro-active traditional marine safety legislation and does not make allowances for an occupation that is relatively dangerous. The standards specified for a Certificate of Survey are not sufficient in themselves to satisfy all safety obligations under OH&S legislation. However, the minimum required standards specified for a Certificate of Survey can go a long way toward satisfying OH&S obligations.

The changed social and legislative environment of the new millenium means that the industry needs to take a new approach to fishing safety. The review of the USL Code and its enabling legislation that is currently being carried out by the NMSC provides the fishing industry with an opportunity to review the nature and application of pro-active certification standards in a way that will help satisfy OH&S obligations while at the same time avoiding conflict and unnecessary duplication.

The USL Code currently contains differences in standards applying to fishing and trading vessels. Some of these differences are justified by the different hazards and risks that apply to these vessels. However, some of the differences are without apparent logic, and form artificial barriers to concurrent and future uses of a fishing vessel for trading. The updating of the USL Code to become the NSCV provides an opportunity for the differences to be reviewed on their individual merits with a goal to determine appropriate and consistent levels of compliance for both trading and fishing vessels. In undertaking such reviews, the industry's safety record and occupational health and safety obligations must be taken into account.

ⁱ Thompson Clarke Shipping Pty Ltd. Census of Non-SOLAS Users of Marine Radio Safety Services.2000.

ⁱⁱ National Occupational Health and Safety Commission. Work-related fatal injuries as a result of fishing and maritime activities in Australia, 1989 to 1992. Sydney. June 1999.

ⁱⁱⁱ International Maritime Organization. SOLAS Consolidated Edition. 1997. Regulation 3(a)(vi).

^{iv} Australian Maritime Safety Authority webpage: <http://www.amsa.gov.au/imo/public/a-conventions-eif.html>

^v Fishing Vessels Casualty Taskforce Report. Dying to Fish. Mar 1999

^{vi} Uniform Shipping Laws Code. Section 13. Tables of equipment for Class 2A to 2E and Class 3A to 3E.

^{vii} Uniform Shipping Laws Code, Section 5F Clause 1.3. Uniform Shipping Laws Code, Section 11, Pt.1, cl.7. & Tables of equipment for Class 2C to 2E and Class 3C to 3E.

^{viii} Uniform Shipping Laws Code Subsection 5D Part IV

^{ix} Uniform Shipping Laws Code Subsection 5E cl.E.8, E.10.3.

^x Uniform Shipping Laws Code Section 7 cl.3.15

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- ^{xi} Order under the Commercial Vessels Act (NSW) exempting certain vessels from survey, crewing and other requirements. 29 Sep 1998.
- ^{xii} Maritime Safety Qld: <http://www.transport.qld.gov.au/qt/maritime.nsf/index/commercialregistration>
- ^{xiii} National Occupational Health and Safety Commission. Work-related fatal injuries as a result of fishing and maritime activities in Australia, 1989 to 1992. Sydney. June 1999.
- ^{xiv} National Occupational Health and Safety Commission. Work-related fatal injuries as a result of fishing and maritime activities in Australia, 1989 to 1992. Sydney. June 1999.
- ^{xv} National Marine Safety Committee. Unpublished report titled Assessment of Fatal and Non-Fatal Injury Due to Boating in Australia: Phase 2 Report.
- ^{xvi} National Marine Safety Committee. Unpublished report titled Assessment of Fatal and Non-Fatal Injury Due to Boating in Australia: Phase 2 Report.
- ^{xvii} Occupational Health and Safety Act 2000 (NSW)
- ^{xviii} Uniform Shipping Laws Code Section 11 Appendix F 1.4
- ^{xix} Uniform Shipping Laws Code Section 13 Appendix M and Appendix N
- ^{xx} Uniform Shipping Laws Code Section 5C Clause C13.1, C14.1, C.59.2
- ^{xxi} Uniform Shipping Laws Code Section 5C Clause C43.2, C45.2
- ^{xxii} International Maritime Organization. SOLAS Chapter 9-Code for management of the safe operation of ships (ISM Code)
- ^{xxiii} National Marine Safety Committee. Issues Paper-Uniform Shipping Laws Code Fire Safety Review. September 2001. www.nmsc.gov.au/documents/fireissues.pdf