



# SEA SAFETY

INFORMATION BULLETIN

Number 3 - October 2006

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## International tools for improved fishing vessel safety

**H**ello again, readers. First off, my apologies for the delay in completion and publication of this bulletin. A heavier-than-usual workload and more travel than I care for in the past few months, but back on schedule now and hopefully more regular in the months to come.

There is some excellent material in this bulletin, and I would first like to draw your attention to the lead article in the Safety Feature section regarding the ratification of the Torremolinos Protocol and the STCW-F Convention. As noted in the article, there is a real possibility for Pacific Island countries (PICs) to act collectively in the ratification and adoption of these important documents in the interests of promoting common safety standards, saving lives and preventing accidents. It requires support for the further development of political will in taking responsible steps with safety issues in an international framework. A task for all with an interest in preventing accidents and loss of life at sea.

Readers will also enjoy the contribution from Simon Reid on the New Zealand FishSAFE initiative, which has been a multi-agency commitment to addressing work safety issues at an individual boat level. An excellent initiative that is proving very successful and could well be applied more widely in the region. Thanks are due to John Swamy for his summary of the EU-funded sea safety programme for increasing safety awareness among artisanal fishermen in the tsunami-affected districts of Nagapattinam and Cuddalore, Tamil Nadu, India.

This edition also takes a look at some important aspects of marine communications, with a summary of the new GPIRB and a discussion of the pros and cons of mobile phones. I would again like to encourage group members and readers to sharpen their pencils or sit down at their keyboard and send in safety-related stories and articles.

Hugh Walton

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SECRETARIAT OF THE PACIFIC COMMUNITY

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# SPC Activities

## ■ Application of Safe Operation Plans during the practical component of the SPC/NMIT Pacific Islands Fisheries Officers Course

*by William Sokimi, SPC Fisheries Development Officer*

The practical component of the SPC/Nelson Marlborough Institute of Technology (NMIT) Pacific Islands Fisheries Officers Course was held at the Vanuatu Maritime College (VMC) in Santo from 5 to 30 June. The course was attended by nine students from seven Pacific Island countries: one each from Fiji, Nauru, Samoa and Vanuatu; two from Papua New Guinea; and three from Kiribati.

The programme developed for this year's practical course emphasised several aspects of small-scale commercial fishing operations, including the safety of crew and vessel through the daily use of Safe Operation Plans (SOPs); preparation and management of fishing vessels engaged in small fishing operations; construction of fishing gear and application of fishing methods; recommended practices for onboard handling of fish; post-harvest operations on return to base; handling, processing and packing fish for the export market; repairing and stowing gear in readiness for the next fishing operation; a working knowledge of the ecosystem approach to fisheries (EAF); and sustainable fishing practices.

Deterrent weather conditions (20-30 knot winds and rough seas) were experienced for the duration of the course. However, the daily routine of getting up early, preparing the fishing vessels for sea using SOPs, conducting fishing and post-harvest operations and preparing the vessels for the next fishing trip served the participants well in understanding the intricacies and dilemmas that commercial fishers face daily in order to carry out successful fishing operations.

The constant bad weather stressed the importance of preparing the vessels for fishing trips using SOPs and gave the participants an insight into the hardships and risks that small-scale commercial fishers face when trying to eke out a living. It's not just about catching fish.

The catch is the end product of meticulous planning and preparation, and is dependent on fishers' knowledge, selection of fishing grounds, weather conditions, and luck. The preparation of an SOP and its daily use reassures fishers that at least standard precautionary measures have been taken to give them better options when trouble occurs at sea and to safeguard their return from their fishing trip. Prudent seamanship and good boat-handling skills will also fortify their chances of a safe return to port.

Three different vessels were used for carrying out the fishing operations. The FV Etelis and FV Em Nao were used during the deep-bottom fishing and vertical longline exercises, while the FV Evolan was brought in during the horizontal tuna longline exercise. When the weather permitted, all vessels fished in the ocean side outside the reef areas up to 4 nautical miles from the reef; otherwise, the vessels operated in the lee of the islands lying off Luganville town in Santo. Each vessel had a separate SOP to suit its size and the capacity of the people who would be travelling on board for the training exercises.

The FV Etelis is a 10-metre vessel constructed of marine plywood with a 48 hp inboard diesel engine and licensed to carry 10 people plus the vessel's skipper, so 11 in all. During the course only eight people were carried on board, including the skipper.

The FV Em Nao is a 5-metre vessel constructed from marine plywood and powered by a 75 hp Yamaha outboard motor. The vessel is licensed to carry six people, but only five were taken on the fishing exercises.

The FV Evolan is a 12-metre vessel constructed from fibreglass and powered by a 75 hp Yanmar inboard diesel engine. This vessel is licensed to carry 10 people, but during the training exercises only eight were carried.

## SPC Activities

The following is the safety checklist for the FV Em Nao. It is not the full SOP but only the list used daily for pre-departure safety checks. Other documents in the SOP include fishing gear checklists, periodical inspection and service forms, records of audit and inspection, and records of safety equipment.

This pre-departure checklist can be used as a guide to develop your own SOP, specific to your vessel and type of commercial operation. More information on SOPs is available in issue #2 of our Sea Safety Bulletin..

SPC wishes to acknowledge the valuable input of Peter Petherbridge, New Zealand VSA Volunteer at the College, in the development and promotion of the VMC vessels' SOPs.



*Students of the SPC/NMIT Pacific Islands Fisheries Officers Course completing the pre-departure checklists during the practical fishing course in Santo*



FV 'EMNAO'			
<b>Pre-departure checklist, to be completed by skipper and left ashore. All equipment on Safety Certificate is to be on board at all times; other items may depend on proposed voyage.</b>			
Anchor, Danforth, chain and rope in good condition			Yes/No
Navigation lights tested and working			Yes/No
Radio, VHF	Tested Ch 16/12		Yes/No
Radio schedule times .....			
EPIRB	Tested OK		Yes/No
Torch and spare battery	Working		Yes/No
First aid kit	Checked		Yes/No
1 x fire extinguisher	Checked		Yes/No
Lifebuoy and line	In place		Yes/No
Coastal lifejackets, 1 per person	Good condition/dry		Yes/No
3 hand, 2 parachute and 2 smoke flares	In date		Yes/No
Charts and instruments, leadline	For voyage		Yes/No
Fuel, quantity on board .....	litres		
Engine checked			Yes/No
Engine checked	OK	Spare spark-plug on board	Yes/No
Tools, spare gear and engine parts on board			Yes/No
Spare light bulbs and fuses			Yes/No
Engine tested ahead and astern	OK		Yes/No
Steering tested	OK		Yes/No
Paddles on board			Yes/No
Food and water on board			Yes/No .....
people .....	days		
Weather forecast	Seen Yes/No	Copy taken	Yes/No
Other equipment taken for voyage .....			
Name of skipper .....			
Total number on board		people	
Pre-departure safety talk given to all on board.			Yes/No
<b>Date and time of departure.....</b>			
<b>Intended voyage.....</b>			
<b>Expected date and time of return.....</b>			
<b>The above checklist is correct .....</b>		<b>Skipper</b>	
<b>Actual date and time returned .....</b>			
<b>Fuel remaining .....</b>	<b>litres</b>	<b>Required .....</b>	<b>litres</b>
<b>Any deficiencies found and maintenance needed .....</b>			



# Safety Feature

## ■ The Torremolinos Protocol and STCW-F Convention: Tools for improved fishing vessel safety

by Michel Blanc, SPC Fisheries Development and Training Adviser

It is a well-known fact that fishing is one of the most dangerous occupations in the world. The following statistics from the International Labour Organization (ILO), the International Maritime Organization (IMO) and the Food and Agriculture Organization of the United Nations (FAO) clearly demonstrate the extent of the safety problem in the global fishing industry.

- Each year there is an average of 24,000 fatalities and 24 million non-fatal accidents (non-fatal injuries are grossly under-reported, according to ILO).
- While fishers comprise less than 1% of the global workforce, 7% of worker fatalities occur in the fishing industry.
- The fatality rate is estimated at 80/100,000 per annum, which is 79 times higher than the overall occupational fatality rate.

The community nature of much of the world's fishing activity and the potentially devastating impact that high injury and fatality rates can have on fishing communities are demonstrated by another set of statistics.

- In 1995 the total world fishing fleet (of all types) was about 3.8 million vessels.
- About 15 million people are employed aboard fishing vessels and about 98% work on vessels less than 24 metres in length.
- Most of the world's fishing fleet comprises boats that operate in artisanal fisheries.

According to IMO, 80% of accidents are caused by human error and most of these errors can at some point be attributed to management deficiencies that create the pre-conditions for accidents. Personnel must be effectively managed to ensure that they have appropriate training and that they work in accordance with relevant labour laws and agreed conditions. The procedures,

methods and systems used on fishing vessels must be effectively managed to ensure that they work effectively and efficiently and produce the required outcomes. Finally, plant (hull, machinery, fishing gear, etc.) must be managed to ensure that it is properly maintained and performs in accordance with its designed capacity.

The solutions for improving fishing vessel safety are thus straightforward: seaworthy vessels, well-trained and competent crews, and safety-oriented management.

Seaworthy boats are of critical importance, but it is necessary to have standards for their design, construction methods and materials of construction, as well as for their equipment and outfit. Along with these standards there must also be standards for maintenance and inspection - in other words, a regulatory system designed to oversee the fundamentals of safe operations. The standards must be universally adopted, and this requires some sort of international binding agreement. The Torremolinos Convention and its 1993 Protocol provide the necessary framework.

Just as important as the standards for vessels are standards for crew, their training, qualifications and methods of work. Because fishing is an industry that operates in open seas, interacts with other maritime industries and is global in operation, it is important that common crew training standards be used, particularly when it comes to qualification and certification. Those standards must be universally adopted and recognised, and the only way to do this is through the framework of an international convention. This is the purpose of the Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1995 (STCW-F Convention).

### **The 1977 Torremolinos Convention and its 1993 Protocol**

The safety of fishing vessels has been a matter of concern to IMO since the organisation came into existence. In 1977, the first-ever international conference on the safety of fishing vessels was held in Torremolinos, Spain. The conference adopted the Torremolinos Convention, which established a safety regime for fishing vessels of more than 24 metres. The Convention looked at construction standards and some safety-related equipment for fishing vessels in a similar way that the SOLAS Convention does for cargo and passenger vessels. The Torremolinos Convention was found too stringent by the major fishing nations, and as such, was never ratified.

In 1993, a Protocol to the Convention was adopted (the Torremolinos Protocol). The Protocol updates and amends the 1977 Convention, taking into account technological evolution and the need to take a pragmatic approach to encouraging ratification of the instrument. The safety provisions of the Protocol cover construction, stability, machinery, fire protection, protection of crew, life-saving equipment, emergency procedures, radio communications, navigation equipment, vessel certification and port state control. Some of the provisions are restricted to fishing vessels of more than 45 metres. To date, six states have ratified the Protocol (15 are required for its entry into force).

### **The 1995 STCW-F Convention**

The International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (1995) complements the Torremolinos Protocol by setting a regulatory framework for the training and certification of fishing vessel personnel. STCW-F is the 'sister' convention to the 1978 STCW Convention (training and certification of seafarers), as amended in 1995, with similar provisions.

The STCW-F Convention addresses training and certification standards for skippers and

watchkeepers on fishing vessels of more than 24 metres, engineers on vessels of more than 750 kW and crew in charge of radio communications. It also requires basic (pre-sea) safety training for all fishing vessel personnel. The Convention embraces the concept of competency-based training. It does not deal with manning levels. So far the STCW-F Convention has been ratified by six states, with 15 required for its entry into force.

### **Document for Guidance on Training and Certification of Fishing Vessel Personnel**

First published in 1985, then thoroughly revised in 2001, the Document combines the conventions and recommendations adopted by ILO and IMO with the wide practical experience of FAO in the field of fishers' training.

The Document is aligned with the provisions of the STCW-F Convention. It provides guidance for setting the framework of a training system for fishing vessel personnel appropriate to the size and nature of the fishery (all sizes of fishing vessels are covered). It addresses issues such as methods of training and assessment (competency-based training is promoted), content and duration of training programmes, competencies to be assessed, and required experience and qualifications for tutors. There is a strong emphasis on sustainability (FAO Code of Conduct), fatigue management and the active involvement of all parties in training development.

The above instruments were promoted at a regional seminar in late March in Suva, Fiji, as part of an initiative from IMO to urge member governments to consider accepting the 1993 Torremolinos Protocol and the 1995 STCW-F Convention. It was the eighth in a series of nine regional seminars run by Milhar Fuazudeen (IMO Technical Officer) and David Harrod (Maritime Safety Consultant). Participants included 10 maritime administrators, eight training providers, three fisheries administrators and two fishing operators, as well as staff from the SPC maritime and fisheries programmes.

## Safety Feature

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With regard to the likely impacts of Torremolinos and STCW-F on Pacific Islands, several important points were made at the seminar.

- The Pacific is well ahead of other regions in that it already has training and certification standards for fishing vessel personnel: a common certification structure for trading and fishing vessels was developed by the SPC Regional Maritime Programme (RMP) in the mid-1990s through a consultation process involving heads of marine departments and training institutions. It is monitored on an ongoing basis through a subcommittee of the Pacific Islands Maritime Association (PacMA) (the latest version is available from RMP).
- Training institutions in the region are already familiar with the concept of competency-based training, and a number of model training programmes for fishing vessel personnel are available and being used throughout the region: SPC Safety Certificate, SPC/Pacific Island Qualified Fishing Deckhand Certificate, etc. The pre-sea induction training system used in Papua New Guinea for new vessel crew is also relevant as it is aligned with the requirements of STCW-F for basic pre-sea safety training for all fishing vessel personnel.
- While the Protocol and Convention apply to large fishing vessels (> 24 metres), of which there are very few in PICs, the application of these instruments is flexible. It is possible for national laws to extend the applicability of Torremolinos and STCW-F to smaller classes of vessels.
- National administrations and the regional fishing industry need to be aware of and familiar with the provisions of these international instruments and prepare for their entry into force. The current status of requirements and standards in the region means that the

effective implementation of the Protocol and Convention would not be too difficult.

- Due to the current limited number of signatories, PICs, by ratifying the instruments, may drive their entry into force.
- The SPC maritime and fisheries programmes can underpin a regional mechanism and be the focal agency in assisting countries with the implementation of the Protocol and Convention.

SPC shares the opinion of IMO that implementing the 1993 Torremolinos Protocol and the 1995 STCW-F Convention will significantly improve the safety record of the fishing industry and contribute to the prevention of loss of lives on board fishing vessels.

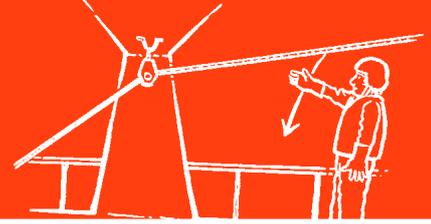
Obviously, the introduction of relevant standards for vessel safety and crew training can only provide to fishing vessel personnel a safer working environment, improved safety, wider employment options and sustainability of livelihood. However, the change will have a cost, not only for fishing vessel operators (upgrading of safety systems) but also for training institutions (wider application of competency-based training and assessment) and maritime administrations (certification and surveys). These cost implications need to be considered and carefully assessed. SPC and the Forum Fisheries Agency (FFA), through the EU-funded DEVFISH Project, will soon undertake a regional study on the issue, the results of which will be widely distributed to fisheries and maritime stakeholders.

### **For more information, contact:**

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## ■ FishSAFE: A New Zealand fishing industry safety programme

by Simon Reid

### Overview

FishSAFE is a partnership between the fishing industry and government agencies that is aimed at improving the safety performance of the New Zealand commercial fishing sector - in other words, reducing the number and severity of injuries to fishers.

The industry-led partnership was formed in 2004, and originated from a study into the causes of work-related fatalities within the commercial fishing industry that was carried out in 2000 by Maritime New Zealand. That study highlighted the high fatality rate within the commercial fishing industry and in 2001 led to the creation of FISHGroup - the Fishing Industry Safety and Health Advisory Group.

FISHGroup was an industry-led forum charged with identifying the causes of work-related near-misses, injuries and fatalities. It brought together fishers, industry stakeholder groups and government agencies to develop strategies aimed at improving safety performance. That work was successfully completed in 2003 and a final report was produced that made a series of recommendations in the areas of communications and safety awareness, streamlining of compliance, training and development, human factors, and design, construction and equipment.

The key recommendation was the formation of an industry-led body that would focus on the promotion of safety within the fishing industry by developing and supporting industry and government partnerships, and facilitating industry initiatives. This body was charged with implementation of the recommendations contained in the final report, and became known as FishSAFE. Membership is open to individual fishers and representative industry organisations, as well as government agencies with an interest in health and safety in the commercial fishing indus-

try. The current chairman of FishSAFE is Peter Dawson from the NZ Federation of Commercial Fishermen.

The regulatory framework covering industrial health and safety in New Zealand was revised at the same time as FishSAFE was being established, and coverage was extended to include fishing vessels under the legislation that applied ashore. FishSAFE took the view that the New Zealand deepwater fleet generally had been able to devote time and resources to responding to the application of the revised Health and Safety in Employment Act to their operations.

However, the owners and operators of smaller vessels often find themselves without either the time or specialist knowledge to meet their requirements under the new legislation. These vessels make up the majority of the New Zealand fishing fleet in terms of both vessel numbers (about 1100) and people employed, and are a high-risk area when it comes to number and severity of injuries.

In New Zealand, universal workers' compensation insurance is operated on a 24-hour no-fault basis by a government agency - the Accident Compensation Corporation (ACC). This agency was closely involved in FISHGroup and, together with Maritime New Zealand, is a key government partner with the fishing industry in FishSAFE. ACC statistics show that the rate of injuries and fatalities on smaller fishing vessels (under 24 metres) is comparable with that of forestry workers and aerial top dressing pilots - and this risk factor is of course reflected in the high ACC insurance premiums paid by fishers. Large employers in the fishing industry were able to enter into partnership programmes with ACC and gain discounts on the insurance levies for their employees in return for improvements in safety performance. However, there was no comparable mechanism that smaller companies or owner/operators could access.

**Figure 1** shows the situation facing the sector, where the number of new accidents is actually falling but the cost of those accidents in terms of treatment and compensation is relatively static.

**Figure 2** reinforces the picture, illustrating the number and cost of both existing and new claims for the previous five years.

**Figure 3** clearly illustrates the issue facing the small fishing vessel sector in New Zealand: the actual number of new injuries is falling, but the cost of those injuries (and consequently the rates of ACC levies) is rising.

**Figure 4** compares the rate of claims for smaller fishing vessels with other industry sectors that ACC views as having significant rates of new accidents.

**Figure 5** illustrates the nature of the injury with regard to new accident insurance claims for inshore fishing vessels.

**Figure 6** shows the parts of the body affected by accidents. When viewed together, Figures 5 and 6 clearly show that the majority of injuries are fractures, dislocations, and soft-tissue damage to the lower limbs - from the knee to the foot, and from the elbow to the finger.

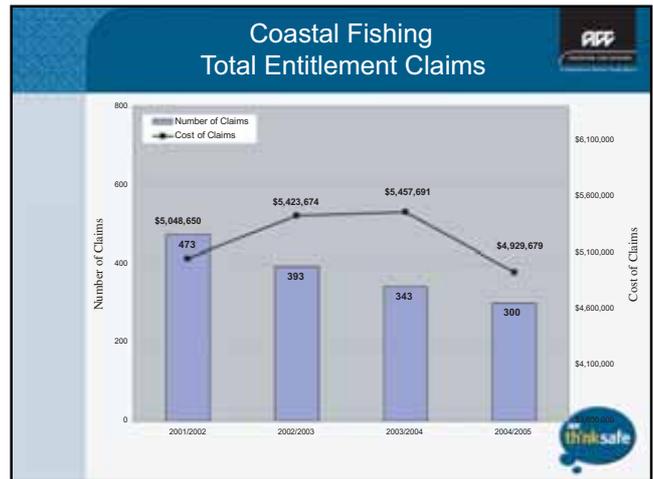


Figure 2: Coastal fishing total entitlement claims

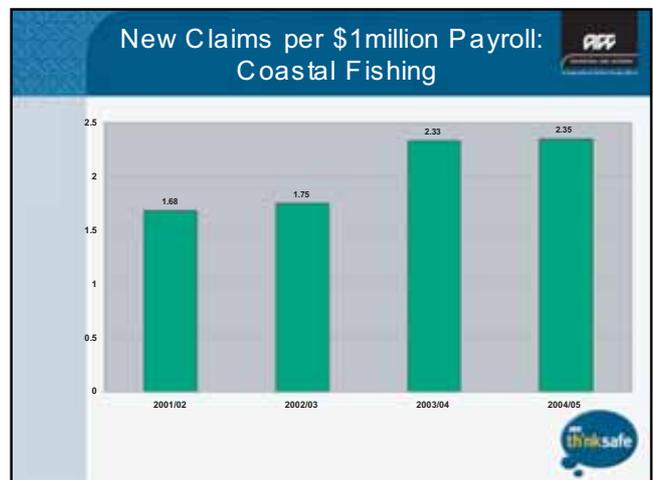


Figure 3: New claims per \$1 million payroll - coastal fishing

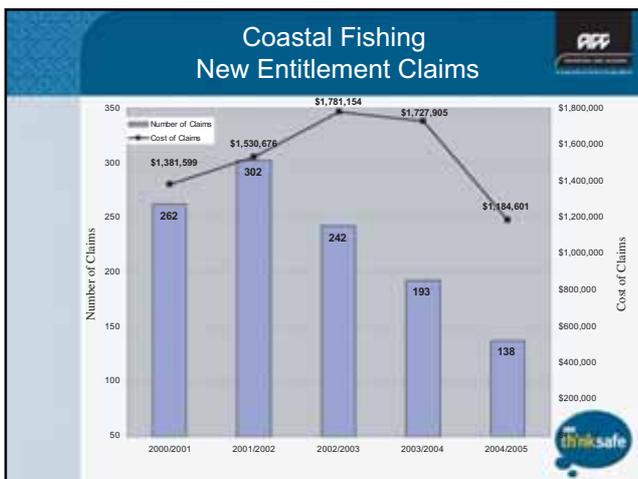


Figure 1: Coastal fishing new entitlement claims



Figure 4: Claims per \$1 million payroll - significant industries

## Training activities

The first priority for FishSAFE has been to adapt the approach of the New Zealand deepwater companies and develop safety guidelines for small commercial fishing vessels and associated injury prevention training, with the target audience being owners, operators and crew of fishing vessels less than 24 metres in length. The intention was to work with Maritime New Zealand to develop an appropriate response to health and safety legislation, and to work with ACC to create access to levy discount schemes in return for better safety performance by the owners/operators and crew of smaller vessels.

The development of the guidelines and training on their use has been a tripartite project between ACC, Maritime NZ and the fishing industry, funded by ACC to the tune of \$NZ500,000 over a three-year period. The Seafood Industry Training Organisation (SITO) has developed a one-day training workshop at little or no cost to participants to help skippers and owners of vessels under 24 metres put the guidelines into practice and give them the tools to formally train their crews.

The workshops commenced in May and will be rolled out over the next two years. The training will help owners and skippers tailor the guidelines to the situations on their vessels and in their fisheries. It will give them commonsense and pragmatic ways in which to cut down the odds of injuries and accidents, as well as meet their obligations under Safe Ship Management and Health and Safety regulations.

People with hands-on experience in the fishing industry will help deliver the training. SITO is also recruiting and training a network of industry people who are close to the fishers and stakeholder groups and who understand their work. These FishSAFE 'mentors' will help skippers and owners put the guidelines into place and will provide ongoing support for implementing them.

As well as being able to access a 10% reduction in ACC insurance levies, everyone who completes the training workshop will get

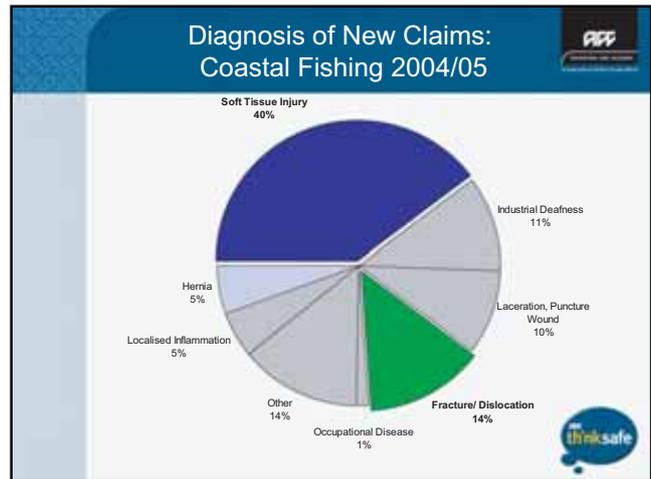


Figure 5: Diagnosis of new claims - coastal fishing 2004/05

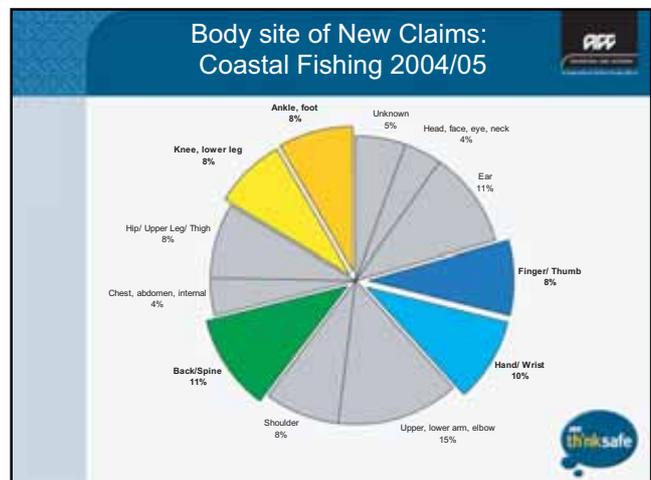


Figure 6: Body site of new claims - coastal fishing 2004/05

the FishSAFE passport, which is recognition that they have attended and completed the training and put the principles into effect on their vessel. The training at the workshops and the training that skippers will do with their crew on the vessel is all formalised against standards registered with the New Zealand Qualifications Authority (NZQA) and can be part of a national qualification. For owners and skippers, employing someone with the FishSAFE safety passport means they know they have someone with basic safety knowledge.

### The Guidelines

The Guidelines for Health and Safety On Board Small Fishing Boats were developed by fishers, for fishers. They take a 'best practice' approach to the common safety issues that affect all small fishing boats, and use the same approach to look at the hazards involved in specific fishing operations.

They are intended to be a useful and practical tool for everyone involved in the operation of smaller fishing vessels, helping crew to work safely and identify hazards as well as allowing skippers and owners to meet their obligations under New Zealand health and safety legislation and maritime rules.

Use of the Guidelines is intended on three different levels. The first level is a comprehensive set of resource materials for use as a reference tool for owners and skippers, which will be developed during 2006. In most cases this would be kept ashore, away from the vessel, or accessed via the Internet.

The second level is the 'real' Guidelines used during the training workshops. These are meant to be kept on the vessel wherever possible, with the skipper and crew as the target audience. The owner and skipper can work with their FishSAFE mentor to tailor the material to their vessel and the way they operate it.

The third level of Guidelines material will largely comprise stickers, pamphlets, laminated handouts, checklists and the like. It is intended to support and complement the induction and safety training of crew on vessels. This supporting material will become available in 2006 via training workshops and the FishSAFE network of mentors.

The Guidelines are meant to be customised to every vessel and each particular operation - users can remove the bits that aren't relevant and add in things that are. FishSAFE mentors will provide support and advice on doing this. Much of the safety material is relevant to every small boat, regardless of where and how it operates. The intention is that the skipper and

crew of a vessel will have a set of safety reference materials that are as relevant as possible to the equipment they have and the work they do.

These materials will provide a starting point for formal identification and management of hazards on the vessel, as is required now by law - and again, FishSAFE mentors will help with this process. The Guidelines identify the common safety issues fishers have encountered across the range of aspects involved in operating a vessel, and offer simple solutions or measures that can be used to try and address those issues. By taking the Guidelines material that has been customised to a vessel and testing it and how it applies to the way the vessel operates, the skipper and crew will have put in place a straightforward and effective hazard ID and management process. The FishSAFE mentor can help them to document the process in a simple way that is acceptable for any Safety Management System (SMS) or regulatory requirement, and the mentor will be available to fishers for ongoing advice.

The Guidelines are a living document and comments and feedback are most welcome. They can be viewed at [www.fishsafe.org.nz](http://www.fishsafe.org.nz). Any material on the website is freely available for use as long as FishSAFE is acknowledged as the source.

### FishSAFE mentors

FishSAFE mentors are the key link in helping owners, operators and crew to make their vessels a safer place to work and to access the ACC levy discounts that are available.

FishSAFE mentors provide free advice and guidance on injury prevention and hazard management on vessels. They are experienced individuals with a strong industry background who work closely with stakeholder organisations wherever possible. Their main roles are to help owners and skippers to personalise the Guidelines for individual vessels, and to assist the owner and/or skipper in the process of identifying and managing the hazards involved in the

## Training activities

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operation of their vessel. ACC and Maritime New Zealand have worked with SITO to develop an intensive training package for the mentors to equip them for this role.

The mentors will:

- help organise the training workshops in a particular area;
- support owners and skippers on how to tailor the Guidelines for their boat and operation;
- support owners and skippers in identifying and managing hazards involved in the operation of their vessel;
- provide material and advice for skippers to use in induction and safety training for their crew;
- provide assistance, support and advice to owners and skippers in the process of qualifying for available ACC levy discounts;
- provide assistance, support and advice to self-employed crew in the process of qualifying for available ACC levy discounts; and
- provide a local resource in each port on safe ship management, FishSAFE and hazard management on an ongoing basis.

### Induction and safety briefing process

One of the key requirements of the FishSAFE injury prevention process is for skippers to ensure that a consistent induction and safety briefing process takes place for all crew who work on the vessel, regardless of how much experience they have or what licence they hold.

The skipper needs to be assured that all crew know how to work safely on the boat, and that they have the skills to do so. This is a major requirement under legislation, and ensuring that it happens is also a major component in the owner, skipper and self-employed crew qualifying for the ACC levy reduction that is available. The induction and safety briefing process is critical to anyone associated with the vessel obtaining a levy discount. One of the issues is consistency - there is a tendency to think that people we assume to be experienced know both what they are doing and why they are doing it, which means that they do not get the same

kind of briefing and orientation as someone with no experience at all. The other major requirement in terms of induction and safety training is that it is required to be documented - by SMS companies and Maritime New Zealand, as well as from regulatory health and safety perspectives.

Everyone who works on a boat needs to be made familiar with the safety equipment carried, and with all the procedures that are going to apply in an emergency - who is going to do what in the event of fire, man overboard, etc. It is just as important to make them familiar with the way work is to be done safely on the boat, whether it is standing watch, working the gear or handling catch.





# Technology and Safety

## ■ The GPIRB: The smart EPIRB



The GPIRB is the first of a new generation of emergency beacons. Global Position Indicating Radio Beacons combine the latest in GPS and 406MHz EPIRB (Electronic Position Indicating Radio Beacon) technology, and add extraordinary precision to your emergency distress signal. If you are a boater who operates offshore, this could be the best 'life insurance' policy you own.

The GPIRB, with its built-in GPS, determines and broadcasts its own location. This shortens the time required to get an accurate fix on the beacon location and saves valuable time at the beginning of a search and rescue (SAR) operation.

The unit comes with a float-free bracket that releases it if it is submerged (as in a sinking). There is a manual mode to turn the unit on manually and a test mode that should be used on a frequent basis to test the operation. It has a minimum 48-hour operating life and 8-channel internal GPS, and comes with a lithium battery.

*Courtesy of Boatsafe.com - Nautical Know How, Inc*

## What's the difference between 406MHz EPIRBs and the new GPIRB?

The position of a 406MHz EPIRB is determined by calculations using the Doppler shift in the beacon's distress signal, which occurs as satellites approach and recede in overhead orbits. The accuracy of the calculations is determined by the number of signal bursts received by the satellites. Accuracy is enhanced when a satellite passes directly overhead, because the satellite receives the greatest number of signal bursts. The only real problem with the system is that it takes time for an accurate fix to be acquired.

In contrast, the new GPIRB takes an active role in determining its own position. When activated, its internal GPS finds its own position, just like an onboard GPS. Having located itself, it broadcasts its identity and position on 406MHz. It will then shut down for 20 minutes to conserve power, and repeat the process of locating itself and rebroadcasting. It will continue to update its position every 20 minutes as long as it is active. The advantage of a GPIRB is that an accurate fix is almost instantly available. Its frequent update allows rescuers to compute drift accurately, and direct SAR teams directly to you - difficult to do with the time delays of an EPIRB.



## ■ VHF radios versus cellular phones



With the increasing availability of cellular (mobile) phone coverage in many Pacific Islands, the following article is a timely reminder of the limitations of cellphones as a sea safety tool.

*Courtesy of Boatsafe.com - Nautical Know How, Inc.*

The US Coast Guard does not advocate cellular phones as a substitute for the regular maritime radio distress and safety systems recognised by the Federal Communications Commission and the International Radio Regulations - particularly VHF maritime radio. However, cellular phones can have a place on board as an added measure of safety.

### Cellular phone limitations in an emergency

- Cellular phones generally cannot provide ship-to-ship safety communications or communications with rescue vessels. If you make a distress call on a cellular phone, only the party you call will be able to hear you.
- Most cellular phones are designed for a land-based service. Their coverage offshore is limited, and may change without notice. Almost everyone has experienced communications out to about 25 miles at times, yet at other times could not get through to a land-based phone inside of 10 miles from shore. This might well create a communications problem in the event of an emergency at sea.
- Locating a cellular caller is hard to do. If you don't know precisely where you are, the Coast Guard will have difficulty finding your location on the water.

Note: In some areas cellular providers have established a special code (\*CG) that, if you are in range, will connect you directly to a Coast Guard Operations Center. This service may only work with the carrier to which you have subscribed.

### Cellular/VHF marine radio comparison

Cellular phones do provide the convenience of a simple, easy-to-use, inexpensive, private and generally reliable telephone service to the home, office, automobile and other locations. Placing a shore-to-ship call to someone with a cellular telephone is especially convenient. However, you may need a special agreement with your carrier to use it outside their local service area.

VHF marine radios were designed with safety in mind. If you are in distress, calls can be received not only by the Coast Guard but by ships that may be in a position to give immediate assistance. A VHF marine radio also helps ensure that storm warnings and other urgent marine information broadcasts are received. The Coast Guard announces these broadcasts on VHF channel 16. Timely

receipt of such information may save your life. Additionally, your VHF marine radio can be used anywhere in the world.

On VHF radios, however, conversations are not private and individual boats cannot be assigned a personal phone number. If you are expecting a call, channel 16 or the marine operator's working channel must be continually monitored.

### Should you rely on a cellular phone exclusively?

Actually, there is no comparison between cellular phones and VHF marine radios. They normally provide different services. The cellular phone is best used for what it is - an onboard telephone that is a link with shore-based telephones. A VHF marine radio is intended for communication with other ships or marine installations - and it is a powerful ally in times of emergency. If you have a portable or hand-held cellular telephone, by all means take it aboard. If you are boating very far off shore, a cellular phone is no substitute for a VHF radio. But if you are within cellular range, it may provide an additional means of communication.



### ■ A safer tool: The improved ATÉPAS dugout canoe in Senegal

*Jacques Huet, Marine Expert Plus, Gaspé, Québec, Canada  
Gaétan Myre, Groupe Collegia, Matane, Québec, Canada*

Senegal is, along with Mauritania, one of the biggest fishing countries in West Africa. Artisanal fisheries play an important role in the national economy, providing more than 600,000 direct jobs and helping to feed the most disadvantaged sectors of society. These fisheries supply up to 85% of industrial processing plants and provide the raw materials for a very important artisanal processing industry, which is mainly run by women.

An age-old activity, Senegalese dugout canoe fishing has evolved a great deal since the 1970s, when the canoes gradually became motorised. Over the years, as fish became scarcer near the coasts, longer canoes had to be built but no substantial changes were made to building techniques. The largest canoes today are 22 metres long; most are 12-16 metres long.

Traditional dugout canoes are not ribbed but consist of a keel made from a tree trunk to which planking is attached. The planks are joined to each other by long nails. Watertightness is loosely ensured by strands of jute covered in tar. 'Cross-members' join the rib-bands and ensure a certain degree of lateral stability. The structure is completed by spurs fore and aft. A well hole is made in the aft of the canoe for the outboard motor's shaft.

The canoes are often built by travelling carpenters who use very basic tools, and the materials the canoes are made of are not the best in quality. Dugout canoes have limited durability (5-6 years) and must be repaired often. Their principal drawbacks are their lack of solidity and lack of watertightness. It is not uncommon to see them break apart when they try to pass the surf line going out to fish or coming back again.

Since the canoes leak, a bailing device - generally some kind of foam - must be kept on board at all times. In addition, the canoes usually have absolutely no safety gear,

whether active or passive, to make it possible to save lives during shipwrecks. As the canoes have cross-members, it can be hazardous to move about during fishing operations.

From 1990 to 1996, the Canadian International Development Agency (CIDA) funded a project designed to improve the traditional Senegalese dugout canoe. The 'improved dugout' section of the ATÉPAS (Improving Fishing Techniques in Senegal) project had the following objectives:

- improving building techniques for traditional dugout canoes while keeping the same general look, which fishers are very attached to culturally;
- improving the vessels' overall safety and integrating safety gear (mast and radar reflector, spare sail, buoyancy tanks, etc.); and
- setting up a shipbuilding yard equipped with modern tools, and training carpenters in new building techniques.

The project set up a boatyard in Mbour on the Petite Côte about 100 km south of Dakar. Mbour is one of the most important fishing and artisanal processing sites in the country. In all, about 10 carpenters - members of the same economic interest group (groupement d'intérêt économique, or GIE) - were trained.

The hands-on training covered modern building techniques using electric tools. Improved dugout canoes of 12.5-18 metres were designed including all the required safety equipment. Between 1992 and 1996, the yard built twenty 12.5-metre pirogues and sixty 18-metre canoes, but due to disagreements within the economic interest group the yard then ceased to operate.





## New Maritime New Zealand DVD

*Courtesy of Maritime New Zealand*

Passengers aboard Cook Strait ferries are being shown an educational safe boating DVD produced by Maritime New Zealand. The DVD, which was produced by Maritime NZ's Recreational Boating team, was introduced onto Interislander and Strait Shipping services in June 2006. It teaches passengers why small craft need to keep well clear of ships in confined areas. Maritime's Jim Lott, Manager Recreational Boating, said the screenings on board the passenger ferry services were 'invaluable' to the Crown entity's safe boating campaign. Over one million people cross Cook Strait each year.

'Many of these passengers are recreational boaties, so for us it's great to be able to capture them by screening these safe boating messages - because in the worst case, a ship cannot do anything to avoid a collision,' said Mr Lott. He said the message in the Cook Strait DVD - that small craft within 500 metres ahead of a ship are in danger - applies to all harbours and harbour approaches. Examples filmed from the bridge of ships clearly show the risk many small boat operators are unaware of.

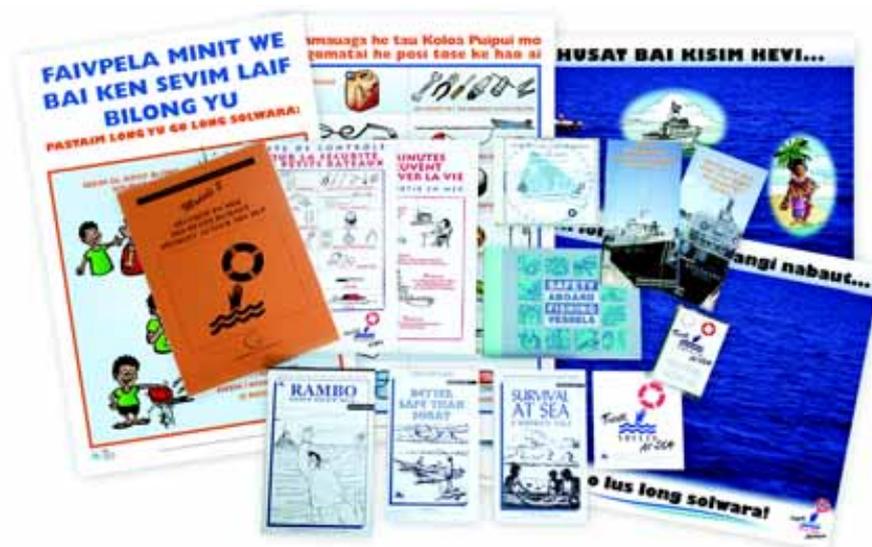
'The DVD carries on the very successful boating safety campaign involving the ferry companies and Maritime NZ,' said Mr Lott. 'Each summer the companies have been giving out boating

safety packs to all who take a small boat across Cook Strait on a ferry, so we're really thrilled that so many people will be exposed to our new educational safety message.'

Strait Shipping spokeswoman Wendy Pannett says the company is keen to support the campaign and help educate small boaties sharing the waterways with big vessels. 'We've been working with Maritime NZ on this campaign for over a year by distributing information packs to all boaties travelling on our Bluebridge service, and the DVD is a valuable extension to this activity.'

Toll spokesperson Sue Foley said the company was 'delighted' to support Maritime New Zealand by showing the DVD on its ships. 'We appreciate the effort that has gone into putting the DVD together and we know it will go a long way towards getting the safe boating message across,' she said.

You can obtain a free copy of the Safe Boating DVD series, which covers two hours of educational information, by contacting Maritime NZ's Recreational Boating team at [recreational.boating@maritimenz.govt.nz](mailto:recreational.boating@maritimenz.govt.nz).





# Accidents and Incidents

## ■ Preventable tragedy: Reinforcing the dangers of alcohol and boats

*Courtesy of Boatsafe.com - Nautical Know How, Inc.*

A recent tragic accident in the USA prompts this reminder about boating and alcohol. Two boaters, out for a day of fishing, were returning to the boat ramp to load up for the day. Less than half a mile from the ramp they ran into a channel marker. Both men were thrown from the boat. One man survived; the other did not. Investigation of the accident turned up several beer cans in the boat. Although the final investigation has not been concluded, there is a great possibility that alcohol played a part in this accident.

Most boaters, even though they logically know that they should not drink and boat, don't understand the enhanced effects that alcohol can have on the water. Natural stressors such as exposure to sun, glare, wind, noise, vibration and motion on the water produce 'boater's hypnosis' or fatigue. This in itself reduces reaction time almost as much as being under the influence. Adding alcohol to these environmental stressors intensifies their effects.

Alcohol can decrease a person's ability to handle a boat in many ways. As a depressant, alcohol goes straight to the nerves, bloodstream and brain. As recreational boaters it is hard enough to remember all the rules, regulations, boat-handling techniques, etc. while lucid. A few beers to quench the thirst in a rapidly dehydrating body and the following happens.

**Sense of balance erodes:** Most boating deaths result from falling out of a small open boat, without a lifejacket, whether the boat capsizes or not.

**Vision fades:** Because of the sun and reflection of light, objects on the water can be hazy and difficult to see. Colour perception and peripheral vision deteriorate and at night depth perception decreases. You can imagine what happens if you can't distinguish between the red and green markers (or worse, don't see the markers at all) or red and green lights of an oncoming vessel at night.

**Coordination suffers:** Should a person fall into the water they may have trouble just floating, let alone grasping onto a life ring or throwable device. Add the shock of the cold water and the risk of cramping, and the likelihood of drowning increases significantly.

**Surface blood vessels dilate:** Blood vessels on the surface of the skin dilate to increase the rate of body heat loss while in the sun. If, while these vessels are dilated, you fall overboard into cold water, hypothermia sets in quickly and this further reduces your decision-making abilities.

**Dehydration sets in:** As the sun beats down and the body naturally tries to cool itself by expelling perspiration to cool the skin, the body starts to get dehydrated. Drinking alcohol while dehydrated greatly enhances the rate at which the alcohol is absorbed.

**Judgement is impaired:** One of the things that drinking tends to do is to make you begin to lose your judgement. After a drink or two, people tend to become relaxed and are more likely to perform dangerous acts that they might not normally do if not under the influence. Because their judgement is impaired, they may not even realise they are doing something dangerous. This, combined with the other debilitating symptoms previously covered, spells disaster.

One-third of all boating fatalities in the USA are alcohol related. It is illegal to operate a boat, or to permit others to do so, while under the influence of alcohol, narcotics or barbiturates. Penalties are severe and include fines of up to \$5000, imprisonment of up to one year, non-paid public service work, and mandatory substance abuse counselling. If an operator under the influence kills or seriously injures another person, the penalty can be up to five years in prison and a fine of up to \$5000.

## Accidents and Incidents

### ■ And in Papua New Guinea, alcohol kills

An update by Hugh Walton

New Ireland Province in Papua New Guinea's Islands Region has a grim small-boat safety record for 2006, with two major alcohol-related boat accidents causing multiple deaths.

In the first incident, a crowded 23 ft Yamaha boat was making the return evening trip from Kaut Harbour to Djal Island, a journey of some 10 nautical miles. It was blowing and rough, and mid-trip the boat operator decided to turn around and head back to Kaut. Once the boat had turned around, one of the passengers, reportedly in an inebriated state, challenged the operator and assumed control of the vessel, turning back in the direction of Djal.

Shortly thereafter the vessel was swamped and some 20 people were tossed into the sea. With darkness falling, the group of passengers set out for the shore at Kaut. It was to be a grim night, with 10 passengers making it safely back to shore, four bodies washed up at Kaut and six people missing and presumed dead. The commandeering passenger was one of the lucky ones.

The accident made page 3 in the national papers with a headline saying '3 bodies washed up', but there was no subsequent in-

vestigative action pursued by either provincial or national authorities. It seems that there is no real political will to deal with this type of incident in PNG.

The second incident, in July, was a virtual repeat of the first, only it was the vessel operator who was under the influence of alcohol. The vessel was on a trip between Kokapo in East New Britain and the west coast of Namatanai in New Ireland Province.

In this instance it was reported that six persons drowned and eight managed to make it safely back to shore, including the boat operator. Following a police investigation, the boat operator was charged with murder and is now in Namatanai jail awaiting trial.



*“Don’t increase the risk,  
stay sober at sea.”*

*In September 2000, SPC Fisheries Training Section produced a poster showing what happens to fishermen who go fishing after a drinking party.*

*This cartoon poster adds to the resource materials produced by the Training Section, aimed at reducing the number of small boat accidents in the region.*





# News from other places and reader contributions

## ■ Sea safety project for artisanal fishermen in Nagapattinam and Cuddalore Districts, January-June 2006

by John Swamy, National Boat Safety Consultant, UNDP

A sea safety project for increasing awareness among artisanal fishers in the tsunami-affected districts of Nagapattinam and Cuddalore, Tamil Nadu, India, got underway in January 2006 and ended in June the same year.

The project was funded by the European Commission for Humanitarian Aid and implemented by the United Nations Development Program (UNDP) and the South Indian Federation of Fishermen Societies (SIFFS), the largest NGO working among artisanal fishermen in southern India.

### Background

The Bay of Bengal is considered one of the meanest seas in the world. Fishermen operating in these waters lead a hazardous life with no safety equipment. Very little has been done about the safety of artisanal fishermen in India. Most safety initiatives in the past were targeted at fishermen in large mechanised boats. This project is the first initiative on sea safety for artisanal fishermen on the Tamil Nadu coast.

The fishermen go out to sea in fibre boats and catamarans using gill nets and hook and lines. All fibre boats and some of the catamarans are powered by long-tail outboard engines. The fishermen carry no safety equipment except for the sail rig that is carried by all boats as alternate propulsion. All fibre boats have a provision for using drop keels to prevent drifting to leeward during sailing. Drop keels are also used while on engines during strong winds.

### The project

The project intended to increase awareness on all issues concerning sea safety among artisanal fishermen. Workshops were conducted in 16 villages in Nagapattinam and

Cuddalore Districts for more than 800 active seagoing fishermen. Street plays were staged in 38 villages across the two districts. An illustrated handbook, in Tamil, was published and over 8000 copies were circulated among fisher communities.

Artisanal fishermen along this coast had never been exposed to life-saving equipment such as lifebuoys, lifejackets, GPS, lifeboat rations, radar reflectors, portable VHF radio and the heliograph. The workshops served as a platform to disseminate information regarding sea safety equipment and its usage, concerns and related problems faced by these fishermen. 'We have never seen anything like this before,' said Selvan, a labourer in a fishing boat. 'We've seen wireless sets with policemen but never knew [they were] useful for fishing.' Selvan echoes the sentiments of the majority who attended the workshops.

The Sethu Samudram Canal is an issue fishermen will have to face in the near future. It will focus merchant ship traffic along the inshore regions, which are fishing grounds for artisanal fishermen. The increased traffic will mean a loss of nets and livelihood for these fishermen. Merchant ships and other large vessels may cut a net in two and proceed on their way without even being aware of it. During the workshops, fishermen learned how a simple radar reflector can make their boats and nets visible to ship radars. Radar reflectors must always be used by small boats fishing in the vicinity of merchant ship traffic. In the case of fibre-reinforced plastic (FRP) boats using gill nets, one more reflector must be hoisted at the end of the net.

The use of the following safety equipment was demonstrated during the workshops:

- survival rations
- compass
- jackknife

## News from other places and reader contributions

- lifejacket
- lifebuoy
- first aid kit
- sea rescue streamer
- radar reflector
- portable VHF radio
- handheld GPS receiver
- heliograph

It is not that the fishermen along this coastline are not conscious of safety issues. They carry sail rigs, which consist of a bamboo mast that is almost as long as the boat. They have no qualms about carrying this rather cumbersome piece of equipment, though it is rarely used. So the carriage of additional equipment was not met with any resistance. However, the cost of the equipment was a cause for anxiety.

Fishermen requested that SIFFS consider providing the equipment with a subsidy, as the cost of some of the equipment was beyond their means. It was pointed out and generally agreed during the workshops that essential safety equipment was not necessarily expensive and that the more expensive equipment was desirable as opposed to essential.

Safety strategies to prevent accidents were also discussed at the workshop. Engine failure is one of the chief causes of stranding at sea, followed by unexpected changes in weather like sudden squalls. Loss of gear, border conflicts with Sri Lanka and other sea safety incidents also came up for discussion. Vital information on fishing methods and night fishing techniques from a safety perspective was collected from fishermen during the workshops.

Since the workshops were male centred and targeting only seagoing fishermen, a street theatre troupe was hired to target women and children. An appropriate script was developed for staging street plays highlighting the importance of sea safety. Plays were conducted in 38 fishing villages in Nagapattinam and Cuddalore Districts, reaching out to more than 7600 individuals from fishing communities.

Over 8000 copies of a simple, illustrated handbook in Tamil listing precautions to be taken

before going out to sea, while at anchor, while fishing at night and during bad weather was circulated among the fishermen. It also contains a safety equipment checklist.

Any awareness initiative on sea safety should be followed up with an implementation programme. Responding to fishermen's requests at the awareness workshops for safety equipment, SIFFS has initiated implementation of the project in five villages in Nagapattinam District: Kodyakarai, Arcattuthurai, Vizhunthamavadi, Keezhamoovarkarai and Poompuhar.

Fishermen in these five villages will now be able to acquire safety equipment with a subsidy. A safety kit comprising the following items of equipment will be made available to these fishermen:

- radar reflectors (2)
- survival rations (2)
- jackknife
- lifebuoy
- heliograph
- compass
- first aid kit
- 20-litre container for emergency fresh water
- lifejacket (optional)

### Want to find out more on Sea Safety?

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## News from other places and reader contributions

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The total cost of the kit is Rs.6000 and SIFFS will contribute 80% of this while the fisherman contributes 20%. The kit is for use in FRP boats only.

### Conclusion

The advent of engines ushered in the need for safety among small-scale fishermen. Earlier, when boats were rowed or propelled by wind, fishermen went for only short trips offshore and fished in sight of one another most of the time. All traditional emergency responses were upset with the introduction of engines. The depletion of inshore resources also added to the risk. Now fishermen go greater distances and isolate themselves from other boats and are helpless during emergencies. They are not aware of equipment that can help save their lives during emergencies.

Many workshops, seminars and declarations have been made about sea safety in Tamil Nadu, but this is the first time efforts have been made to introduce safety equipment and a safety culture among artisanal fishermen. Sea safety was discussed from a maritime perspective with active, seagoing fishermen.

Of the many issues aired during the village-level workshops, loss of power due to engine failure, unexpected changes in the weather and loss of way were found to be the chief causes of distress. Issues such as hunger and thirst experienced by fishermen while stranded and adrift in the ocean also came up for discussion.

Through workshops, street plays and a handbook in Tamil, the fishermen of Nagapattinam and Cuddalore Districts were

introduced to sea safety equipment and its use during emergencies. Discussions, based on experiences in emergency situations while at sea, were held with seagoing fishermen during the village-level workshops. Of the 11 pieces of safety equipment demonstrated, the GPS and the portable VHF radio were the most wanted. The compass came next, closely followed by the radar reflector, rescue streamer and heliograph. The men confessed to setting their eyes on such equipment for the first time.

Awareness drives should be stepped up and the men need to be trained in the use of safety equipment. Simultaneously, safety equipment must be made available at affordable costs and its carriage in boats encouraged. Inspections must be conducted on a regular basis to ascertain if the boats are conforming to basic standards of safety. Sea safety incidents and accidents have to be recorded so that a clearer picture of the risks and dangers experienced by fishermen will emerge.

Accidents will happen no matter what, but we hold within us the power to reduce risks by taking properly planned and level-headed action. Presently, artisanal fishermen have no provisions for the safety of his their life at sea. Safety equipment does not guarantee safety of life, but it will bolster the helplessness that prevails in times of distress and restore confidence during life-threatening situations.



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