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FAO
TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES

1

Suppl. 3

FISHING OPERATIONS

3. Best practices to improve safety at sea in the fisheries sector

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3. Best practices to improve safety at sea in the fisheries sector

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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PREPARATION OF THIS DOCUMENT

Fishing is considered to be the world's most dangerous occupation, first estimated by FAO in 1989 to cause more than 24 000 deaths per year and later confirmed by the International Labour Organization (ILO) at a Tripartite Meeting on Safety and Health in the Fishing Industry, Geneva, Switzerland, 13–17 December 1999. The issue of safety in the fisheries sector was again raised at the twenty-seventh session of the FAO Committee on Fisheries (COFI) held at FAO headquarters from 5 to 9 March 2007, at which a large number of members expressed concern about safety at sea in the fisheries sector, especially small-scale fisheries. It was suggested that FAO should develop guidelines on best practices for safety at sea and that COFI should consider developing an international plan of action (IPOA) on the subject. FAO was also urged to continue collaboration with the International Maritime Organization (IMO). As a result, an Expert Consultation was held in Rome, Italy, from 10 to 13 November 2008 to develop a draft outline of guidelines for best practices to improve safety at sea in the fisheries sector (FAO Fisheries Report No. 888). The consultation also provided recommendations regarding the scope of the guidelines, the special needs of developing countries and other specific considerations and goals.

The issue of safety in the fisheries sector (that includes vessel operations in support of aquaculture activities) was once more raised at the twenty-eighth session of COFI and many Member States again noted the importance of safety at sea, as well as the outcome of the above-mentioned FAO Expert Consultation on Best Practices for Safety at Sea in the Fisheries Sector. Consequently, there was widespread support for the development of guidelines as recommended by the Expert Consultation. The Committee recognized the effective working relations that FAO enjoyed with IMO and ILO and encouraged such collaboration to continue, especially in the areas of safety at sea and conditions of work and health standards aboard fishing vessels and vessels used in support of aquaculture activities.

These guidelines were prepared within the Fishing Operations and Technology Service of the FAO Fisheries and Aquaculture Department, taking into consideration the draft outline developed by the above-mentioned Expert Consultation and the result of experience gained from field trials on the subject matter within developing countries. Due consideration was also given to additional comments and suggestions received and to related expert views voiced at major international meetings and/or given in publications.

FAO. 2015.
Fisheries operations. Best practices to improve safety at sea in the fisheries sector.
FAO Technical Guidelines for Responsible Fisheries. No. 1, Suppl. 3.
Rome. 196 pp.

ABSTRACT

Article 6, paragraph 6.17, of the Code of Conduct for Responsible Fisheries recognizes that "States should ensure that fishing facilities and equipment, as well as all fishing activities, allow for safe, healthy and fair working conditions and meet internationally agreed standards adopted by relevant international organizations". Consequently, following directions from the Food and Agriculture Organization (FAO) Committee on Fisheries, the three principle relevant international organizations, FAO, the International Labour Organization (ILO) and the International Maritime Organization (IMO), have cooperated in the development of mandatory and voluntary instruments, as well as guidelines for their implementation. Such cooperation was crucial in the revision of Parts A and B of the FAO/ILO/IMO Code of Safety for Fishermen and Fishing Vessels, as well as the in the development of the Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels and in the development of:

- Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels;
- Implementation Guidelines on Part B of the Code, the Voluntary Guidelines and the Safety Recommendations; and
- Revision of the Document for Guidance on Training and Certification of Fishing Vessel Personnel.

Furthermore, FAO cooperated with ILO in the development of its Work in Fishing Convention (No. 188) and in 2012 with IMO in finalizing the Cape Town Agreement on the implementation of the Protocol to the Torremolinos Convention. Therefore, for the first time standards are now available for fishing vessels of all sizes and may be readily applied to many vessels used in aquaculture activities. Consequently, there is a sound

basis to move forward with the development of Best Practices for Safety at Sea in the Fisheries Sector, as recommended by an Expert Consultation held in Rome, Italy, from 10 to 13 November 2008.

It is noted, however, that vessels used in support of aquaculture may fall under legislation promulgated for fishing and non-capture fisheries operations; hence, the need for close cooperation between fisheries and maritime administrations.

The purpose of these guidelines is to enable relevant authorities to develop and implement strategies aimed at improved safety, health and conditions of service at sea in capture fisheries and aquaculture operations. They apply to all commercial fishing activities, as well as activities at sea within the aquaculture sector. Furthermore, the principles therein, may also be applied to vessels engaged in fisheries research.

However, while these guidelines are not directed at sport and recreational activities carried out within the aquatic environment, administrations responsible for such sectors may well take note of the safety and health issues therein.

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ACRONYMS AND ABBREVIATIONS

AIS	automatic identification system
ALDFG	abandoned, lost or otherwise discarded fishing gear
Code	Code of Conduct for Responsible Fisheries
COFI	Committee on Fisheries
EAF	ecosystem approach to fisheries
EEZ	exclusive economic zone
EPIRB	emergency position indicating radio beacon
FAO	Food and Agriculture Organization of the United Nations
GMAW	gas metal arc welding
GRP	glass reinforced plastic
GT	gross tonnage
GTAW	gas tungsten arc welding
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IAMSAR	International Aeronautical and Maritime Search and Rescue
ICAO	International Civil Aviation Organization
ILO	International Labour Organization
IMO	International Maritime Organization
IMTA	integrated multitrophic aquaculture
IPOA	international plan of action
IRCS	international radio call sign
ISO	International Organization for Standardization
ITU	International Telecommunication Union
IUU	illegal, unreported and unregulated (fishing)
kW	kilowatt
LR	Lloyd's Register
m	metre
mm	millimetre
MAIB	Marine Accident Investigation Board
MARPOL	International Convention for the Prevention of Pollution from Ships
MCS	monitoring, control and surveillance
MEPC	Marine Environment Protection Committee

MERSAR	Merchant Ship Search and Rescue
MPA	marine protected area
MSC	Maritime Safety Committee (IMO)
NACA	Network of Aquaculture Centres in Asia Pacific
NGO	non-governmental organization
NIOSH	National Institute for Occupational Safety and Health (United States of America)
NLRI	National Lake Rescue Institute (Uganda)
NPOA	national plan of action
OSH	occupational safety and health
P&I	protection and indemnity (cover)
P&S	port and starboard
SAR	search and rescue
SART	search and rescue radar transponder
SOLAS	International Convention for the Safety of Life at Sea
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
STCW-F	International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel
SWL	safe working load
TAC	total allowable catch
TIG	tungsten inert gas
UNCLOS	United Nations Convention on the Law of the Sea
UNGA	United Nations General Assembly
UV	ultraviolet
UVI	unique vessel identifier
VHF	very high frequency
VMS	vessel monitoring system

BACKGROUND

1. From ancient times, fish from oceans, lakes and rivers has been a major source of food and a provider of employment and other economic benefits for humanity. Ocean productivity seemed particularly unlimited. However, with increased knowledge and the dynamic development of fisheries and aquaculture, it was realized that living aquatic resources, although renewable, are not infinite and need to be properly managed, if their contributions to the nutritional, economic and social well-being of the world's growing population were to be sustained.

2. However, for nearly three decades, because of the dramatic increase in pollution of the aquatic environment and the atmosphere, abusive fishing techniques worldwide and illegal, unreported and unregulated fishing (IUU), catches and landings have been shrinking and fish stocks declining, often at alarming rates.

3. Stock depletion has negative implications for food security, as well as economic development, and reduces social welfare in countries around the world, especially those relying on fish as their main source of animal protein and income, such as subsistence fishers in developing countries. Therefore, living aquatic resources need to be properly managed if their benefits to society are to be sustainable.

4. Sustainability of societal benefits requires a recovery of depleted stocks and maintenance of the still-healthy ones through sound management. In this regard, the adoption of the United Nations Convention on the Law of the Sea in 1982 provided a new framework for the better management of marine resources. Thus, the new legal regime of the oceans gave Coastal States rights and responsibilities for the management and use of fishery resources within the areas of their national jurisdiction, which embrace some 90 percent of the world's marine fisheries.

5. In recent years, world fisheries have become dynamically developing sectors of the food industry and many States have striven to take advantage of their new opportunities by investing in modern fishing fleets, aquaculture development and processing factories in response to growing international demand for fish and fishery products. It became clear, however, that many fisheries resources could

not sustain an often uncontrolled increase of exploitation. Overexploitation of important fish stocks, modifications of ecosystems, significant economic losses and international conflicts over management and fish trade still threaten the long-term sustainability of fisheries and the contribution of fisheries to the supply of food.

6. In light of this situation, while recognizing that the recovery of depleted stocks is still urgent and that avoiding depleting still-healthy stocks is important, FAO Member States have expressed the need to further develop aquaculture as the only immediate way to bridge the gap between the dipping capture fisheries output and the increasing world demand for seafood.

7. Indeed, in the last three decades, aquaculture has recorded a significant and most rapid growth among the food-producing sectors and has developed into a globally robust and vital industry. However, aquaculture also has been shown at times to have the potential to cause significant environmentally and socially adverse impacts.

8. Thus, the nineteenth session of the FAO Committee on Fisheries (COFI), held in March 1991, recommended that new approaches to fisheries and aquaculture management embracing conservation and environmental, as well as social and economic considerations, were urgently needed. FAO was asked to develop the concept of responsible fisheries and elaborate a code of conduct to foster its application.

9. Subsequently, the Government of Mexico, in collaboration with FAO, organized an International Conference on Responsible Fishing in Cancún in May 1992. The Declaration of Cancún, endorsed at that conference, was brought to the attention of the United Nations Conference on Environment and Development, also known as the Earth Summit, in Rio de Janeiro, Brazil, in June 1992, which supported the preparation of a Code of Conduct for Responsible Fisheries (CCRF). The FAO Technical Consultation on High Seas Fishing, held in September 1992, further recommended that in the elaboration of a code the issues regarding high seas fisheries also be addressed.

10. The One Hundred and Second Session of the FAO Council, held in November 1992, discussed the elaboration of the CCRF, recommending that priority be given to high seas issues, and requested that proposals for the CCRF be presented to the 1993 session of COFI.

11. The twentieth session of COFI, held in March 1993, examined in general the proposed framework and content for such a Code, including the elaboration of guidelines, and endorsed a time frame for the further elaboration of the CCRF. It also requested FAO to prepare, on a "fast track" basis, as part of the CCRF, proposals to prevent reflagging of fishing vessels that affect conservation and management measures on the high seas. This resulted in the FAO Conference, at its Twenty-seventh Session in November 1993, adopting the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, which, according to FAO Conference Resolution 15/93, forms an integral part of the CCRF. It was also recognized and confirmed, that issues of responsible aquaculture development and aquaculture sustainability should be addressed in the formulation process so that these be appropriately covered in the envisaged CCRF.

12. This implicit recognition of the importance of governance in aquaculture is underlined in Article 9, paragraph 9.1.1, of the CCRF, which requires states to "establish, maintain and develop an appropriate legal and administrative framework to facilitate the development of responsible aquaculture". In addition, at the beginning of the new millennium, there was growing recognition of the significant potential for the use of ocean and coastal waters for mariculture expansion. The outstanding issue in this area is that, unlike in capture fisheries, the existing applicable principles of public international law and treaty provisions provide little guidance on the conduct of aquaculture operations in these waters. Yet, experts agree that most of the future aquaculture expansion will occur in the seas and oceans, certainly further offshore, perhaps even as far as the high seas. The regulatory vacuum for aquaculture in the high seas would have to be addressed should aquaculture operations expand in that direction.

13. The CCRF was formulated so as to be interpreted and applied in conformity with the relevant rules of international law, as reflected in the 10 December 1982 United Nations Convention on the Law of the Sea. The CCRF is also in line with the Agreement for the Implementation of the Provisions of this Law, namely the 1995 Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. It is equally in line with, *inter alia*, the 1992 Declaration of Cancún and the 1992 Rio Declaration on Environment and Development, in particular Chapter 17 of Agenda 21.

14. The development of the CCRF was carried out by FAO in consultation and collaboration with relevant United Nations agencies and other international organizations, including non-governmental organizations (NGOs).

15. The CCRF consists of five introductory articles: Nature and scope; Objectives; Relationship with other international instruments; Implementation, monitoring and updating; and Special requirements of developing countries. These introductory articles are followed by an article on General principles, which precede the six thematic articles on Fisheries management, Fishing operations, Aquaculture development, Integration of fisheries into coastal area management, Post-harvest practices and trade, as well as Fisheries research. As already mentioned, the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas forms an integral part of the CCRF.

16. The CCRF is voluntary. However, certain parts of it are based on relevant rules of international law, as reflected in the United Nations Convention on the Law of the Sea of 10 December 1982. In capture fisheries, the CCRF also contains provisions that may be or have already been given binding effect by means of other obligatory legal instruments among the parties, such as the Agreement to Promote Compliance with Conservation and Management Measures by Fishing Vessels on the High Seas, 1993. In aquaculture, the provisions of the CCRF implicitly encourage participatory governance of the sector, which extends from industry self-regulation, to co-management of the sector by industry representatives and government regulators and to community partnerships. Compliance is self-imposed or enforced by peer pressure, with industry organizations having the ability to exclude those who do not comply and governments only checking periodically.

17. The Twenty-eighth Session of the FAO Conference in Resolution 4/95 adopted the CCRF on 31 October 1995. The same resolution requested FAO *inter alia* to elaborate appropriate technical guidelines in support of the implementation of the CCRF in collaboration with Members and interested relevant organizations.

18. The expanding role and increasing contribution of aquaculture to economic growth and social welfare, as well as global food security, was recognized and reiterated at international levels such as the 1995 FAO/Japan Conference on the Contribution of Fisheries and Aquaculture to Food Security, the 1996

World Food Summit, the 1999 Ministerial Meeting on Fisheries, the 2000 FAO/NACA (Network of Aquaculture Centre in Asia Pacific) Conference on Aquaculture in the Third Millennium and its Bangkok Declaration and Strategy, and most recently, the 2009 World Summit on Food Security.

19. The application of the ecosystem approach to fisheries and aquaculture as a strategy for the development of the sectors contributes to the implementation of the provisions of the CCRF, thereby enforcing the technical, ecological, economic and social sustainability of the industry.

INTRODUCTION

Earlier work carried out by FAO during 1987, in relation to accidents aboard fishing vessels, indicated a fatality rate of 24 000 fishers annually, which was higher than in any other normal occupation. This was later confirmed through a study conducted by the International Labour Organization (ILO) that indicated an estimate[1] of 80 fatalities per 100 000 fishers that occur worldwide per year in capture fisheries. It seems plausible, however, that the fatality rates in countries for which data are not available may be higher than in those countries that do keep records; thus, the total number of fatalities may be even higher than those indicated above. Although the aquaculture sector is not immune to loss of life, there are no global estimates of fatalities at this moment in time related to activities carried out aboard support vessels.

Nevertheless, the consequences of loss of life in both sectors have a profound impact on family dependents. In many developing countries, these consequences can be devastating: widows often have a low social standing, there is no welfare State to support the family and with a lack of alternative sources of income, widows and children may face destitution.

In order to formulate effective interventions to improve safety, a comprehensive understanding of both the nature of safety and the lack of it is a prerequisite. The need for reliable data and information related to both the causes and effects of accidents at sea cannot be overstated. Such analysis must go beyond considering the direct cause of an accident (e.g. fire, collisions, capsizing) and must seek to explain why and how the problem arose. The process should include the views of all partners, taking their perceptions and perspectives into account. Thus, defining the problem would provide potential solutions. However, the safety aboard fishing vessels and vessels used in support of aquaculture activities concerns not only the technical elements of vessel design, construction and equipment but also a number of social and economic factors. Indeed, the main reason for accidents in the fishing industry is human error (estimated in the United States of America to be responsible for

[1] ILO. 1999. Tripartite Meeting on Safety and Health in the Fishing Industry, Geneva, 13–17 December 1999.

80 percent of accidents in the industry)[2] rather than the design and construction of unsafe boats. Furthermore, poor practices and seamanship can result, for example, in well-designed and well-constructed vessels capsizing because of operational behaviour that reduces the stability of the vessel.

In capture fisheries, overcapacity and overfishing of coastal resources are probably the major factors that have limited or even, in some instances, nullified positive efforts to improve safety at sea. In a situation of overcapacity and overfishing, there is high competition to catch limited resources. Pressures on owners and skippers to ensure economic survival can result in cost cutting on vessel maintenance, safety equipment and labour, as well as living and working conditions, leading to undermanning and fatigue that greatly contribute to human error and accidents. At the same time, within this competitive environment, increased investment in speed and catching efficiency further aggravates the problems because investment repayment drives the urgency to catch more fish. Therefore, unless fishing effort is commensurate with fish resources, this state of competition will continue, with negative consequences on safety.

The situation is worsened when viewed within the context of the many fisheries that are characterized by open access, overcapacity, overstressed resources and an excess of labour. Where fisheries or aquaculture activities represent an opportunity for employment of last resort, there is no shortage of workers who are willing to accept poor conditions of employment, thus further contributing to the problem of overcapacity. Furthermore, many fishers are generally part of the "informal labour sector", unrepresented and non-unionized. They are often self-employed or engaged as casual labour and not regarded as skilled labour. As a result, they are frequently not sufficiently protected by social or labour legislation, nor are they regarded as a significant grouping by political forces. Indeed, one of the definitions of small-scale fishers (who account for perhaps 90 percent of the 20 million fishers in the marine capture sector alone) describes them as being very much subject to the control of those persons and groups holding power in the community, such as religious and political leaders, moneylenders and others in economically strong positions. In this situation, their needs for adequate protection and improved safety may go unanswered and, thus, highlight the necessity for fisher representation and community empowerment.

[2] Umberti, W.J. 2001. Excerpts from Operation safe return: a non-traditional approach to improving commercial fishing vessel safety. *Proceedings of the Marine Safety Council*, April–June 2001.

Success in achieving the objectives of improved safety and health should also result ultimately in a higher level of professionalism within the fisheries and aquaculture sectors, noting that women and men should have decent and productive work in conditions of freedom, equity, security and human dignity. Safe and healthy working practices contribute positively to productivity and economic growth.

Furthermore, in the case of capture fisheries, the decisions of fisheries managers can, inadvertently, adversely affect safety at sea in a variety of ways, both directly and indirectly. Safety in fishing operations cannot, therefore, be divorced from fisheries management and this is recognized in the provisions of the FAO Code of Conduct for Responsible Fisheries (the Code), which addresses safety and health in the fisheries sector. Improving safety should become an explicit objective of fisheries management. Considering the socio-economic and environmental elements, FAO Members and regional organizations should undertake to promote safety at sea as part of the ecosystem approach to fisheries (EAF).

Legislation plays an essential role in ensuring the proper design, construction and equipment of fishing vessels and vessels used in support of aquaculture activities, as well as ensuring the proper training and working conditions of their crews. However, safety legal requirements accepted by the merchant fleet as a result of effective enforcement, together with strong seafarer representation, are often met with reluctance in the fisheries sector, where enforcement is often less effective and operators avoid compliance with legal requirements that might affect their income. Unlike many industries, the work environment, working conditions and practices in the fisheries sector are inadequately controlled because they take place at sea, out of sight of the law enforcer. In some cases, compliance with legislation may not result in the desired impact because operators, being aware of the increased seaworthiness of their vessels (as a result of compliance), may simply extend the limits of acceptable risk. Similarly, the risk factor may also apply in the case of vessels used in support of aquaculture activities, it being noted that not all such vessels are registered as fishing vessels.

Regulators generally prefer a "command and control" form of legislation for a number of reasons, including ease of enforcement, clarity for regulated groups and certainty of intent. The drawbacks, however, may include rigidity, a tendency to be over detailed, inflexibility and high costs, as well as the adversarial nature, and in some cases, ineffectiveness and unenforceability of a command-and-control approach. However, even after the most rigorous decision-making process inside the administration, legislation has yet to pass

the most demanding test of all, namely that the sector must agree to comply with it because it supports the intent. Yet, implementation may be better assisted by strategies such as education, assistance, persuasion, mentoring, promotion, economic incentives and monitoring, rather than by a purely command and control approach, which is very often ineffective in countries that tend to rely too much on ineffective punitive threats and too little on other kinds of incentives.

Safety issues are multisectoral but they are often addressed on an impromptu basis. Furthermore, safety issues on fishing vessels are of a different nature from those on merchant ships, where, for example, the majority of hazardous operations are carried out in the safety of the port, unlike operations of fishing vessels and vessels used in support of aquaculture activities, particularly aboard small fishing vessels, where crews have to work at sea, on deck, in all weathers, frequently with their hatches open, locating and gathering their cargo from the sea. It is evident that in many countries there is an overlap of responsibilities for the implementation of safety regulations and, indeed, the provisions of international conventions to which a State is a party. It is important, therefore, to ensure that legislation clearly addresses the question of responsibility, be it under a maritime administration, a fisheries administration or a combination of both. The safety of fishers and fishing vessels has been an integral part of the programme of work of FAO since the recruitment of its first naval architect in 1946 and, in particular, through the design and construction of fishing vessels, as well as safety training in developing countries. On matters of conditions of work and service in the fishing industry, FAO has worked closely with the ILO through its Committee on Conditions of Work and Service in the Fishing Industry. Cooperative arrangements were also established with IMCO which later became the International Maritime Organization (IMO), following the entry into force of the convention to establish the IMO.[3] The cooperation between the three organizations continues to the present day.

The long-standing cooperation between FAO, ILO and IMO has resulted in the development or revision of a number of binding and non-binding instruments that address the safety of fishers and fishing vessels, and many of these are referred to and expanded on in greater detail within these guidelines. Recent developments have witnessed even greater levels of collaboration between these United Nations organizations in recognition of the need to address the safety problem in a more holistic manner. This collaboration should also be reflected

[3] Initially known as the Intergovernmental Maritime Consultative Organization (IMCO), the name was changed to the International Maritime Organization (IMO) in 1982.

at the national level among the concerned administrations, thus permitting a pooling of ideas and expertise to ensure the development of comprehensive and effective measures. Furthermore, a broad range of economic, social and technical interventions are required to improve safety at sea, and cooperation between administrations and other concerned groups is required at national and regional levels if these interventions are to be effective.

Thus, these guidelines for Best Practices to Improve Safety at Sea in the Fisheries Sector are primarily intended for maritime, labour and fisheries administrations, industry and fisher and aquaculturist associations, as well as representatives of fishing and aquaculture communities. They seek to raise awareness of the breadth of the safety problem and to offer guidance on the broad range of issues that must be addressed if the safety problem is to be tackled in an effective and holistic manner. However, these guidelines cannot be considered as providing a single detailed prescription for all that needs to be done to improve safety. Nevertheless, it is foreseen that they will underline the need for the establishment of responsible administrations that provide an environment within which fishing and aquaculture communities, owners, operators and skippers/masters can make use of the options and tools necessary to improve their safety at sea. These guidelines also take into account the outcomes of FAO regional meetings on fishers' safety at sea, which have emphasized that improved safety will best be achieved through the development and implementation of coordinated national strategies. Ultimately, sea safety is a national responsibility, and efforts to improve safety and react to emergencies need to be continuous.

PART 1

General Provisions

"States should ensure that fishing facilities and equipment, as well as all fisheries activities, allow for safe, healthy and fair working and living conditions and meet internationally agreed standards adopted by relevant international organizations." (Extract from Article 6, paragraph 6.17, of the FAO Code of Conduct for Responsible Fisheries.)

1. PURPOSE AND SCOPE

1.1 The purpose of these "Best Practices" is to provide guidance to enable relevant authorities to develop and implement strategies aimed at improved safety and improved health and conditions of service in capture fisheries and aquaculture activities.

1.2 The scope of these Best Practices applies to all commercial fishing activities, as well as activities within the aquaculture sector, with particular reference to the operation of water-borne craft, as well as vessels engaged in fisheries research. It does not extend to recreational fishing.

1.3 The Best Practices, hereinafter referred to as the guidelines, are formulated in a manner consistent with the development and implementation of holistic and comprehensive national strategies for safety in the fisheries sector.

2. DEFINITIONS

2.1 For the purpose of these guidelines:

(i) "sea" means **all** marine waters, rivers and inland waters;

(ii) "fisheries sector" refers to capture fisheries operations and aquaculture activities that rely on the use of water-borne craft;

(iii) "fishing operations" means an authorized activity in connection with the harvesting of aquatic living resources;

(iv) "aquaculture" means activities carried out at sea, as defined in (i) above, by individuals, including the placement and stocking of cages, as well as attending to the growing out process and the transfer of grown fish to market;

(v) "vessel" means water-borne craft used in capture fisheries and aquaculture operations;

(vi) "casualty investigator" is a person qualified and appointed to investigate a casualty or incident under procedures laid down in national law for the furtherance of safety at sea and protection of the aquatic environment.

3. OBJECTIVES

3.1 Long-term objective

The principal objective of these guidelines is improved safety and health of those persons working in the fisheries sector, achieved through the development of national strategies and their implementation. Thus, the guidelines adopt a holistic approach to ensure that all factors influencing

safety are comprehensively covered. Within this approach, the raising of the awareness of safety issues is accorded high priority, as is the role of women in the implementation of such national strategies.

3.2 Immediate objectives

The immediate objectives include, but need not be limited to, the attainment of:

- a decrease in the incidence of accidents and loss of life in capture fisheries and in aquaculture activities, with particular reference to vessel operations;
- higher levels of professionalism within the fisheries and aquaculture sectors;
- decent and productive working conditions, equity, security and human dignity for women and men; as well as
- safe and healthy work practices that contribute positively to food security and economic growth.

4. GUIDING PRINCIPLES

These guidelines recognize the need to adopt a participatory approach through consultation with stakeholders and the creation of a broad-based empowerment structure to ensure ownership of the process by the ultimate beneficiaries, the sea-going personnel in the fisheries and aquaculture sectors and their families. The guidelines also recognize the need for regional and subregional cooperation in promoting safety at sea, especially in relation to small-scale fisheries. However, whereas the guidelines have a global perspective, the intent is for action at national and local levels to ensure that all stakeholders hold a clear and shared vision of the long-term and immediate objectives.

5. TARGET AUDIENCES

Based on the general principle of the participatory approach to safety at sea, these guidelines are intended to be user friendly, taking into consideration the relatively wide target audience and the application of the guidelines at the national and local levels. Although these guidelines, in general, do not make a distinction between developed or developing countries, specific needs of the latter group of countries are specifically addressed where and when appropriate. Thus, the guidelines would be of particular value to those individuals or groups, including women's groups, with a desire to champion

the cause of improving safety in fisheries and to parties interested in auditing the current status of safety in their fisheries.

6. LEGAL ASPECTS

It is recommended that a participatory approach should be followed in reviews of national legal frameworks related to occupational safety and the relationship with safety in the fisheries sector as defined in 2.1 (ii) above. Consequently, such reviews should also take into consideration the scope of these guidelines, which is not limited to fishing activities conducted from fishing vessels but also includes activities using support vessels in aquaculture. Furthermore, it is stressed that such reviews should not be limited to shipping, maritime, labour and fisheries legislation and regulations, but should include other legal instruments (directly or indirectly) related to safety as defined in paragraph 2 of these general provisions.

It may also be stressed that due note should be taken of the fact that a relevant legal framework may be quite different from one country to another. Consequently, it is considered that the provision of a "model law" within these guidelines may not be an ideal approach. For this reason, guidance is given on elements of solid legislation and certain options for their inclusion in a specific legal framework. Nevertheless, it is important to note the provisions of the United Nations Convention on the Law of the Sea (UNCLOS). Thus, from the point of view of an official accident investigation, the following extracts from Article 97 of UNCLOS should be kept in mind in relation to penal jurisdiction in matters of collision or any other incident of navigation:

1. In the event of a collision or any other incident of navigation concerning a ship on the high seas, involving the penal or disciplinary responsibility of the master or of any other person in the service of the ship, no penal or disciplinary proceedings may be instituted against such person except before the judicial or administrative authorities either of the flag State or of the State of which such person is a national.
2. In disciplinary matters, the State which has issued a master's certificate or a certificate of competence (or licence) shall alone be competent, after due legal process, to pronounce the withdrawal of such certificates, even if the holder is not a national of the State which issued them.
3. No arrest or detention of the ship, even as a measure of investigation, shall be ordered by any authorities other than those of the flag State.

Furthermore, the review of the legal framework should identify links (or the absence of links) between fisheries management and shipping/maritime/labour legislation, as well as the basis for coordination, or the lack thereof, among relevant institutions.

7. LEAD AGENCY

Given the cross-sector involvement within government, it is recognized that there would be a need for coordination between government agencies with regard to the development and implementation of a safety strategy related to activities at sea as defined under paragraph 2 above. Consequently, it is foreseen that there would be a need to have a single lead agency nominated by government to be responsible for an overarching operational safety programme for safety at sea in capture fisheries and aquaculture activities.

8. OUTLINE OF THE GUIDELINES

In order to ensure the safety of vessels used in capture fisheries and vessels used in aquaculture operations, the need to develop national legislation, regulations or other measures is a fundamental requirement. Whereas such measures should be related to the design, construction and equipment of vessels, training and certification of vessel personnel and conditions of work and service in capture fisheries and aquaculture activities, there is a need to fully understand the causes and incidence of loss of life and accidents in vessel operations.

Chapters 1, 2, 3 and 4 of Part 2 of these guidelines for Best Practices to Improve Safety at Sea in the Fisheries Sector are based on a series of interlinked themes related to policy and procedures supported by more detailed guidance as set out in a series of Appendixes and Annexes. Given that the themes are interlinked, it is clear that the overall development of a safety management system would proceed in a well-coordinated manner.

Chapter 1 contains proposals for a baseline assessment of safety issues to be carried out through data collection and analysis of accidents in order to identify and provide the necessary information to permit an understanding of where problems exist. In addition, the results of the analysis would provide benchmarks in support of monitoring and evaluation units.

Chapter 2 provides guidance on the creation of an inventory or baseline survey, through a comprehensive overview of all aspects of a national fisheries sector and, in particular, the human resources engaged in the sector, as well

as available aquatic resources, technology and supporting services. Such an inventory would be useful in drawing attention to the diversity of fisheries, which range from the subsistence level to that of industrial fleets.

Chapter 3 explains how the information provided within Chapters 1 and 2 would be analysed in detail in order to identify safety problems and their causes. This analysis would then be used to develop corresponding solutions and measures for their mitigation, together with a safety strategy.

Chapter 4 provides guidance on the implementation and promotion of a safety strategy. It includes recommendations on how to advocate, manage and influence change and to evaluate progress.

9. SPECIAL REQUIREMENTS OF DEVELOPING COUNTRIES

In order to implement the guidelines for Best Practices to Improve Safety at Sea in the Fisheries Sector, many developing countries would have special needs that extend beyond simply translating the text of best practices into national languages. This would certainly be the case within the artisanal and small-scale fisheries sectors and could extend to the aquaculture sector. Furthermore, assistance may be required to remove constraints to the development and implementation of a safety policy and also to promote participation in regional and subregional activities related to safety at sea.

PART 2

Application

1. DATA COLLECTION AND ANALYSIS TO IMPROVE SAFETY

It is understood that, whereas the requirement for data is paramount, the extent and complexity of a data collection system should reflect the level of development in the capture fisheries and aquaculture sectors. For example, where there is a small fleet of fishing vessels and limited aquaculture activities, with manual reporting from a local level to national focal points, the system can be relatively simple. A higher level of development could be applicable for countries with a large fleet of small fishing vessels with established routines for accident reporting from local to the national level and, where appropriate, to a regional level and could include basic data compilation and facilities for accident investigations, statistical analysis and feedback mechanisms. At a more developed level, for countries with advanced fishery safety policies and monitoring, routine mandatory reporting, statistical analysis and assessment functions would be the norm. In addition, however, a government may also establish a maritime accident investigation board (MAIB) that would be ***independent*** *of maritime or fisheries administrations.*

1. POLICY LEVEL

It is considered essential to ensure that a baseline assessment of safety issues is carried out through data collection and analysis of accidents within the capture fisheries and aquaculture sectors in order to identify and provide the necessary information to permit an understanding of where and why problems exist. In addition, the results of the analysis would provide benchmarks in support of monitoring and evaluation.

Consequently, principle officers within a government structure with responsibilities, individually or collectively, for all aspects related to safety at sea should meet to develop a programme of action. It should be understood, however, that the first stage in defining any problem would be not only to provide evidence of its nature and magnitude but also to explain why and how the problem has arisen. This process has to include information obtained from all relevant stakeholders, taking into account their perceptions and

perspectives. The meeting of the principle officers, within the government, would be expected to identify the ideal "responsible agency" to lead the overall safety at sea programme, as well as to make proposals for the necessary funding and support that would be required.

In parallel, all involved parties, including fishing communities, should be sensitized to the importance of data collection and analysis and how they could be expected to participate in the process. It should also be made clear to all concerned that data collection is based on reports on which action **should** have been taken and due note taken of such action.

2. DATA COLLECTION

2.1 General

2.1.1 A system to begin accident data collection and recording could be initiated in countries on the basis of the programme of action, developed as described in the chapeau to Chapter 1. However, care should be exercised to avoid duplication of effort between individual government agencies; for example, data collection activities as set out below.

2.1.2 The baseline assessment of safety issues through accident/incident data collection, interpretation and analysis should include the design of data collection systems, acknowledging that it is important to identify appropriate data sources because these may vary from country to country. The design should include:

- identification and definition of data types and the development of a data dictionary that defines and describes/classifies accident types;
- preparation of a standard form for accident data collection, as well as instructions how, where and when to collect data; and
- the development of interpretation criteria.

However, in most cases, the design of a data collection system would reflect the level of development in the country concerned. Consequently, as a minimum, there are three main options for a system, as outlined below, although it should be noted that fisheries research activities at sea may also vary within each of the options so given.

No. 1 Simple ad hoc level

Applicable for a small fleet of vessels, with manual reporting from the local level to national focal points, without established routines.

No. 2 Basic level
Applicable for countries with a large fleet of small fishing vessels with established routines for accident reporting from local to provincial and to national level, including basic data compilation and facilities for accident investigations, as well as statistical analysis and feedback mechanisms.

No. 3 Developed level
Established in countries with developed fishery safety policies and monitoring covering a wide range of fishing vessel types and sizes, and those vessels used in support of aquaculture activities. Routines for mandatory reporting, statistical analysis and assessment functions would be in force and a maritime accident investigation board (MAIB), independent of the national maritime and fisheries administrations, would have been established.

2.2 Sources of data

As stated under 2.1.2, sources of data may vary from country to country and would reflect the degree of development within the fisheries sector or maritime sector. This is further developed in Appendix 1 but, in general, a list of sources of data would include the following:

- the logbook of the vessel;
- the registrar of ships from whom the current status (valid, transfer of ownership or reason for closure of the entry in the register) would be found, as well as technical details of such vessels;
- the authority responsible for the issue of a licence to fish / authorization to fish, which should also provide information regarding the characteristics of a vessel and navigational warranties,[4] where applicable;
- the authority responsible for the certification of vessel personnel;
- an MAIB (where established), which may take a long time to finalize its report, particularly where there had been loss of life or loss of vessel. However, it is often the case that such an authority may find that the true cause of an accident turns out to be very different from the **convenient solution** identified in the aftermath of a tragedy, by individuals, who are not accident investigators. It may also be necessary to contact the coastguard or navy in the event that assistance had been given to

[4] Navigational warranties are set out in paragraph 1.5.2 of Chapter 4.

recover life or property. Similarly, the police, particularly at the local level, should be consulted, as well as death records and the outcome of coroners' inquests;

- surveyors/inspectors under maritime and fisheries administrations, who enforce the legal requirements for the design, construction and equipment of fishing vessels and vessels used in aquaculture activities as well as mandatory inspections for the issue of safety certificates; and
- insurance companies, with particular reference to cases involving claims under hull and machinery policies and protection and indemnity cover (P&I). In addition, ship classification societies may also be consulted.

The investigation team could also consult with organizations representing fishers and owners of vessels, and with representatives of aquaculture installations and, with due care, obtain anecdotal evidence from fishers, communities and families.

2.3 Data required

2.3.1 The identification of data collection requirements should also include accidents that occur in capture fisheries and aquaculture activities that are not necessarily **vessel** related. It is also essential to clearly identify and document whatever is deemed to be essential in support of accident investigation, analysis and interpretation of data, as well as the implementation of accident mitigation measures. Furthermore, it is important to keep in mind that in the event of a formal inquiry, data submitted **must** be certifiable.

2.3.2 However, irrespective of the level of development within the fisheries sector, as outlined in 2.1, it is important to decide what data should be collected and how such data would relate to current legislation concerning conditions of work and service, health and safety requirements, as well as the design, construction and equipment of fishing vessels and those vessels engaged in aquaculture activities. Consequently, initial reports of an incident or accident should include as much of the following information as possible:

1. name and identification number of vessel;
2. name and address of owners;
3. name of the master, skipper or person in charge;
4. date and time of the accident;
5. where from and where bound;

6. latitude and longitude or geographical position at which the accident occurred;
7. part of vessel where accident occurred if it happened on board;
8. weather conditions at time of accident;
9. name and port of registry of any other vessel involved;
10. number of lives lost or persons injured, together with their names, addresses and gender; and
11. brief details of the accident, including sequence of events leading to the accident, the extent of damage and whether the accident caused pollution or a hazard to navigation.

2.3.3 In the case of the "total loss" of a vessel and crew, data collection becomes more difficult, if no "mayday" signals had been received and it had not been sighted from another vessel and no vessel position monitoring had been operational. Such a situation becomes extremely difficult should the vessel sink in deep water or on the high seas (even if the approximate position is known).

3. ANALYSIS

3.1 General

The analyses of the collected data should determine the direct and indirect contributing factors to fatalities, injuries and vessel casualties before, during and after the event. Thereafter, the results should be reviewed in light of the appropriate international conventions to which the State is a party and national legislation. Given the interdisciplinary nature of the review, it would be directed by the lead agency to ensure collaboration between the agencies involved. It should be noted, however, that due note must be taken of reports of the MAIB (where established) that are made directly to government because recommendations by such a board are made directly to government.

Analysis of the causes of accidents should be made for improved decision-making processes in terms of prevention and not simply to provide a report of an accident. For fisheries management purposes, the collection and analysis of resource quality data is a prime function. There should, however, be a provision for the integration of safety data, with the objective being to determine whether or not fisheries management decisions had in any respect increased the level of risk in fishing operations. Such an exercise would require close cooperation

between accident investigation officers, fisheries managers and fishing industry representatives in order to reduce the level of risk.

3.2 National level

At the national level, countries should set up a long-term system of collection, storage and analysis of data on safety at sea. Furthermore, an environment should be established to facilitate the harmonious exchange of this information between all the agencies responsible for safety at sea. This exchange could be made through regular collaborative meetings between agencies mobilized by the lead agency. Also, under the direction of the lead agency, a functioning statistical section with trained officers in database management, analysis and reporting, computing and communication systems should be created.

3.3 Regional level

3.3.1 At the regional level, countries should be prepared to regularly provide information to a regional structure, such as a regional fisheries management body or other appropriate regional organization concerned with maritime accidents and incidents, where further analysis would be undertaken if deemed necessary. Under such a regional arrangement, administrations within the region would be informed of accident and incident patterns (as well as exceptions to the rule), and situations to be avoided, and provide a regional search and rescue (SAR) network with the results of the analysis. It should be understood, however, that although the formal reports of an independent MAIB are also made public, such investigations could, in some cases, take time to conclude, as stated above. Consequently, the data provided by the lead agencies of national bodies would, in the first instance, provide information on accidents for statistical purposes.

3.3.2 Should a regional initiative be followed, there would be a need for standardization of data. However, given the options set out in 3.2 above at the national level, the regional body should take the initiative, on the basis of discussions with national teams, to provide a reporting format.

3.3.3 The regional organization should include an item on safety at sea in its agenda for management meetings under its constitution and encourage member States to provide notice of accidents to IMO and, as the case may be, to ILO and the FAO Committee on Fisheries (COFI). In this regard, the lead agency should ensure that any procedure for reporting would provide for the necessary links between the responsible agencies, department or divisions.

2. NATIONAL FISHERIES AND AQUACULTURE SECTOR INVENTORY

To better understand the causes for accidents at sea, an inventory or baseline survey should be made that would provide a comprehensive overview of all aspects of the national fisheries sector and, in particular, the human resources engaged in the sector, as well as available aquatic resources, technology and supporting services. The information generated would be analysed and fed into the development process for a safety strategy and its implementation.

1. HUMAN RESOURCE INVENTORIES

1.1 Fishing vessel and aquaculture support vessel personnel

Although the scope of these guidelines applies to all commercial fishing activities and to activities within the aquaculture sector (with particular reference to the operation of water-borne craft), as well as to fisheries research vessels, an inventory of human resources may also extend to fisher communities, fisheries managers and authorities concerned with the implementation of safety legislation.

In assessing the numbers and demography of people involved in the fisheries sector by activities (capture fisheries / aquaculture), due consideration should be given to dependents of fishers and as found appropriate, those involved in post-harvest activities, as would be the case in small-scale fisheries. In addition to numbers of individuals, it would be important to identify workers whose age falls below the lower limit as set out in legislation for working on board vessels engaged in capture fisheries and in aquaculture activities.

The identification of vessel owner organizations and fish processing and marketing organizations, as well as fisher representative organizations and entities representing others employed in the capture fisheries and aquaculture sectors, including their interests and mandates, is essential.

Such inventories would be required in order to carry out socio-economic studies of fisher and aquaculture communities and fleet segments.

1.2 Fisheries managers

In waters under the jurisdiction of a State, fisheries managers are required to have an understanding of fish stocks and their distribution in order to determine maximum sustainable yields for the various species. Furthermore, they must cooperate with other States in the case of highly migratory species and straddling stocks and with regional management bodies for high seas fisheries. Consequently, there is a need to ensure that the fishing effort does not lead to overfishing and, hence, fisheries managers must have a full knowledge of the numbers of fishing vessels and fishers so **authorized/allowed** to fish.[5] Thus, to control fishing effort requires at the minimum:

1. comprehensive reports reviewing all national fisheries plus the distribution and State of their resources;
2. the number and type of fishing vessels as well as non-fishing vessels that are dedicated to supporting activities in the capture fisheries and aquaculture sectors by defined size or tonnage categories and hull materials;
3. a summary of national fisheries management objectives and regulations so as to allow analysis of their direct or indirect relationship to safety issues; and
4. identification of the competent authority or authorities responsible for the management and administration of the fisheries sector, the maritime sector, occupational safety and health (OSH) and SAR, together with a clear understanding of links and responsibilities.

1.3 Training and education

A review should be carried out of obligatory training and education requirements covering fisheries management, fishing and aquaculture vessel personnel, vessel inspection and accident investigation departments, SAR services and harbour management. The review should include, but need not be limited to, training facilities and cover subject matters within the fisheries and aquaculture sectors, including the training of trainers. Information collected in the review should include:

1. the number of qualified trainers and their specializations, as well as the number of extension specialists;

[5] This would include foreign fishing vessels under access agreements.

2. the availability of qualified examiners in areas of certification of fishing vessel personnel and personnel engaged on vessels supporting the aquaculture sector;
3. the names of universities and technical colleges for the education and certification of naval architects, marine engineers and electrical engineers and, where applicable, trades colleges related to ship and boatbuilding; and
4. in the event that training services are not available in the State concerned, an indication of where and how such services are obtained.

1.4 Shipbuilders, boatbuilders and safety equipment suppliers

1.4.1 Shipbuilders

A review of the shipbuilding sector may be considered to apply to the larger fishing vessels, as well as vessels in support of aquaculture, and to shipyards expected to be capable of designing and constructing ships. Of direct interest would be the level of qualifications and skills of the senior staff and the skills of the workforce, in general, by virtue of the fact that such shipyards should be able to meet the design and construction requirements set out in national legislation. In the event that no shipyard exists, the review should extend to the availability of such facilities within the region.

1.4.2 Boatbuilders

In cases where the national fleet consists mainly of smaller vessels, an inventory should be prepared setting out the number of boatyards and their capabilities and locations. Furthermore, the extent to which such boatbuilders comply with regulations governing accreditation should be carefully examined. With regard to accreditation, the review should examine the manner in which the required skills are attained and, in the process, identify the role of the government in training.

1.4.3 Safety equipment suppliers

How and where safety equipment that meets the criteria set out in national regulations can be obtained should be carefully reviewed, together with import regulations, where this is the case. In the event that safety equipment has to be imported and import duties applied, the reviewers should also control where, when and why such tariffs apply.

Should safety equipment be produced locally, it would be necessary to verify that the specifications comply with the standards set in internationally

agreed, legally binding instruments, as and where they relate to fishing vessels and vessels used in support of aquaculture activities. Further guidance on safety equipment requirements in relation to fishing vessels, especially small fishing vessels, can be found in the FAO/ILO/IMO documents listed in Annex 4. In the case of vessels used in support of aquaculture activities that are not classified as fishing vessels, the requirements for equipment would be found under maritime legislation.

2. LEGAL REQUIREMENTS

Legal requirements for institutional cooperation may be included in primary legislation and, for example, provide for a permanent coordination body and set requirements for the exchange of information or joint action, etc. Nevertheless, in the review of legislation, it would be essential to document the:

- terms of reference of an existing marine accident and investigation board or for the establishment of such a board;
- status of existing national legislation directly or indirectly related to safety in capture fisheries and aquaculture, such as legislation for the design, construction and equipment of vessels, fisheries management, merchant shipping,[6] occupational safety and health (OSH)[7] and others;
- procedures and conditions for the issue of an authorization to fish and for the registration of a fishing vessel;
- identification of procedures and conditions for the authorization of aquaculture and small-scale and subsistence fishing operations; and
- provisions for the registration of support vessels in fishing operations and aquaculture that are not considered to be fishing vessels.

Legislation for the design, construction and equipment of fishing vessels and vessels supporting aquaculture activities should be examined and the responsible ministries identified as regards:

[6] It should be noted that many vessels used in aquaculture activities would be registered as merchant ships and not fishing vessels. Consequently, they would fall under the responsibility of a maritime administration.

[7] Due note should be taken of the provisions of ILO concerning the requirements for inspections under the ILO Work in Fishing Convention (not in force).

- inclusion or revision of construction standards for fishing vessels[8] and aquaculture support vessels (including vessels used for the carriage of live fish);
- vessel safety certification requirements to be set out in national regulations;
- accreditation of shipbuilding/boatbuilding companies (within the country) and an outline of their capabilities, including details of accreditation schemes that may be in place;
- requirements for the approval of technical specifications for the production (and importation) of safety equipment, machinery and services facilities, and the identification of approved manufacturers and suppliers within the country; and
- requirements for the carriage of ship-to-shore / ship-to-ship communication systems and procedures for the reporting of the position of a vessel at sea.

Legal obligations of vessel owners reporting incidents and accidents in relation to their vessels and crew members should be examined. In so doing, particular attention should be given to:

- the maintenance of records listing incidents, accidents and near misses (in the operational log of the vessel) and procedures for reporting to the appropriate administration (by radio where deemed necessary);
- Such requirements in legislation in relation to the insurance of hull and machinery, crew members, excess liabilities and as appropriate, for protection and indemnity coverage;
- the identification of appropriate insurance brokers and marine mutual associations, and ease of access to P&I cover for fishing vessels and aquaculture support vessels; and
- the conditions imposed by credit institutions providing finance to the fisheries and the maritime sectors.

[8] See Chapter II of the FAO/ILO/IMO Code of Safety for Fishermen and Fishing Vessels, Part B; Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels; and Safety Recommendations for Decked Fishing Vessels of Less than 12 meters in Length and Undecked Fishing Vessels.

3. PROBLEMS, SOLUTIONS AND SAFETY STRATEGY DEVELOPMENT

The information provided in Chapters 1 and 2 has to be analysed in detail in order to adequately identify safety issues and their causes. The analysis would then be used to develop corresponding solutions and measures for their mitigation, together with the development of a safety strategy.

1. PROBLEM IDENTIFICATION AND RECTIFICATION

1.1 Safety policy

In reviewing policy-related issues that have been identified following an assessment of the work done as prescribed by Chapters 1 and 2, particular attention should be given to the effectiveness of the management of interagency cooperation in accident investigation and analysis, and to identifying where improvements are necessary. The lead agency should ensure that each participating agency provides an assessment of its inputs that includes the number and qualifications of staff so assigned to the capture fisheries and aquaculture sectors investigation process and the survey and certification of vessels. Due note must be taken of the existence of an independent MAIB and its authority (and terms of reference) as set out in legislation.

The reaction of those employed in capture fisheries and aquaculture activities to the improvement of safety at sea measures (as defined in Part 1) by their organizations and government should be explored through meetings with the industry. In this regard, the **lead agency**, should ensure participation by each sector of its management team. Discussion on the overall approach to sea safety and, in particular, to the role and influence of vessel personnel in general, may also be included in the agenda.

From a policy point of view, there may be a need to amend fisheries legislation in light of perceived links between fisheries management decisions and safety at sea (both positive and negative). In such a case, there should also be a need to include navigational warranties that may be applied by the authority for different classes of vessels and by the authority responsible for

the certification of those persons in charge of a vessel. It is clear that the need to manage fisheries in a sustainable manner, with due respect to the EAF (that includes the protection of the marine environment[9]), would be a matter for discussion.

The level of recognition of variations in legislation that exist across the region and in fisheries should also be seen in the context of international legally binding instruments such as the Fish Stocks Agreement.[10] In addition, there is legal precedence regarding the interaction between neighbouring States with regard to safety at sea when establishing a common fishing zone for the management and exploitation of fish stocks within adjacent waters that fall under the jurisdiction of these States.

1.2 Legal issues

The need for the reporting of incidents and accidents that take place aboard fishing vessels and those vessels used in support of aquaculture activities should be addressed in legislation in the event that existing legislation in this regard does not include fishing vessels.[11]

Legislation should provide for the process of immatriculation of fishing vessels and vessels used in support of aquaculture activities. In the case of small fishing vessels that are not intended to make an international voyage, consideration could be given to the alignment of the process of an authorization to fish provided that it contains the same information as would be set out in a certificate of registry.

There should also be a requirement for persons in command of a fishing vessel or a vessel used in support of aquaculture activities to hold a certificate of competence, it being noted that a requirement for sea experience prior to sitting an examination should be included. The same should be applicable to persons in charge of the propulsion machinery, and the actual levels of qualifications would of course reflect the different sizes of vessels and installed horsepower,

[9] See Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL).

[10] Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

[11] It is probable that vessels/ships used in support of aquaculture activities (not registered as fishing vessels) would fall under maritime legislation, whereas this might not be the case for smaller fishing vessels.

and the application of navigational warranties that would also extend to the size and design of individual vessels.

Relevant legislation should include provisions to address the design, construction and equipment of fishing vessels and those vessels used in aquaculture activities. Fishing vessels may, in some cases, be a component of the fisheries legislation, whereas vessels supporting aquaculture activities would probably fall, in many cases, under a maritime administration. Nevertheless, each set of legislation should address the provisions of international conventions to which the flag State is a party[12] and in the case of fishing vessels, due attention should also be paid to the FAO/ILO/IMO Voluntary Instruments as set out below under 1.5 Vessels and equipment.

There should also be a provision for mandatory inspection of a vessel and its equipment and, indeed, at any time in relation to the issuance or endorsement of a safety certificate where and when a vessel and its equipment are found to be in good order.

In amending legislation, reference should be made to the provisions of the International Convention for the Prevention of Pollution from Ships (MARPOL) and, in particular, to Annex V, which calls for the reporting of lost fishing gear to the flag State and to another coastal State should the vessels be engaged in fishing in waters of that coastal State. Two reasons are given in Annex V for reporting losses; one reason from the point of view of the marine environment, and the other for the safety of navigation. With regard to this issue of abandoned, lost or otherwise discarded fishing gear (ALDFG), which has been raised at the United Nations General Assembly (UNGA) on several occasions, and as ALDFG is part of a wider problem of marine pollution, it also comes under the remit of IMO. FAO has also considered the problem within COFI and considers marine debris and ALDFG as issues of major concern, including the effect of ghost fishing.[13]

1.3 Fisheries management

Notwithstanding the fact that in many countries a ministry of fisheries or fisheries department (or division) may have the responsibility for the survey of

[12] Examples are SOLAS, COLREGS, ILO Fishing Convention, Protocol to the Torremolinos Convention (not in force) and the International Conventions on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) and Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW–F).

[13] UNEP Regional Seas Reports and Studies 185 and FAO Fisheries and Aquaculture Technical Paper 523 (joint report).

fishing vessels and the issuance of safety certificates, the concept of including safety at sea as an objective within the management of fish stocks is not readily visible in many instances.

However, because fisheries management **policies** may have wide-ranging direct and indirect effects on safety in fishing operations, there are valid arguments for fisheries resource managers to consider that their decisions may have an adverse impact on safety. For example, by affecting fishers' options for how, when and where they may fish, such options (where they exist) could cause fishers to be faced with a choice between safety and earning a living. In addition, without effective control, the number of fishers and/or vessels participating in a fishery may increase and, thus, the numbers of fishers and fishing vessels may be at risk.

Furthermore, if fishery resources are depleted or competition for limited resources becomes more intense, fishers may be forced to fish farther offshore or in inclement weather to seek a living. In this regard, fisheries managers, following a review of stock distribution and the identification of sea areas that can be open to fishing, should ensure that no fishing vessel should be allowed to operate in such areas if its navigational warranties exclude such an area.

1.4 Data collection and analysis

Systems for collecting and analysing information on accidents at sea, the type of accidents and the reason they occur are essential aids to an analyst, as well as accident investigation officers, and in the development of a safety strategy. Furthermore, although management systems, self-assessment systems[14] and historic data on fatalities and injuries may also exist, their validity depends on how the information was obtained, how the verification process was adopted and how the data were stored.

Currently, not all countries have the capacity to address sea safety issues and in many cases there is a need for specialized training and awareness raising. In this regard, it has been noted that limitations often extend to:

- a lack of human resources to implement sea safety measures;
- inadequate attention to preventive measures (considering the absence of capacity to invest in the coastguard, etc.);
- poor state of vessel operators' organizations that often leads to a low level of response to sea safety measures;

[14] Self-assessment of the condition of the vessel and its equipment from a safety perspective referred to in Appendix 6.

- a lack of proper sea safety training programmes for fishing vessel personnel and crews operating vessels in support of aquaculture activities; and
- a lack of awareness of the importance of safety at sea programmes among most vessel crew members and the general public.

1.5 Vessels and equipment

Experience has shown that in many cases there is often a lack of well trained boatbuilders, and sometimes there is simply a shortage of raw material to build and repair fishing vessels. In addition, complaints are often made with regard to the lack of availability of technical guidelines even though appropriate guidelines have been available for many years. In addition, FAO has produced numerous designs and guidelines for boatbuilding in wood, steel, ferro cement and fibreglass. Furthermore, FAO/ILO/IMO developed the following pertinent voluntary instruments that have recently been revised:

- Part A of the Code of Safety for Fishermen and Fishing Vessels addresses safety and health practices for skippers/masters and crews. It applies to fishing vessels of all types and sizes;
- Part B of the Code of Safety for Fishermen and Fishing Vessels addresses safety and health requirements for the construction and equipment of fishing vessels and applies to decked fishing vessels of 24 m in length and above; and
- Voluntary Guidelines for the Design, Construction and Equipment of Small (decked) Fishing Vessels of 12 m in length and over but less than 24 m in length.

Following the revision of the above-mentioned documents by FAO/ILO/IMO, recommendations for decked fishing vessel of less than 12 m in length and undecked fishing vessel were developed. Thereafter, it was decided to develop guidelines for the implementation of these instruments, that have been published. Therefore, there are now technical guidelines that cover all classes and sizes of fishing vessels, thus providing an effective tool for fishing vessel designers, surveyors and accident investigation specialists. In addition, for vessels used in support of aquaculture activities and not classified as fishing vessels, the relevant IMO and ILO regulations and guidelines may apply. During the development of the FAO/ILO/IMO guidelines for the implementation of the above-mentioned voluntary instruments, it was noted that some countries may

face difficulties in the procurement of safety equipment such as life rafts, life jackets and flares. The same difficulties might well apply to the requirements for equipping those vessels engaged in SAR operations.

1.6 Search and rescue service

Article 98 of UNCLOS states: "Every coastal State shall promote the establishment, operation and maintenance of an adequate and effective SAR service regarding safety at sea and, where circumstances so require, by way of mutual regional arrangements cooperate with neighbouring States for this purpose".

SAR services in most countries are not limited to the maritime sector and, while governments have a leading role, they often have the backing of voluntary services. Consequently, the lines of communication must be well defined and the participating parties well trained and adequately equipped. Given the three development levels (in fisheries) as described in 2.1.2 of Chapter 1, it is evident that options to provide SAR services nationally and options for regional cooperation do, in fact, vary greatly. The latter can certainly be the case when a country is duty bound to cooperate with other countries in a region, where some of these countries may have more developed fisheries and marine structures than their neighbours. Although such a situation would be recognized by the lead agency in the region, there would still be a need for each individual country to address its domestic responsibilities. In doing so, there should be a requirement for vessel-to-vessel / sea-to-shore (voice) communication and preferably a vessel position monitoring system.

SAR is an essential aspect of safety at sea and it demands the full attention of both those who go to sea and those who administer. Consequently, as a first priority, cooperation between fishers should be encouraged and they should receive appropriate government support to ensure sustainability. Further information and guidance is given in Appendix 7.

4. MANAGING CHANGE

Managing change requires the involvement and understanding of each sector at all times, and progress depends heavily on the availability of services and safety equipment in line with legislation, which should reflect the provisions of relevant international conventions and regional obligations. Within such a process, the provisions of the Code should be kept in mind.

For example, Article 6, paragraph 6.16, of the Code states: "States, recognizing the paramount importance to fishers and fish farmers of understanding the conservation and management of the fishery resources on which they depend, should promote awareness of responsible fisheries through education and training. They should ensure that fishers and fish farmers are involved in the policy formulation and implementation process, also with a view to facilitating the implementation of the Code."

Article 6, paragraph 6.17, states: "States should ensure that fishing facilities and equipment, as well as all fisheries activities, allow for safe, healthy and fair working and living conditions and meet internationally agreed standards adopted by relevant international organizations."

Article 6, paragraph 6.18, states: "Recognizing the important contributions of artisanal and small-scale fisheries to employment, income and food security, States should appropriately protect the rights of fishers and fish workers, particularly those engaged in subsistence, small-scale and artisanal fisheries, to a secure and just livelihood, as well as preferential access, where appropriate, to traditional fishing grounds and resources in the waters under their national jurisdiction."

1. PLANNING, POLICY AND LEGISLATION

1.1 Managing change

Managing change implies that the required changes have already been identified and, indeed, many such changes would have taken place in addressing the issues raised in the previous three chapters, including the need to amend legislation. Thus, at the forward-planning stage, nothing must be overlooked

and it requires an in-depth understanding of the long-term implications of change and consultation with stakeholders.

Drawing upon the data collected (and analysis made), inventories, and problems and solutions identified, this chapter concentrates on the promotion of the overall strategy on how to manage or influence change. This, however, calls for a sound management structure under the direction of the nominated lead agency, as mentioned in Part 1 of these guidelines, and should reflect the level of development of the fisheries sector as discussed in Chapter 1.

Having identified the strengths and weaknesses within the country and, where relevant, within the region, a plan of action with measurable goals and objectives to monitor progress and evaluate impact should be developed. In so doing, it is important to ensure that all stakeholders are consulted and that interaction with the management team (and with one another) is clearly defined. There may also be a perceived need to raise political will for a commitment to improving safety in capture fishing operations and aquaculture activities and, furthermore, to learn from the experiences of other sectors in the country with regard to operational safety and health programmes.

In addition, the management team under the lead agency and other key partners within the strategy to implement change should all reflect on the provisions of the Code, as set out above in the chapeau to this chapter. Non-governmental organizations (NGOs) may also have a role to play and other non-traditional "agents of change", such as families, primary schools, women and religious groups, should also be recognized. Furthermore, there may also be a need for individuals or pressure groups to champion the cause of safety at sea.

1.2 Policy

Individual countries, having recognized the need for legislation to improve safety at sea, should:

- generate sufficient political will at national and regional levels to address sea safety issues in relation to capture fisheries and aquaculture activities, in particular, the saving of life and protection of property at different levels;
- make available sufficient financial resources for sea safety programmes and their implementation;
- consider the diversity of fishing operations and aquaculture activities that make use of water-borne craft, whether it be related to inland, coastal or offshore waters;

- lift the indigenous coastal fisheries up to a higher level of development and status by emphasizing the safety of the fishers and the well-being of their families; and
- recognize the economic importance of small-scale and artisanal fisheries.

As stated above, countries should designate a single lead agency for coordinating sea safety measures. This agency should be in charge of harmonizing and implementing safety programmes and coordinating inputs and needs from other relevant agencies. This, however, may well lead to a change from previous arrangements, requiring careful management in the case of change and, indeed, a choice of lead agency would reflect the level of development of the capture fisheries and aquaculture sectors and of agency responsibilities as set out in national legislation.

The selection of the lead agency would also be influenced by the level of development of both the capture fisheries and aquaculture sectors. Furthermore, because the principle objective is to address safety at sea, there could be split responsibilities between maritime and fisheries administrations as a consequence of the interpretation within national legislation of the implementation of internationally adopted binding instruments to which the State is a party. In this regard, where a vessel is required to be registered, fishing vessels would be registered as such. However, many vessels used in aquaculture activities would, in fact, fall under the different categories set out for the registration of, for example, launches, dive boats, tugboats and live fish carriers. The same may apply for fisheries research vessels.

Furthermore, in many developing countries and particularly in small island States, it is quite common to place small fishing vessels under the responsibility of a fisheries administration and larger fishing vessels under a maritime administration (should it exist). Thus, the selection of a lead agency would certainly need to take into consideration the composition of the fleets.

The Expert Consultation held in Rome, Italy, from 10 to 13 November 2008 to develop a draft outline of these guidelines (FAO Fisheries Report No. 888) made mention of the usefulness of having an international programme of action (IPOA) on safety at sea. Consequently, the role of the lead agency should not be underestimated.[15] In certain cases, there may be a need for a

[15] Annex 5 provides an outline of an IPOA.

regional approach, which may be particularly appropriate within large lake systems and common fishing zones.

1.3 Legal issues

Legislation should reflect the provisions of international conventions that address the safety of fishing vessels and vessels used in support of aquaculture activities. However, with regard to the design, construction and equipment of fishing vessels, the one and only international convention that addresses fishing vessels of 24 m in length and above has yet to enter into force. In this regard, it should be noted that an international conference held in Cape Town in October 2012 adopted the Cape Town Agreement of 2012 on the Implementation of the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977. The entry into force criteria require that not fewer than 22 countries be parties to the agreement and not fewer than 3 600 fishing vessels of 24 m in length and over be operating on the high seas. Nevertheless, it is imperative to address the voluntary instruments developed by FAO/ILO/IMO that cover fishing vessels of all types and sizes, as well as vessel personnel. These voluntary instruments include, in particular, Part A of the Code of Conduct for Fishermen and Fishing Vessels, which addresses safety and health issues.

Furthermore, the Code (Article 6, paragraph 6.17) stresses that "States should ensure that fishing facilities and equipment, as well as all fisheries activities, allow for safe, healthy and fair working and living conditions and meet internationally agreed standards adopted by relevant international organizations". In this regard, it should be noted that the reference to internationally agreed standards is not limited to international conventions. In addition, in the formulation of new, or revising existing, legislation, an administration should also address regional standards where these exist and, as and when required, consult with FAO, IMO and/or ILO as the case may be.

However, in addressing legislation, it has to be kept in mind that with regard to the design and construction of vessels, legislation is normally limited to new vessel construction and, in certain cases, vessels undergoing extensive refitting. Nevertheless, in the case of safety equipment, any amendments could also be applied to existing fishing vessels.

As stated above, the level of development in the fisheries and aquaculture sectors in a country would greatly influence the necessary amendments to legislation and this should be given careful consideration. Nevertheless, in all cases, the causes of accidents and incidents that have been clearly identified

should be reviewed and proposals for changes in legislation clearly set out. Such changes need not be limited to the physical characteristics of vessels and safety equipment but should also include other aspects as set out below.

1.4 Fisheries management aspects of safety regulations

Fisheries managers should have in place a monitoring system to report on what is fished and where the fishing and aquaculture activities carried out are being carried out. Such conditions should reflect the requirements set out in section 1.5 Operational aspects. Fisheries management should also reflect the provisions of Annex V of MARPOL (Regulation 6, paragraph 10) in relation to the reporting of lost fishing gear, aquaculture cages and related structures with regard to environmental impacts and safety of navigation. Such reporting procedures should be incorporated in legislation and should include the way in which warnings may be issued to maritime traffic from the point of view of safety of navigation and threat to sensitive areas. Furthermore, such reports of lost fishing gear, cages and netting should be maintained in a manner that would provide evidence to fisheries management of the cumulative effect of lost gear in order to plan retrieval operations and reduce further damage, particularly in sensitive areas, and the effects of ghost fishing.

Efforts by international organizations, through various conventions and other legally binding instruments, have relied on advances in the development of technology. Such technology, on which many safety standards are based, also increases operational efficiency. Consequently, in the case of fleet restructuring, fisheries management should beware of limiting technological development through legislation as regards the design, construction and equipment of fishing vessels and those vessels used in aquaculture activities. In the case of vessels used in aquaculture that fall under the maritime administration, there would be a need for active cooperation between administrations.

1.5 Operational aspects

1.5.1. Levels of certification for vessel personnel

Ideally, all persons in charge of a vessel and its machinery should be required to hold a certificate of competency. The internationally accepted standards are set out in the IMO Conventions on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) and Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F). Nevertheless, it has to be acknowledged that a great number of fishers, for example, may not meet basic education standards that would allow them to sit a written

examination and the same could apply to those working in aquaculture activities. Consequently, in promulgating legislation, it would be necessary to provide for alternative means for a person to satisfy an examiner.

1.5.2 Navigational warranties

Navigational warranties may relate to the certification of those persons in charge of a vessel and they may be applied to a person depending on the level of certification achieved. Such warranties may also limit the size and power of the vessel that the certificate holder is allowed to be in charge of and/or set navigational limits within which that person would be allowed to sail.

Navigational warranties may also be applied to a vessel, may relate to its design (decked or undecked, power source) and may also reflect conditions of class imposed by a ship classification society.

1.5.3 Mandatory annual safety certificate for a vessel

Each and every vessel should be bound to be inspected during construction, on delivery and on a regular basis thereafter, and the need for a valid safety certificate should be linked to the allocation of an authorization to fish or participate in aquaculture activities and to the register of such vessels. Legislation should reflect the need for the hull, machinery, lights and shapes to be carried, navigational equipment/instruments and safety equipment to be subject to regular inspection.

1.5.4 Authorization for a vessel to fish or operate in support of aquaculture activities

No vessel should be allowed to fish unless so authorized, and the same requirement should be applicable for vessels that operate in support of aquaculture activities. The requirement, in legislation, should reflect conditions set out in the fisheries act or the maritime act.

1.5.5 Registration of a vessel and the allocation of the flag[16]

Legislation should require that no vessel be allowed to operate beyond waters under the jurisdiction of the flag State unless it has been issued with a valid certificate of registry and one that will not expire while the vessel is on passage outside waters under the jurisdiction of the flag State. Consequently, legislation should set out acceptable requirements for the register of a vessel and the

[16] See Appendix 5.

maintenance of the register. In parallel, the minimum requirements to identify a vessel and its ownership should be applied to the licence/authorization to fish or to operate in support of aquaculture activities and the details so entered in a public record.

Therefore, in reviewing the registry and licensing issues, there would be a need to ensure linkages with, for example:

- permission to build a vessel;
- permission to import a vessel, including the demise charter of a vessel;
- regulations in relation to the limitation of vessel capacity;
- renewal of certificates of registry;
- requirements for safety certificates;
- an authorization to fish/operate in aquaculture activities; and
- ensuring that responsibilities are clearly defined.

Consequently, the overall requirements for the registration of a vessel and its maintenance on the register and for the duties of the designated registrar should be addressed and, in particular, appropriate levels of qualified staff should be identified to cover, *inter alia*:

- compliance with relevant international conventions, other mandatory instruments and protocols;
- mandatory surveys of vessels;
- surveys during new vessel construction;
- examinations for certificates of competency (vessel crew); and
- accreditation of boatbuilders and safety equipment repair and testing centres.

1.5.6 Minimum manning requirements

It is well known that many small fishing vessels and, in certain instances, small craft used in support of aquaculture activities operate "single handed". However, while the small aquaculture support vessel may be operated by one person, the actual operations are generally between known points. This is not always the case with fishing vessels, and the position of the vessel at any moment in time (if out of sight) may not be known. Legislation should call for a ship-to-shore / ship-to-ship communication system for such small vessels:

the system may allow for the use of mobile phones (where such a service exists) and a reporting schedule when the vessel is at sea.[17]

1.5.7 Minimum age for service on a vessel

Legislation should reflect the conditions as set out in the ILO Work in Fishing Convention, C188 (2007) and Recommendation 199.[18] In the case of vessels used in support of aquaculture activities that are not classed as fishing vessels, the Maritime Labour Convention, 2006, would apply. In both conventions, there is also a requirement for vessel personnel to be in possession of a valid medical certificate.

1.5.8 Requirement for pre-sea training

Pre-sea training requirements fall into two main categories, and in each case the courses regarding operational requirements and safety vary greatly, depending on the class of vessel. Nevertheless, there should be a basic requirement for new entrants to be instructed accordingly and for the timing of refresher courses to be identified. Legislation should also reflect a need for fisheries management observers and fisheries scientists to undergo pre-sea safety training if they intend to go to sea on a vessel as defined in Part 1.

1.5.9 SAR;[19] monitoring, control and surveillance (MCS)

Provisions should also be addressed in legislation that would reflect the development of a fishery and/or an aquaculture sector. They should clearly state the role of government institutions and voluntary services, as well as their responsibilities and, as the case may be, their cooperation within a region for search and rescue services.

With regard to MCS, such requirements would vary greatly, given the scope of these guidelines. Nevertheless, in all cases, there would be a need to address the issue in legislation with regard to:

[17] Charter IX of the FAO/ILO/IMO document Code of Safety for Fishermen and Fishing Vessels, Part B, and/or Chapter 9, the Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels, both referring to Radio communications, and Chapter 9 of the Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels should be addressed.

[18] It may be noted that Convention No. 188 and Recommendation No. 199 replace seven of the existing ILO instruments specific to the fishing sector.

[19] See Appendix 7.

- the delegation of responsibilities for and the means to effect monitoring;
- the means for control and surveillance, including remote sensing;
- the use of sea-going observers; and
- the application of penalties for non-compliance.

1.5.10 Small vessels[20]

In the development of rules and regulations related to vessel construction and equipment, and the limitations related to areas of operation, due care should be exercised in the case of very small vessels and those of primitive build.

1.6 Marking and identification of fishing vessels

At the Eighteenth Session of COFI, a standardized system for the marking and identification of fishing vessels was endorsed for adoption on a voluntary basis to identify fishing vessels operating, or likely to operate, in waters of States other than those of the flag State. Thereafter, the Director-General of FAO informed the Secretary-Generals of the IMO[21] and the International Telecommunication Union (ITU) of the adoption of these Standard Specifications as an aid to fisheries management and safety at sea.

Article 8, paragraph 8.2.3, of the Code contains the following reference: "Fishing vessels authorized to fish on the high seas or in waters under the jurisdiction of a State other than the flag State should be marked in accordance with uniform and internationally recognizable vessel marking systems such as the FAO Standard Specifications and Guidelines for Marking and Identification of Fishing Vessels".

It may be noted, however, that although the document[22] containing the authentic text of the standardized system for the marking of fishing vessels predates the Code, the subject is addressed in more detail in Annex II of the FAO Technical Guidelines for Responsible Fisheries, No.1, Fishing Operations. More recently, however, attention has been given to fishing vessels of 100 GT and above with regard to the IMO numbering scheme as set out in Annex 6 in these guidelines.

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[20] See Appendix 9.

[21] The IMO participated in the FAO expert consultations. At the Eighteenth Session of COFI, the IMO representative stressed the importance of such a vessel marking system in relation to safety at sea.

[22] FAO Document D/T8240/Tri/2/9.94/250.

APPENDIX 1

IMPLEMENTATION OF MANAGEMENT CHANGE

Chapter 4 highlighted the need to manage change and stressed the need for close cooperation between government ministries, departments and agencies. Managing change also requires an interchange of the effects of proposed revisions to legislation and strategies with regard to the safety at sea issue prior to adoption in order to avoid conflict after the fact. Furthermore, managing change is not limited to legislation and management policies. Indeed, in some cases, there may be a need to start from scratch, and in other cases, rules and regulations may be promulgated without access to safety equipment so specified due a lack of availability or affordability. The same might be the case where search and rescue (SAR) services are not already in place.

1. COOPERATION AMONG STAKEHOLDERS

During the development of the plans of action, the principle stakeholders should be consulted and the extent of their commitment to change so established. In this regard, it is vitally important for government representatives to set out their commitment to change and make public wherein their direct responsibilities lie. Such a course of action is essential, particularly in cases where the fishing fleet is a mixture of artisanal, small-scale and industrial fisheries. In addition, the same level of importance would apply to the aquaculture sector in that some vessels would fall under maritime administration and others under fisheries administration.

Based on the agreed plans of action, a programme for improving safety at sea would be developed. The design and formulation of such a programme would include progress indicators and would address implementation, reviewing procedures, ongoing monitoring and evaluation, plus correction and adjustment, taking into consideration the effectiveness of the programme and the "cost of life" benefits to the country.

2. NATIONAL POLICIES

National policies should be formulated in a manner consistent with national legislation and for this reason, the provisions of the fisheries legislation, maritime legislation and legislation covering health and safety should be addressed. Such policies, however, should reflect the national situation with regard to capture fisheries and aquaculture in line with the development scenarios set out in Chapter 1 of Part 2. National policies should also reflect, where appropriate, the provisions set out in a regional policy (with which the country is associated) provided that these are **not** of a lower standard than the national policy.

During the implementation of such national polices, a holistic approach should be followed that extends to grassroots levels and considers, *inter alia*, components such as livelihoods, coastal vulnerability, integrated coastal area management and climate change initiatives.

3. THE ROLE OF FISHERIES MANAGEMENT

Fisheries management has a role to play in relation to safety issues. Indeed, no vessel should be allowed to fish unless it has a valid safety certificate. In the event that a safety certificate is no longer valid, the authorization to fish should be suspended or withdrawn. Furthermore, if it is the intention for a fishing vessel and/or a vessel in support of aquaculture activities[1] to operate on the high seas or in waters of a neighbouring State, such a vessel must be registered. Additionally, a vessel should not be allowed to leave port if the certificate of registry is due to expire while the vessel is operating in waters that are not under the jurisdiction of the flag State or on the high seas.

Notwithstanding the fact that in many countries the ultimate responsibility for the safety of vessels need not be a fisheries administration, fisheries managers should consider safety an explicit goal of fisheries management. Consequently, in managing change, it would be essential, under the direction of the lead agency, to clarify the role of fisheries management *vis-à -vis* safety at sea; for example, its role in the implementation of national legislation with regard to the training and certification of fishing vessel personnel and crews of vessels used in support of aquaculture activities. Fisheries managers already have responsibilities for MCS of fishing activities and the increasing use of vessel (position) monitoring systems (VMS) can be an important safety tool, particularly in SAR operations.

[1] Such as a live fish carrier vessel on international voyages.

Fisheries managers should also build up mechanisms for close collaboration and cooperation between themselves and the administrations responsible for safety. This also applies to maritime administrations. With a clear understanding of each other's responsibilities and limitations, cooperative efforts towards obtaining mutual objectives should be discussed and implemented. There would also be a need, under the management of the process by the lead agency, to consider the following:

- the formation of a safety committee(s) that would include the key stakeholders;
- the empowerment of stakeholders to take action as agreed in consultation;
- where applicable, consultation among all stakeholders with the aim of transferring ownership of the principal objective of these guidelines on best practices (the improved safety and health of those working in the fisheries sector) to the beneficiaries;
- the value of statutory, formal classroom and informal training, as well as training of and by extension specialists at the dockside or on the beach;
- the provision of resources to bring about change, including skills, expertise, time and financing, to ensure change through action, performance and accountability;
- the use of mentors to enhance communications with fishers, including fisher-to-fisher communication; and
- the development of a communication strategy to keep channels of communication open for the distribution of all pertinent information and to raise awareness.

From a purely fisheries management point of view, quota-based fishery management systems might be safer than competitive fishery management systems. In competitive fishery management systems, fishers compete with one another for the available fish. In quota-based fishery management systems, managers limit how much individual fishers may catch. Under quota-based management systems, fishers face less of a trade-off between safety and other objectives, giving them less incentive to take risks, such as fishing without adequate rest or fishing in bad weather. Quota-based fishery management may eventually result in the use of newer and safer vessels, more environmentally friendly fishing gear and greater fuel efficiency.

4. LEGAL ISSUES

There should be a requirement in legislation for rules and regulations for the design and construction of vessels and equipment (including safety equipment) for fishing vessels and vessels in support of aquaculture activities. This requirement should include procedures to be followed by owners and boatbuilders / shipbuilders, making it obligatory for them to submit plans for approval by the responsible government body. Legislation should also include a mandatory requirement for inspection by government-approved surveyors during the construction of a vessel, inspecting and testing of safety equipment and their participation during acceptance trials and stability tests. In addition, legislation should require a certified version of the stability booklet to be kept on board.

It is recommended that the mandatory requirements for stability and associated sea worthiness relating to the range and type of vessels to be covered reflect the guidance given in:

- Annexes 6 and 7 of Part A of the Code of Safety for Fishermen and Fishing Vessels, 2005;
- Chapter III of Part B of the Code of Safety for Fishermen and Fishing Vessels, 2005;
- Chapter 3 of the FAO/ILO/IMO Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels;[2] and
- Chapter 3 of the Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels.

In the case of larger fishing vessels and aquaculture support vessels that are of 24 m in length and over, Annex I of the IMO International Code on Intact Stability, 2008 (2009 edition) should be consulted. Attention is drawn to the provisions in Chapter 3 of Part B of the Code of Safety for Fishermen and Fishing Vessels in relation to the effect of the free surface of liquids in tanks and in particular, as such provisions relate to live fish carriers (commonly referred to as well boats). In this regard, it should be noted that there is an increasing trend to construct larger well boats, the most recent being 76 m in length and arranged to transport up to 450 tonnes of live fish.

Although the Voluntary Guidelines (mentioned above) were produced for vessels of 12 m in length and over but less than 24 m in length, the inclining and rolling period test is also valid for decked vessels that may fall short of the

[2] See also FAO Technical Paper 517, Safety Practices Related to Small Fishing Vessel Stability.

12 m length. Furthermore, when a vessel is in service, the rolling period could be measured and the results compared with the stability "booklet" or stability documentation required to be kept on board the vessel. In carrying out stability trials, attention is drawn to the need for a written record.

Legislation should also include mandatory requirements for regular boat and fire drills and for the reports of such drills to be entered into the logbook[3] of the vessel and duly signed by the skipper/master and witnessed, as appropriate, by the chief engineer or the mate.

Requirements for the qualifications and training of fishing personnel that follow the standards set out in the IMO conventions STCW and STCW-F[4] should also be addressed in legislation.

5. STAKEHOLDER PARTICIPATION

The lead agency should ensure the participation of all stakeholders and identify their roles in the management of change and in the development of a communication strategy to keep channels of communication open for the distribution of all pertinent information and to raise awareness. In this regard, the formation of a joint safety committee with the intent to identify resources to bring about change, including the required skills, expertise and financing, would include the key stakeholders.

Consideration might also be given to stakeholder participation, where and when applicable, in formal classroom discussions, informal training and training of and by extension specialists at the dockside or on the beach. Such interaction with the fishing and aquaculture sectors might help to convince these sectors that **they** are the beneficiaries of these guidelines and that they have a role to play in the ownership of the principle objective, which is improved safety and health for those working in the capture fisheries and aquaculture sectors.

[3] The ship's log or logbook is a formal document in which details of the activities on board are entered and which would contain information on any accident that had occurred on board. Furthermore, the logbook, when full, must not be thrown away or destroyed and should be readily available for a period of three years from the date of the last entry. The official ship's log is supported by a deck log and a machinery log.

[4] International Convention on Standards of Training, Certification and Watchkeeping for Seafarers; International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel.

In short, a consultative approach should be adopted to develop and implement sea safety policies and programmes in fishing, with the involvement of and cooperation among relevant stakeholders at various levels, including:

- government authorities;
- fishers and their organizations/associations, co-management groups, cooperatives and trade unions;
- community organizations, with particular reference to women's groups;
- fishing boat owners; and
- boatbuilders and other supporting services.

6. AGENTS OF CHANGE

It is recognized that change in the attitude of administrations and those that go to sea may be influenced in a number of ways. For example, religious (and non-religious) organizations in many countries open their doors to fishers and seafarers who gather for leisure and to discuss common problems of life at sea, which invariably include occupational safety and health issues. Furthermore, it is not unusual in such formal organizations open to fishers and seafarers to call upon women in their communities to join the board of executives and to assist in the development and implementation of strategies to improve safety at sea. In most cases, such organizations may, in fact, take up these issues with the flag State and often with the appropriate international organizations.

However, the role of women must not be underestimated. They have a direct interest in the safety of all those who serve aboard fishing vessels and vessels engaged in the actual fishing activity or within on-board processing plants. In addition, they are also influential in stimulating approaches to safety, such as through school programmes, thus reaching the children of fishers and seafarers and, consequently, families in general.

More formal approaches to "managing change" may be through capture fisheries and aquaculture extension services and those responsible for the inspection of vessels and safety equipment. This group, as well as equipment suppliers, have an important role to play in reaching out to crew members, explaining why the equipment is needed, how to care for it and how to use it.

Every important initiative requires close cooperation between government officials and the industry in impressing all of those concerned that meeting safety and health objectives is a joint responsibility. Consequently, all individuals should have a clear understanding of how they can contribute to a successful programme of safety at sea.

However, to such agents of change, the availability of resources, both financial and material, is **crucial**, not only to cause change but also to ensure the long-term stability of a safety programme. They also need to draw on evaluations of an accident investigation service and have the right to consultation with officers of the investigation unit.

APPENDIX 2

ACCIDENT INVESTIGATION AND ANALYSIS

There are several definitions of risk. At its simplest, risk is the possibility of an adverse outcome. Risk is often expressed in terms of a combination of the consequences of a series of events and the associated likelihood of recurrence. Consequently the probability, frequency of occurrence and impact of an event are factors that should be considered in any analysis of risk. It may be noted that society's perception of risk may differ from that of the accident investigators and, therefore, they should strive for clarity when communicating about risk and do so in terms understandable to non-specialists.

Furthermore, it may also be noted that the IMO model course on Investigation of Marine Casualties and Incidents, referred to in section 4 below, focuses on the investigation of the safety issues and does not deal with the attribution of liability or blame.

Nevertheless, all accident investigations seek answers to four basic questions:

- *What happened?*
- *How did it happen?*
- *Why did it happen?*
- *What can be done to prevent it from happening again?*

1. INTRODUCTION

Any accident at sea, in harbour or on inland waters involving loss of life results in pain and suffering. The survivors, the families and the community endure grief, loss and confusion. They will have many questions and will want to know "what happened" and "why". Indeed, whenever an accident involving vessels occurs, it seems as if many different official bodies converge on the scene to find out what happened. The police, government officials, lawyers, insurance assessors and marine surveyors will all be asking similar questions, albeit from different perspectives, and this can be confusing to them, as well as to families and friends.

However, given the broad scope of these guidelines, many accidents during capture fisheries and aquaculture activities may escape the notice of lawyers, insurance assessors and marine surveyors because they may only be required to address specific aspects of an accident or incident; but accidents should not escape notice under a well-managed system of accident investigation. Consequently, when designing such a system, each sector covered by these guidelines should provide instructions on how the initial report of an accident should be prepared and to whom it should be given.

If a vessel is lost at sea, the task is to find out the reason for its disappearance. If the wreck is found, an underwater survey of it may be undertaken. In exceptional cases, the decision could be taken to raise it, although many other factors would have to be taken into consideration, such as cost and technical feasibility. A case in point would be the loss of the 66 m stern trawler named *Gaul*, registered in the United Kingdom of Great Britain and Northern Ireland that led to an in-depth investigation and the use of simulation techniques over a period of years and finally to underwater photography that revealed the principle defect. Sometimes, however, missing or sunken vessels prove impossible to find.

In the event of loss of life, the authorities should make every effort to inform families and, in general, the task would usually fall on the shoulders of the police but other persons, such as ordained ministers, the staff of fishers or seafarers' missions, doctors or close relatives, could also break the news.

2. ACCIDENT INVESTIGATIONS

Those charged with the responsibility for accident investigation should demonstrate by example a commitment to safety, reliability and ethical conduct through the professional management of risk. They should clearly demonstrate the standards by which they expect risks to be managed, thus setting an example for others. In addition, because the factors that give rise to risk are interdependent and, therefore, cannot be examined in isolation, a systematic and holistic approach should be adopted.

Some factors that give rise to risks may appear to be readily identifiable at first glance, for example:

1. vessel-related factors, such as:
    - vessel and equipment (poor design and construction, inadequate crew facilities and medical supplies, poor maintenance, lack of quality boat builders);

- operational factors, including vessel management, aids to navigation, etc; and
- lack of access to communication networks (very high frequency [VHF]), shortwave, mobile and satellite phone, satellite/VHF distress system, emergency position-indicating radio beacon (EPIRB);

2. general factors, such as:
   - human element (navigational error, fatigue, stress, lack of training, risk-taking behaviour, drug abuse, lack of a safety culture and demographic issues);
   - equally, the human element also applies to shore-based controllers, ship repairers, surveyors, etc.;
   - fisheries management regimes (overcapacity, excessive competition);
   - regulatory measures (unclear, inappropriate or out-of-date regulations, or gaps or contradictions among applicable regulations, in particular regarding registration and fishing authorization procedures);
   - lack of enforcement, resulting from a lack of trained human resources; and
   - lack of financial resources and/or inadequate sanctions;
3. natural environmental factors, such as:
   - fog, poor visibility, winds, high seas (waves), storms, lightning tempests and tsunamis.

3. INFRASTRUCTURE ASSESSMENT

3.1 Service facilities

The lead agency should ensure that an infrastructure assessment is carried out with regard to the extent and capacity of available service facilities for the construction and repair of vessels in the fleet. Such an assessment should include details of the labour force employed in the service facilities, to identify the number of persons employed and to establish the level of skills available. It should also be established whether or not an accreditation scheme for boat builders is in place and, if so, how it compares with that of other industries.

3.2 Education and training facilities

Local professional engineering bodies should be sourced to obtain information regarding entry into the various grades of membership (fellow, member,

associate member and associate). In addition, it should be noted whether any of the memberships are associated with the service facilities involved in the construction and repair of vessels in the fleet wherein an accident incurred and/or with the survey and design offices mentioned below.

Information should be obtained from education and training institutions regarding the types of courses that are available (both diploma and non-diploma courses). In this regard, the investigation may extend to regional institutions.

3.3 Survey and design offices

A list of surveyors should be drawn up and include naval architects and marine engineers who are accredited by ship classification societies, insurance underwriters and/or a salvage association. This type of information would normally be available from a Lloyd's agent, a chamber of commerce or associations of professional engineers and naval architects. A note should be made of the degree of familiarity of these persons with the small vessels used in the capture fisheries sector. It may be necessary to extend the investigation to other countries in a subregion or region.

With regard to vessels used in support of aquaculture, due note should be taken of the advances in the development of the design of vessels used in the deployment and maintenance of cages, particularly in the marine environment, as well as those vessels used to transport live fish.

3.4 Assessment of actual needs

Assuming that governments would agree to make provisions in law setting out standards for the design, construction and operation of small vessels and enforcement of the attendant regulations, there would be a parallel need for a process of monitoring, control and certification. In this regard, the government would set the requirements for the inspection of small vessels and for the qualifications and experience of inspectors and investigating officers (who might in some cases perform both functions). The government may, of course, decide to install an inspection system that would make use of appropriately qualified and experienced surveyors/inspectors on a non-exclusive basis, for example through a Lloyd's agent.

If a government elects to have an inspection service and assign to it the responsibilities for the investigation of accidents and incidents in the fisheries sector, the line of command should be clear and each "inspector" should

be readily identifiable by post description. In this regard, it may be deemed desirable, after an analysis of the needs, to appoint inspectors with specialization in specific fields. In addition, short-term inputs from experts in, for example, naval architecture and marine engineering could be obtained under contract with a technical/educational institution or a specialized individual, particularly where a high level of expertise is required in the event of investigations into mishaps leading to loss of life and/or property at sea.

Where such an inspection service already exists, a thorough review should be made of possible needs for in-service training with regard to the investigation of both accidents and incidents if the inspectors are required to perform both functions, which is likely in the case of fleets of small vessels.

4. ACCIDENT INVESTIGATION AND UNIT ANALYSIS

The level of development of the capture fisheries and aquaculture sectors in a country would greatly influence the number of staff and their technical qualifications, experience and competence to investigate accidents and incidents of any nature occurring during capture fisheries and aquaculture activities. As many accidents would be related to the operations of fishing vessels and aquaculture support vessels, investigators would have to understand how such vessels are operated when at sea and in port. Furthermore, they should have received formal training in marine accident and incident investigation.[1] In addition, there would be a need for administrative staff to deal with records, data analysis and publications and to provide general support.

Such persons, so appointed to carry out an investigation related to an accident or incident concerning fishing vessels, other capture fishing-related activities and aquaculture operations, should demonstrate a high level of personal and professional integrity. In the exercise of professional skills, such persons must recognize that meeting the demands of the industry requires ability and commitment often without regard for personal convenience.

It should be kept in mind that the designated investigation officers might encounter areas outside their own discipline in the course of an investigation. In such cases, they should be advised to request the assistance of appropriate technical advisers.

While the above-mentioned qualifications are highly desirable, it is recognized that, in some countries, a sufficient number of individuals so qualified may not be available. In such cases, competent investigating officers

[1] See, for example, the IMO's model course 3.11: Marine and Accident Investigation.

may originate from other backgrounds but all of them must have the same basic skills taught in classrooms and subsequently reinforced in the field under the guidance of qualified investigators approved by the flag State.

The flag State should ensure that individual investigators have a working knowledge and practical experience in those subject areas pertaining to their normal duties. Additionally, to assist individual investigators in the conduct of duties outside of their normal assignments, the lead agency should ensure ready access to expertise in the following areas, as necessary:

- all aspects of the relevant International Maritime Organization (IMO) and International Labour Organization (ILO) conventions;
- all aspects of national laws and regulations of the flag State;
- vessel construction, subdivision, stability and watertight integrity;
- vessel electrical and machinery systems;
- safety equipment systems, plans and equipment items;
- fire protection construction methods;
- navigation and communications equipment;
- fishing vessel operations and deck machinery;
- safety management systems; and
- evaluation of the effects of the human element.

5. ACCIDENTS AND MAJOR AND SERIOUS INJURIES

5.1 "Accident" means any occurrence on board a vessel or involving a vessel whereby:

(a) there is loss of life or major injury to any person on board, or any person is lost or falls overboard from the vessel or one of its boats;

(b) a vessel:

(i) causes any loss of life, major injury or material damage;

(ii) is lost or presumed to be lost;

(iii) is abandoned;

(iv) is materially damaged by fire, explosion, weather or other cause;

(v) goes aground;

(vi) is in collision;

(vii) is disabled; or

(viii) causes significant harm to the environment.

(c) **any** of the following occur:
  (i) a collapse or bursting of any pressure vessel, pipeline or valve;
  (ii) a collapse or failure of any lifting equipment, access equipment, hatch-cover, staging or boatswain's chair or any associated load-bearing parts;
  (iii) a collapse of cargo,[2] unintended movement of cargo or ballast sufficient to cause a list, or loss of cargo overboard;
  (iv) a snagging of fishing gear, which results in the vessel heeling to a dangerous angle;
  (v) a contact by a person with loose asbestos fibre, except when full protective clothing is worn; or
  (vi) the escape of any harmful substance or agent, if the occurrence, taking into account its circumstances, might have been liable to cause serious injury or to cause damage to the health of any person.

5.2 "Major injury" means:

(a) any fracture, other than to a finger, thumb or toe;
(b) any loss of a limb or part of a limb;
(c) dislocation of the shoulder, hip, knee or spine;
(d) loss of sight, whether temporary or permanent;
(e) penetrating injury to the eye; or
(f) any other injury:
  (i) leading to hypothermia or to unconsciousness; or
  (ii) requiring resuscitation, or requiring admittance to a hospital or other medical facility as an inpatient for more than 24 hours.

5.3 "Serious injury" means any injury, other than a major injury, to a person employed or carried on a vessel, which occurs on board or during access, which results in incapacity for more than three consecutive days, excluding the day of the accident, or as a result of which the person concerned is put ashore and the vessel sails without that person, unless the incapacity is known or advised to be of three consecutive days or less, excluding the day of the accident.

[2] The term cargo is directly relevant to vessels/ships used in support of aquaculture activities but in the context of accidents it may be seen, for example, to cover fishing gear and implements, necessary for certain types of fishing operations, that may be stowed on deck.

6. FORMAT FOR THE REPORTING OF CASUALTY STATISTICS

At the IMO, the Maritime Safety Committee (MSC), at its fifty-eighth session, approved a format for the reporting of casualty statistics for fishing vessels and fishers at sea and issued MSC/Circ.539 in June 1990. This format was later revised (MSC/Circ.539/Add.2). The committee considered that for improving the safety of fishing vessels and fishers at sea, the gathering of casualty statistics is of paramount importance for the future consideration and development of the appropriate amendments, if necessary, to the international requirements. The same criteria should apply in the case of vessels serving the aquaculture sector.

In the absence of appropriate casualty data for fishing fleets, the MSC considered it highly desirable that the reporting system be established as soon as possible to assess the areas of gravest concern for the safety of fishing vessels and fishers at sea. Bearing in mind that there have been different systems used in different countries for registering casualties to fishing vessels and fishers, the committee developed, as a first step, the format for reporting the past major causalities to vessels, i.e. total losses and fatalities to fishers. The format so designed (see form below) could be readily amended to suit vessels used in the aquaculture sector.

However, at the more developed level of fisheries, with fleets of refrigerated cargo ships (for fish), large fishing vessels, fish factory ships and live fish carriers, there may also be a need to address the revised, harmonized reporting procedures required under the Safety of Life at Sea (SOLAS) regulation 1/21 and International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), articles 8 and 12. With regard to the Marine Environment Protection Committee (MEPC) component concerning the incidental spillages of harmful substances of 50 tonnes or more, fisheries managers should take note of the reporting requirements concerning direct natural resource damages as set out below:

- loss of wildlife: impact on birds, marine mammals, fish and on other marine life, including invertebrates;
- loss of fisheries: fin fish, shellfish and fish farming;
- damage to the marine environment;
- damage to the shore environment; and
- habitat degradation: soft habitats (salt marshes, mangroves and mudflats); shoreline (beaches); and rocky coasts and reefs, including coral.

MSC/Circ.539/Add.2

ANNEX

FORMAT OF REPORTS ON CASUALTY STATISTICS CONCERNING FISHING VESSELS AND FISHERMEN AT SEA

1 FISHING VESSELS LOST[1/]

01 COUNTRY			
02 YEAR			
VESSEL LENGTH O.A.	LOA < 12M	12M ≤ LOA < 24M	LOA ≥ 24M
03 TOTAL NUMBER OF FISHING VESSELS			
TABLE A - NUMBER OF TOTAL LOSSES, PRIMARY NATURE OF CASUALTY			
04 FOUNDERED			
05 CAPSIZED			
06 FIRES/EXPLOSIONS			
07 COLLISION			
08 CONTACT			
09 WRECKED/STRANDED			
10 MISCELLANEOUS			
11 UNKNOWN			
12 TOTAL NUMBER OF LOST FISHING VESSELS			
TABLE B - ANALYSIS OF LOSSES OF FISHING VESSELS BY CAUSE (PRIMARY CAUSE)			
13 HUMAN ERROR			
14 STEERING GEAR FAILURES			
15 FISHING GEAR INCIDENTS			
16 OTHER FAILURES OF VESSEL, ITS MACHINERY OR EQUIPMENT			
17 ADVERSE WEATHER			
18 ICING			
19 OTHER			
20 UNKNOWN			
21 TOTAL NUMBER OF FISHING VESSELS LOST			
22 REMARKS			

1/ Any vessel used commercially for catching fish, whales, seals, walrus or other living resources of the sea.

W/5088N/ga

MSC/Circ.539/Add.2
ANNEX
Page 2

2 LOSSES OF LIVES TO FISHERMEN ON FISHING VESSELS

VESSEL LENGTH O.A.	LOA < 12M	12M ≤ LOA < 24M	LOA ≥ 24M
23 TOTAL NUMBER OF FISHERMEN[2/]			
TABLE C - NUMBER OF LOSSES OF LIVES CAUSED BY TOTAL LOSS OF VESSELS (PRIMARY NATURE OF CASUALTY)			
24 FOUNDERED			
25 CAPSIZED			
26 FIRES/EXPLOSIONS			
27 COLLISION			
28 CONTACT			
29 WRECKED/STRANDED			
30 MISCELLANEOUS			
31 UNKNOWN			
32 SUB-TOTAL			
TABLE D - NUMBER OF LOSSES OF LIVES CAUSED BY CASUALTIES OF VESSELS, EXCLUDING TOTAL LOSSES			
33 CAPSIZED			
34 FIRES/EXPLOSIONS			
35 COLLISION			
36 CONTACT			
37 WRECKED/STRANDED			
38 MISCELLANEOUS			
39 UNKNOWN			
40 SUB-TOTAL			
TABLE E - NUMBER OF LOSSES OF LIVES FROM ACCIDENTS ON BOARD			
41 FALL OVERBOARD/ MISSING AT SEA			
42 HANDLING OF FISHING GEAR/MECHANICAL LIFTING			
43 INVOLVING MACHINERY EQUIPMENT			
44 FALLS ON BOARD (GENERAL)			
45 HIT BY SEAS			
46 ASPHYXIATION			
47 OTHER			
48 UNKNOWN			
49 SUB-TOTAL			
50 TOTAL NUMBER OF LIVES LOST (C) & (D) & (E)			

2/ Total number should include both full-time and part-time fishermen. Where possible, indicate under "Remarks" the percentage which is part-time.

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TABLE F - ANALYSIS OF LOSSES OF LIVES TO FISHERMEN BY CAUSE (PRIMARY CAUSE)			
51 HUMAN ERROR			
52 STEERING GEAR FAILURES			
53 FISHING GEAR INCIDENTS			
54 OTHER FAILURES OF VESSEL, ITS MACHINERY OR EQUIPMENT			
55 ADVERSE WEATHER			
56 ICING			
57 OTHER			
58 UNKNOWN			
59 TOTAL NUMBER OF LIVES LOST			
60 REMARKS			

APPENDIX 3

REQUIRED QUALIFICATIONS AND EXPERIENCE OF ACCIDENT INVESTIGATORS, SURVEYORS AND INSPECTORS

Appendix 2 identified needs and issues that confront officers concerned with accident investigation and analysis, and indicated that there would have to be different approaches according to the development of the fisheries and aquaculture sectors in a country or region. Consequently, the desired qualifications and experience of the selected officers may also differ.

1. STATE OF DEVELOPMENT OF THE FISHERIES AND AQUACULTURE SECTORS

In Chapter 1 of Part 2 of these guidelines, the following three examples of development are given in line with the scope of these guidelines:

No. 1 Simple ad hoc level: Applicable for a small fleet of vessels, manual reporting from local level to national focal points without established routines.

No. 2 Basic level: Applicable for countries with a large fleet of small vessels with established routines for accident reporting from local to provincial to national level, including basic data compilation and facilities for accident investigations, statistical analysis and feedback mechanisms.

No. 3 Developed level: Established in countries with developed fishery and aquaculture safety policies and monitoring covering a wide range of vessel types and sizes. Routines for mandatory reporting, statistical analysis and assessment functions. A maritime accident investigation board independent of the national maritime administration or fisheries.

Essentially, many aquaculture activities would equate with the above levels of development, although it is unlikely that many of the vessels would be as large as distant-water fishing vessels. However, this sector is developing

rapidly, and the current generation of recently constructed vessels are of fairly advanced design requiring specialized knowledge of systems for the handling and transportation of a cargo of live fish.

2. QUALIFICATIONS AND EXPERIENCE

2.1 No. 1 Simple ad hoc level

It is highly likely that the role of an investigator would be given to the officers responsible for the routine inspection of vessels in service, under repair or under construction.[1] In the case of fleets of small vessels, the officers may be on the staff of a fisheries department or division and consequently have other duties. They should, however, have a sound knowledge of vessel operations in capture fisheries or in support of aquaculture activities. In addition, they should also be familiar with fishing activities that do not require a vessel and should kept abreast of work and safety regulations applied to the fisheries sector. It is also common practice to call upon a fishing vessel inspector to investigate the loss or destruction of a vessel, or its decommissioning, and to be party to accident and incident investigations. Consequently, their experience should cover the different hull types, hull materials and machinery installations that make up the fleet.

It is also common practice for such officers to oversee the construction of new vessels and, although they may not be qualified naval architects, they should be able to supervise, for example, a rolling period test.

Under exceptional circumstances, there may be a need to call on the assistance of a Lloyd's agent,[2] who would appoint a competent surveyor to carry out or oversee an investigation in the case of an accident or incident on behalf of the responsible administration and provide a formal report with recommendations. In addition, in relation to matters that overlap with health and safety matters, the officer may need to draw on the experience of qualified inspectors in these fields.

[1] The inspectors should have access to the FAO/ILO/IMO documents set out in Annex 4.

[2] The Lloyd's Agency Network provides 24-hour, year-round independent, marine surveying and claims adjusting services to the global insurance industry and its customers, with almost 300 Lloyd's agents and approximately the same number of subagents covering every major port and commercial centre in the world. The network covers more than 170 countries and forms the world's most extensive marine surveying network. Full details can be found in the online Lloyd's Agency Directory.

2.1.1 Desired qualifications

Due to the fact that most officers would be recruited from the trades that design, construct and repair fishing and aquaculture support vessels (as well as pleasure craft), candidates should have attended the equivalent of a technical college during apprenticeship years. These colleges would normally cover disciplines such as engineering, carpentry, electrical engineering and welding, engineering drawing and, of course, mathematics. The standards, however, may differ from one country to another and this should be examined, taking into consideration the need for compatibility within a region or subregion. Ideally, a candidate should have also attended courses in naval architecture and electro-technology, and be familiar with vessel safety regulations.

2.2 No. 2 Basic level

Although many more vessels would be involved at the basic level than are involved at the simple ad hoc level, the likelihood is that they would not be deep-sea fishing vessels or large aquaculture support vessels. Consequently, the investigation and analysis unit would be led by an experienced maritime surveyor, who has been trained in marine accident and investigation techniques and is supported by inspectors of vessels, as proposed for the simple ad hoc level.

2.2.1 Desired qualifications

The candidate to lead a team of inspectors of fishing vessels and vessels in support of aquaculture should have qualifications that are at least equal to the highest level (for deck and engineer officers) as set out in the IMO Conventions on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) (as related to merchant ships) and Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F). In addition, the person would have a diploma in ship surveying and would have successfully completed a course in maritime accident investigation.

2.2.2 Desired experience

Investigating officers should have full knowledge of capture fisheries operations and the operation of vessels in support of aquaculture activities and should have seagoing experience.

2.3 No. 3 Developed level

The lead agency, in consultation with the other interested agencies, might decide to host the unit responsible for investigation and analysis of accidents and incident or, for example, give the responsibility to the relevant fisheries body. Either way, the staffing, the qualifications and experience would not differ substantially.

Given the range of sizes of vessels and areas of operation, the unit would be led by a senior marine surveyor supported by experienced surveyors/inspectors, all of whom having been trained in marine accident and investigation techniques. Support would also be provided by specialist investigators in safety and health issues, as well as specialists in conditions of work and service in fishing vessels and vessels used in support of aquaculture activities. It is also likely that an investigation service for small vessels might also exist, such as mentioned in the description of the simple ad hoc level, under the fisheries management structure and, in this case, it would be an integral component of the overall accident investigation arrangement.

2.3.1 Desired qualifications

In the case of large fleets of fishing vessels of various sizes and those used in support of aquaculture activities, the inspection/investigation unit may have to include a combination of dedicated hull inspectors and machinery inspectors. In all probability, the service would have to be managed by a senior hull and machinery inspector/investigator with a recognized diploma in ship surveying. The knowledge (and experience) required must include maritime law, naval architecture, marine engineering, electro-technology and applied electronics.

2.3.2 Minimum qualifications

Investigating officers should have the following professional qualifications, wherever possible:

1. A certificate issued under the relevant provisions of the STCW convention, as amended, designating the holder as master, qualified to command a vessel of 1 600 GT, or as chief engineer, qualified to be in charge of machinery installed in a vessel powered by main propulsion machinery of 3 000 kW or more; or
2. a university degree or diploma in naval architecture, mechanical engineering, electro-technology or other relevant professional qualification related to the maritime industry;

3. a certificate of competency or equivalent issued by the navy or coastguard (by examination)[3] and a diploma in naval architecture and electro-technology; and
4. a professional qualification in ship construction, naval architecture or engineering accepted by a classification society or a Lloyd's agent for accreditation as a surveyor of ships (hull and machinery).[4]

Alternatively, investigating officers should have equivalent qualifications to those set out in the STCW convention as issued by the navy or coastguard.

2.3.3 Minimum experience

Ten years of seagoing experience, two of which should be at the rank of a senior officer, or ten years of experience in the design and construction/repair of ships/fishing vessels, should be required.

2.3.4 Desired experience

In addition to the required minimum experience, not less than three years of experience in the inspection of fishing vessels (hull and machinery) or three years of experience as a marine or assistant marine superintendent should be required.

3. GENERAL

To assist individual investigators in the conduct of duties outside of their normal assignments, the lead agency should ensure ready access to expertise in the following areas, as necessary:

- all aspects of the relevant IMO and ILO conventions;
- all aspects of national laws and regulations of the flag State;
- vessel construction, subdivision, stability and watertight integrity;
- vessel electrical and machinery systems;
- safety equipment systems, plans and equipment items;
- fire protection construction methods;
- navigation and communications equipment;
- fishing vessel operations and deck machinery;

[3] Having held the rank of lieutenant (marine engineer) for at least three years.

[4] The awards of chartered engineer and chartered marine engineer (by examination) are examples.

- safety management systems; and
- the evaluation of the effects of the human element.

During the first six months of employment within the flag State, investigators should perform tasks under the supervision of an experienced person, in accordance with an approved practical training programme.

When investigators are to be employed for tasks other than those within their field of expertise and experience, they should receive the necessary training and guidance for the new tasks and should perform them for a period of not less than one month, as appropriate, under the supervision of a person with experience in that field.

Irrespective of the arrangements put in place for investigations into accident and incidents by the flag State, any person or entity authorized to participate in an investigation, whether or not an accident is vessel-related, should be suitably qualified. In general, a person qualified as a master mariner could be appointed as a hull and cargo surveyor. Alternatively, surveyors may have qualifications in a marine-related field from an institution recognized by the maritime/fisheries administration and have specialized training to ensure adequate competence and skill. Such a person may also be a qualified officer of the maritime/fisheries administration with an equivalent level of experience and training in performing investigations into maritime accidents and incidents. It is understood, nevertheless, that in every case, inspectors and accident investigators, must have the competence to rule on the adequacy and condition of safety equipment.

This appendix does not attempt to set out the qualifications and experience required for officers who may be assigned to an independent marine investigation and accident board.

APPENDIX 4

CODE FOR THE CONDUCT OF AN INSPECTOR OF VESSELS

This appendix gives guidance in relation to the conduct of a person authorized to carry out an inspection of a vessel and is directed, in the main, to the simple ad hoc and basic levels of development as set out in Chapter 1. It offers a set of basic principles that could be given legal substance as and when a vessel inspection service determines it to be necessary.

However, it does not address inspections that may be required for the sole purpose of fisheries conservation and management.

1. INTRODUCTION

One of the basic principles regarding the building of a vessel is that it should be constructed in a manner that would facilitate regular maintenance, so ensuring that the vessel is at all times and in all respects satisfactory for the intended service of the vessel. To ensure that the principle is followed, it is the duty of a flag State to ensure compliance with appropriate safety requirements for fishing vessels and fishers in accordance with international conventions, internationally agreed codes of practice and voluntary guidelines.[1] The same principle would apply to vessels used in support of aquaculture activities that are not registered as a fishing vessel.

The actual requirements concerning safety construction standards, safety equipment and equipment should be embodied in shipping and/or fisheries acts, regulations and schedules, as appropriate. In addition, the responsible administrative body for the inspection of fishing vessels should be identified in both the shipping and fisheries acts.

Previous experience has shown that the arrangements for the inspection of vessels within regions and subregions may vary greatly, with the coastguard,

[1] The Code of Conduct for Responsible Fisheries (Code), Article 8 – Fishing Operations, paragraph 8.2.5.

the maritime administrations and/or the fisheries administrations carrying out inspections wholly or in part. In some cases, a shipping act may identify the maritime administration as responsible for inspections but other administrations might carry out the work. Conversely, some fisheries acts identify the fisheries administration as responsible but other administrations might carry out the work.

However, the terms of reference for a person authorized to inspect fishing and aquaculture support vessels would most likely be different for officers of a coastguard and perhaps the maritime authorities when compared with those of an officer of a fisheries administration, because in the latter case the authorized person would, in all probability, carry out other duties and may be called upon to give advice.

With regard to all stakeholders, there must be a clear understanding that "due diligence" has to be exercised by the owner and/or managers of a vessel with regard to its maintenance, crewing and to ensure that it is in a seaworthy condition when it puts to sea. A repairer, employed by the owner, must also exercise due diligence and, notwithstanding pressure by the owner, carry out repairs in a sound and proper manner. Furthermore, all persons authorized to inspect vessels must also be diligent at all times in the discharging of their duties, in order to ensure that they are not held negligent.

Failure by any party to exercise due diligence could lead to litigation where the law may apply. In simple terms, tort is a civil wrong, a breach of the duty of care owed by one person to another, and the law prescribes standards for that duty of care. However, it is clear that a higher standard of duty would have to be exercised by experts such as a boatbuilder or repairer and an inspector of vessels in the course of their professional duties.

2. APPLICATION

Whereas this proposed Code for the Conduct of an Inspector of Vessels is intended to give guidance to inspectors of small fishing vessels of less than 24 m in length, the general principles can be applied to the survey and inspection of larger fishing vessels, as well as aquaculture support vessels.

3. DEFINITIONS

For the purpose of these guidelines, the following definitions apply:

(i) "competent authority" means the government of the State whose flag the vessel is entitled to fly;

(ii) "inspection of a vessel" means an inspection carried out to ensure compliance with the provisions of the shipping and/or fisheries acts regarding standards of safety construction, safety equipment, equipment and operation of a vessel;

(iii) "vessel inspector" means a designated member of the staff of a maritime or fisheries administration, regardless of the grade of the person within these administrations;

(iv) "surveyor" means a staff member of a ship classification society, a person appointed as a non-exclusive surveyor on behalf of a classification society, a person appointed by a Lloyd's agent or a person accredited by a professional body as a surveyor of ships;

(v) "vessel" means a vessel used for commercial fishing and/or used in support of aquaculture activities;[2]

(vi) "foreign vessel" means any vessel other than a local vessel; and

(vii) "unseaworthy vessel" means a vessel whose hull, machinery, equipment or operational safety is substantially less than the provisions of the shipping and/or fisheries acts regarding standards of safety construction, safety equipment, equipment and operation of a fishing vessel.

4. BASIC PRINCIPLES

General

No vessel should be used for fishing or aquaculture activities unless there is in existence a valid certificate of seaworthiness, issued in respect of that vessel.

The competent authority may, at any time and without notice, require any vessel to be inspected for the purpose of determining whether it is seaworthy and fit for the purpose for which it is so authorized.

Any person authorized by the competent authority to inspect a vessel for seaworthiness, should have appropriate qualifications and experience.[3]

No person authorized by the competent authority to inspect a vessel should discriminate in form or in fact against classes of fishing vessels, ports of operation or builders of fishing vessels and aquaculture support vessels.

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[2] Activities related to aquaculture include the positioning and maintenance of cages, stocking cages, and the transfer of live fish to the market or for processing.

[3] The qualifications and experience are to be determined by the flag state in accordance with the proposals set out in Annex 1 of the FAO/ILO/IMO document Implementation Guidelines on Part B of the Code, the Voluntary Guidelines and the Safety Recommendations.

Ethics

Such persons so authorized by the competent authority to inspect a vessel for seaworthiness should demonstrate a high level of personal and professional integrity.

In the exercise of professional skills, such persons so authorized by the competent authority to inspect a vessel must recognize that meeting the demands of the fishing and aquaculture industries requires ability and commitment, often without regard for personal convenience. They must be diligent in the performance of their work and exercise care in relationships with others, particularly because confrontations can lead to error, and error can lead to loss of life and/or property at sea.

5. PURPOSE OF THE CODE FOR THE CONDUCT OF AN INSPECTOR OF VESSELS[4]

The purpose of the Code for the Conduct of an Inspector of Vessels is to ensure that all fishing vessels and vessels used in support of aquaculture activities are designed, built, equipped, maintained and operated in accordance with internationally adopted, legally binding instruments and the recommendations of FAO/ILO/IMO.

Consequently, the inspection of a vessel must be conducted in a professional manner consistent with high standards of integrity and fairness.

6. CONDUCT OF INSPECTIONS

It is recommended that a vessel inspector be issued with a document of authority to inspect a vessel. Furthermore, any inspection of an existing vessel should be carried out in the presence of the skipper/master and/or owner.

In the case of a vessel under construction, the inspection should be carried out in the presence of the builder, it being understood that the buyer should be advised when such an inspection is planned in order that the buyer may also be present.

In carrying out inspections, the vessel inspector should take care to ensure that satisfaction and/or dissatisfaction is expressed at key stages of construction. In particular, dissatisfaction should be expressed as soon as the vessel inspector has any doubt, in order to avoid the builder continuing with

[4] This code is not intended to be a substitute for national laws and regulations. It may, however, serve as a guide for those concerned with framing such national laws and regulations.

work that might have to be undone at a later stage and to avoid a dispute between the builder and the buyer.

When a vessel inspector lacks the required expertise for a particular inspection, assistance may be sought from another person with the required expertise acceptable to the competent authority.

The vessel inspector and any person assisting should have no commercial interest in the vessels to be inspected.

In the event that a vessel inspector attends the technical trials of a vessel and/or an inclining experiment or any other test, the inspector must not assume command of the vessel. Furthermore, where a vessel inspector is not totally satisfied with the state of a vessel that is otherwise seaworthy, conditions may be entered in the record of the vessel, requiring the owners to take action within a limited period of time scale, but not later than the next scheduled periodic survey.

If a deficiency cannot be put right at the place of inspection, the vessel may be allowed to proceed to another place where the deficiency can be rectified subject to any appropriate conditions determined by the vessel inspector as a consequence of the inspection.

Where, following any inspection, the vessel is not found to be seaworthy or is not fit for the intended purpose, the vessel inspector, without delay, should recommend that the certificate of seaworthiness issued in respect of that vessel should be withdrawn and the vessel prevented from going to sea.

7. ISSUE OF CERTIFICATES

A vessel inspector should submit a signed report of all inspections made in which the issue of a certificate is recommended or otherwise. Such certificates would include, but need not be limited to:

- a certificate of safety construction,
- a tonnage certificate,
- a carving note,
- a certificate of seaworthiness,
- a safety equipment certificate,
- a radio certificate.

A vessel inspector may be called upon to investigate the loss or destruction of a vessel, or its decommissioning as a vessel, and may be required to recover the certificate of registration issued in respect of that vessel.

An inspector's giving advice

A vessel inspector may be consulted from time to time by boatbuilders, boat repairers, fishers and/or owners of vessels and may give technical advice in this respect. Due diligence must be exercised and the limitations of the vessel inspector should be self-recognized. Where doubt exists, the request should be referred to a more competent person.

Where advice is given regarding types of vessels, machinery and equipment, the vessel inspector should not have a financial interest in the business of the manufacturer(s) so recommended.

A vessel inspector should not give technical advice that is inconsistent with the approved safety construction standards and safety equipment standards set out in the regulations and/or schedules to the appropriate act.[5]

8. LITIGATION

Unless there are provisions in national law stating otherwise, a vessel inspector may be called as a "witness of fact" or as an "expert witness".[6] By virtue of the fact that oral examination is the only means by which the testimony and the bona fides of the witness can be challenged without resorting to endless correspondence,[7] the vessel inspector must demonstrate:

- knowledge,
- integrity,
- rationality,
- communicability, and
- decisiveness.

A witness may be required to submit written reports. Therefore, a vessel inspector must be able to prepare such reports in a concise and accurate manner and should not use terms that may convey more than one meaning. Similarly,

[5] The inspector must be well versed with the contents of the act and regulations and, in particular, the provisions therein for equivalence and exemptions.

[6] The calling of expert witnesses may vary according to the legal system and, whereas these witnesses are usually independent experts not engaged in the subject matters, a party may call as an expert witness an expert engaged in the subject matters.

[7] This process of interrogation would soon expose a person lacking the necessary qualifications and experience.

photographic evidence must be composed in such a manner that it is aligned with and clearly illustrates the point or points so stressed in the report.[8]

Where national law provides for the "doctrine of privilege" and in the event that legal proceedings could arise or be imminent, a vessel inspector so concerned in the matter may submit a report to legal counsel (to the agency responsible for inspections of vessels) for the purpose of receiving legal advice.[9]

[8] To the extent possible, a report should be so written that no sketches or photographs would be required. However, where and when it would enhance a report, sketches and photographs should carry the date, time and place to which the evidence refers, together with the signature of the inspector. Original photographs and negatives should be saved. Photographs that can be edited, such as those taken with a digital camera, should be avoided. Indeed, if taken with a digital camera, such photographs are unlikely to be admissible in court.

[9] Any such report should include the following statement: "Confidential report for the information of the administration's legal counsel prepared for the purpose of obtaining legal advice on proceedings pending, threatened or anticipated".

APPENDIX 5

MATTERS CONCERNING THE REGISTER OF SHIPS, FISHING VESSELS AND VESSELS USED IN SUPPORT OF AQUACULTURE ACTIVITIES

In this appendix, the fundamental principles of international law that relate to the register of ships are summarized and excerpts from pertinent conventions are included. It is concluded that, in general, flag States require fishing vessels to be registered and/or licensed to fish and that the relevant entries in vessel records under both systems contain particulars of the vessel and its ownership. The same may apply to vessels used in the aquaculture sector and they may be required to be licensed to carry out specific duties. In the case of research vessels used in the fisheries sector (as opposed to fishing vessels fitted out for fisheries research), they need not fall under a register of fishing vessels.

It is noted that the application of provisions by flag States of international conventions concerning ***maritime safety*** *and the protection of the marine environment to which they are a party would require merchant ships, fishing vessels and vessels used in support of aquaculture activities, where so mentioned, to be measured for both length and tonnage.*

Attention is drawn to the apparent difficulties in identifying the true extent of beneficial ownership of vessels; thus, it is recommended that the name(s) of the owner(s) should be the same as entered in the register and/or on the licence to fish.

1. GENERAL

These guidelines are intended to cover all sizes and types of ships, fishing vessels, vessels used in support of aquaculture activities and vessels used for fisheries research. However, given the need for alignment with terminology used in international conventions, the term "ship" as used includes fishing vessels and vessels used in support of aquaculture. Consequently, such references in international law that relate to design and equipment, mandatory

surveys regarding safety and the issue of safety certificates apply to capture fisheries and aquaculture activities. Thus, the competent authority must consider fleet policies and the need for compliance by all concerned with regard to fish harvesting and aquaculture activities.

Furthermore, the registration process creates a sound basis for inventories and pertinent information necessary for effective investigation of accidents and incidents.

2. FUNDAMENTAL PRINCIPLE OF INTERNATIONAL LAW

The freedom of the high seas is one of the fundamental principles of international law. However, in order to ensure that the principles of unrestricted access do not lead to abuse, international law lays down rules that provide a framework for the exercise of that freedom and for individual States to enforce compliance with those rules through the jurisdiction exercised over their national ships.[1] Thus, ships and vessels using the high seas must have a national character.[2]

As provided for in Article 91 of the United Nations Convention on the Law of the Sea of 10 December 1882 every State determines the conditions for the granting of its nationality to ships, for the registration of ships in its territory and for the right to fly its flag. States are required to issue to a ship to which it has granted the right to fly its flag documents to that effect. Conditions for granting nationality to ships differ greatly between national registers, open registers and international registers. Ships without nationality are regarded as stateless and receive no protection under international law.

3. DOCUMENTATION

Documentation refers to a document issued by the competent authority in a State, evidencing the ship's nationality and attesting to the right of the vessel to fly the national flag of that State. Although the registration of a ship and

[1] Note that "ships" in this context includes fishing vessels and vessels used in support of aquaculture activities.

[2] Oppenheim's International Law States that, in the interest of order on the open sea, a ship not sailing under the maritime flag of a State enjoys no protection whatsoever, for the freedom of navigation on the open sea is a freedom for such ships only as sail under the flag of a State.

the granting of nationality are generally connected, this is not always the case.[3] This is simply because registration generally involves the recognition and protection of the ship owner's title to a ship as well as the conferment of nationality, whereas documentation is principally concerned with granting entitlement to fly the national flag. Thus, the two concepts should not be confused. Indeed, in so-called "dual registry" situations, which can arise when a ship already registered in one State obtains the entitlement to fly the flag of another State on the basis of a bareboat charter arrangement, the distinction between documentation and registration becomes critical.[4]

4. FLAG

The flying of a flag is evidence of the nationality of the ship, and the flag is flown from the stern of the ship. It should be raised whenever required for the purpose of identification. Nevertheless, international law does not set an obligation for the national flag to be flown at all times by ships on the high seas. This lack of an obligation to do so plus poor maintenance of marks, such as those indicating the port of registry and name or number, is a constraint to the identification of ships (fishing and aquaculture vessels) for the purposes of safety and fisheries management.[5]

5. REGISTRATION

Registration means the entering of a matter in the public record, and the process is equally important when an entry in a register is closed. There are two aspects of "full" registration, one pertaining to public law and the other to private law.

[3] For example, a ship may be enrolled on a temporary basis for the first time by a State and allocated its flag. A consul of the flag State then issues the ship with a document such as a Patente de Navigación or a Passavanti de Navigación. Sometimes, this is simply for a delivery voyage from the place of construction to a port in the flag State, but not always. In such cases, the flag State does not usually require the normal details to be entered in the public record.

[4] See the case of the M/V *Saiga* at the International Tribunal for the Law of the Sea. President Mensah gave a separate opinion stating that: "it is hardly necessary to stress that a certificate of registry is the most important evidence of the nationality of a ship for third states and other parties who may have an interest in the identity of the flag state or in the discharge of flag state responsibilities under the convention and other international agreements dealing with safety at sea and the prevention and control of pollution of the marine environment from ships. It is, therefore, imperative that every ship operating internationally should have a valid certificate of registry at all times."

[5] See The Standard Specifications for the Marking and Identification of Fishing Vessels submitted to the IMO prior to endorsement by the Eighteenth Session of COFI, Rome, Italy, April 1989.

The public law functions of registration include, *inter alia*:

- the allocation of a ship to a specific State and the subjection of the ship to the jurisdiction of that State; for example, for safety regulations, certification of crew and discipline;
- the conferment of the right to fly the national flag;
- the right to diplomatic and naval protection; and
- the right to engage in certain activities within waters under the jurisdiction of the flag State such as fishing.

The private law functions of registration[6] include the protection of the title of the registered owner and

- the protection of the title and the preservation of priorities between persons holding security interests over the vessel, such as mortgages, liens and other encumbrances.

Every State has the right to set conditions for the registration of a ship, including the information to be entered in the record. However, in most cases the following information would normally be recorded:

- the name of the ship and the port to which it belongs;
- details of the ship as contained in the surveyor's certificate;
- particulars concerning the origin of the ship as stated in the declaration of ownership;
- the name and description of the registered owner or owners and, if there are more owners than one, the proportions in which they have an interest in the ship; and
- relative identification marks and the international radio call sign, where applicable.

In general, a person upon payment of the prescribed fee (if any is required) may, on application to the registrar, inspect any register book.

However, the processes of registration and the allocation of a flag are complex. Indeed the registration process is such that, although the owner's title may be recognized through entries in the private law record, those who benefit most from the operation of a fishing vessel (if different from the legal owner or owners, which is frequently the case) are more difficult to identify. This is one

[6] Note, normally available under "simple" registry procedures.

of the reasons why the so-called genuine link remains an issue. It is quite clear, however, that as it relates to domestic law (in particular, in national registers), the genuine link between the ship and the flag State is generally based on certain socio-economic factors (construction, ownership, agent, crew, etc.). In international law, the genuine link consists in the effective control of the flag State over a vessel entitled to fly its flag. Nevertheless, there is a condition that expresses the intent of the flag State to exercise control over a fishing vessel entitled to fly its flag and that is the authorization to fish, if it is a fishing vessel.

Where there is an option for "simple registration", it would not allow the register of mortgages and such an option would not be available in the case of a bareboat chartered ship as set out below.

When a ship is acquired abroad, it is usually possible to obtain a "provisional certificate of registry" for the ship, it being noted therein that the sighting of carving and marking on the ship have been endorsed by a surveyor of the mercantile marine department of the country of build or of a recognized classification society. In most cases, the change to permanent registration is a simple case of a change in the wording from provisional to permanent. However, there would be one date for the provisional registration and another date for the permanent registration, with such entries as the serial number of the ship remaining the same.

It is often common practice to allow the mortgage to be entered on the provisional registry of vessels. Once the mortgage is entered on the provisional registry, the said mortgage would continue to remain in force even after the vessel has been granted permanent registration.

6. THE DEMISE (BAREBOAT) CHARTER

Further complications may arise from bareboat chartering in and out. Some flag States do not even require the suspension or deletion of the entry in the primary register. Other flag States permit the splitting of the public and private law functions of the register of a ship that effectively leaves the private law register open (which may give greater protection with regard to mortgages, liens and other encumbrances) but at the same time suspends the entry in the public law function in the register. In addition, tracing the beneficial ownership may be further complicated in the event of a subdemise of a chartered ship.

Under a demise charter, a ship is leased for a fixed period of time, bare of officers and crew. The charterer, for the period of the charter, may appoint officers and crew and is considered to be the owner for the operation of the

ship with regard to third parties. Such a charter arrangement is referred to as a bareboat charter.

Subject to the laws of the States concerned and which allow bareboat chartering, and provided that the mortgage holders are satisfied, it is common practice for a ship bareboat **chartered in** to be given the flag of the State in which the charterer is located. In many cases, the ships may remain on the register of the bareboat chartering **out** State. This is often referred to as parallel registration or "dual registration".

7. REGISTER ANEW

Where a ship is to be registered anew, the registrar proceeds as in the case of first registry. Upon delivery to the registrar of the existing certificate of registry, and provided the other requisites of registry (or in the case of a change of ownership such requisites as are thought to be material) are duly complied with, the registrar registers the ship anew and grants a certificate thereof.

When a ship is registered anew, its former register is considered as closed, except so far as relates to an unsatisfied mortgage or existing certificates of sale or mortgage entered thereon, and the names of all persons appearing on the former register who are interested in the ship as owners or mortgagees are entered on the new register, and the registry anew does not in any way affect the rights of any of those persons.

8. CARVING AND MARKING NOTE

The issue of a carving and marking note and the cutting of the allocated mark into the main beam of a ship (built of wood) is a centuries-old practice. The note also contains instructions for the positioning of the name of the ship, port of registry and the international radio call sign so assigned to the ship, and such information is entered on the certificate of registry. In the case of ships that are not built of wood, the main beam remains the preferred location for the mark. A plate carrying the mark may be attached to the main beam and, in many cases, the mark may be formed by welding.

It may be noted that the former Lloyd's Register (LR) number now forms the basis for the IMO ship identification number scheme, which requires that the IMO number be carried on a plate permanently attached to the main beam or other permanent structure.

The requirement for an IMO number applies to those ships used in support of aquaculture activities that are 300 GT or over, which may engage in international voyages and are not registered as a fishing vessel. However, as

recently as December 2013, the IMO Assembly, at its twenty-eighth session, recognized the need for the IMO ship identification scheme to be revised to allow a **voluntary** application of the scheme to ships of 100 GT and above, including fishing vessels, and adopted Resolution A.1078(28). The Assembly also invited the governments concerned to implement the scheme, as far as it is practicable, and to inform the IMO of measures taken in this respect. In addition, the Maritime Safety Committee (MSC) of the IMO was requested to keep the scheme under review for further improvement, as may be necessary.[7]

It may be noted, however, that the many fishing vessels and vessels used in support of aquaculture activities of 100 GT and over and those vessels of less than 100 GT that are in "class" already have an LR number, which is the basis for the IMO numbering system, and in most cases, this number is entered on the certificate of registry. The number is unique to the vessel, and should there be a change of flag, the same number is entered in the new register. This provides accident investigators with a further source of information should information related to accident records held by former flag States be needed. In the case of fishing vessels and vessels used in support of aquaculture activities of less than 100 GT that are built to standards required by ship classification societies and have entered into class, they would also receive an LR number.

9. FAO GLOBAL RECORD OF FISHING VESSELS, REFRIGERATED TRANSPORT VESSELS AND SUPPLY VESSELS

In response to the outcome of the Ministerial Meeting in Rome, Italy, in March 2005, FAO is developing the Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels (Global Record). One of the objectives of this effort is to promote the principle that each vessel has a unique vessel identifier (UVI) and that this is referenced within the certificate of registry of the vessel. Given the possibility for vessels under the same flag to have the same name, search and rescue (SAR) operations would be enhanced, both within exclusive economic zones (EEZs) and on the high seas, if the UVI were included in any distress call (MAYDAY message).

At the Thirtieth Session of COFI, in Rome, Italy, from 9 to 13 July 2012, the necessity for a global UVI as a key component of the Global Record to identify and track vessels was recognized. The Committee suggested that

[7] Annex 6 contains the IMO Assembly Resolution A.1078(28) in which guidance is given to the IMO ship identification number scheme.

the UVI, as a first step, should be applied to all fishing vessels, refrigerated transport vessels and supply vessels of 100 GT and above. Thereafter, on the basis of experience gained, vessels of a lesser tonnage or length would be targeted on a step-by-step basis.

At the Thirty-first Session of COFI, in Rome, Italy, from 9 to 13 June 2014, the Committee appreciated the collaboration with the IMO in extending the IMO Ship Identification Number Scheme to fishing vessels and agreed that the IMO number be used as the Global Record's UVI for phase 1, i.e. for vessels of 100 GT and above.

Although the Global Record is in the development stage, administrations should bear in mind that there would be a need to address the issue as it relates to a safety-at-sea programme.

APPENDIX 6

SELF-ASSESSMENT OF VESSEL CONDITION AND FISHING VESSEL SAFETY

A mandatory form for a self-assessment of the condition of a vessel by the skipper/master and crew is used in the fisheries sector in a number of countries, and its use may extend to the aquaculture sector. It consists of a questionnaire to be completed by the vessel personnel, who have the opportunity to provide comments and identify repair work or replacements needed immediately or within a given time frame. The form is submitted to the relevant government agency.

Such a system, however, should require the participants to do more than simply "tick" boxes.

1. OBJECTIVES OF THE SELF-ASSESSMENT OF A VESSEL

The self-assessment of a vessel is not to replace mandatory government surveys that must be undertaken by suitably qualified and experienced surveyors. It does, however, contribute to the work of the surveyor, mainly through the provision of information on completed self-assessment questionnaires. More importantly, it does not replace the obligation of skippers/masters and crew to actually physically inspect their vessels and safety equipment regularly and to discuss safety issues with one another.

2. VALIDITY OF THE SELF-ASSESSMENT PROCESS

From a common-sense point of view, the skipper/master and crew should always be on the lookout for any defect that might cause an accident to personnel or have an impact on the safety of the vessel. Nevertheless, there could well be constraints to the effective implementation of a formal, government-imposed self-assessment scheme that uses a questionnaire to gather information. Some of these impediments might arise due to the level of development in a country, especially with regard to level of skills in small-scale and artisanal fisheries and the level of skills needed to carry out an inspection.

Indeed, in some developed countries, the skipper/master or owner recruits a consultant to carry out the assessment, which is acceptable if the consultant meets with the skipper/master and crew members and demonstrates how the inspection was carried out in conformity with the assessment questionnaire. However, this is not always the case because the skipper/master may take the opportunity to have a well-earned rest. Consequently, the benefit of a "hands on" connection between the skipper/master/crew and the items surveyed and assessed is lost. By contrast, on larger vessels that spend long periods away from port and may transship the catch and bunker at sea, there has to be a monitoring system in place, as required by the responsible agency, and records have to be entered in the deck and machinery logbooks. In such cases, the deck and machinery space officers would contribute directly to the completion of an assessment questionnaire.

However, one of the main impediments to self-assessment, according to skippers and crews of fishing vessels, is the lack of guidance regarding, for example, wear rates on shackles, chains and warps. This becomes more obvious where and when vessels are not "in class". Therefore, should the skipper/master or owner feel less than competent to carry out a survey and complete an assessment questionnaire, consultancy services would be used.

Consequently, in evaluating the need or otherwise for a formal self-assessment programme, the responsible government agency or agencies should look at the fisheries and aquaculture sectors separately and carefully because the responsibility for vessel surveys could well be shared by maritime and fisheries departments.

Guidance should also be given to owners and masters with regard to the selection of approved consultants, with due regard to the categories of vessels to be included in a self-assessment process, and may draw on the example given in the following section.

3. RECRUITING A CONSULTANT TO ASSIST IN THE ASSESSMENT PROCESS

The following example provides a basic inspection standard for fishing vessels and vessels used in support of aquaculture activities that are used worldwide and classified as less than 500 GT. These vessels could be used for various appropriate tasks in the aquaculture sector, including the transport of live fish from cages to facilities ashore, and may also engage in international passages.

It is recognized that the requirements may differ for the various sizes and types of vessels engaged in commercial use other than for sport, pleasure,

pilot duties, surveying of harbours and their approaches or dredging. Thus, a checklist would ensure that a vessel is being operated in a safe manner. It is not intended that a checklist should be used to verify that a vessel has been constructed or operated in accordance with the requirements of a specific flag State, nor to indicate that a vessel is suitable for a particular role.

However, for the purpose of this exercise and to cover situations of sea-going vessels as defined in Part 1 of these guidelines, the following categories of vessels might be considered for an assessment by a consultant:

Category 1 Vessels operating within five nautical miles of land and not morethan a three nautical miles radius from either the point of departure to sea or the seaward boundary of protected waters. This may also include vessels that are based at an offshore installation or offshore facility that is able to provide a safe haven. This may be achieved by recovering the vessel from the water or other appropriate means;

Category 2 Vessels operating up to 20 nautical miles from a safe haven,[1] with favourable weather;

Category 3 Vessels operating up to 200 nautical miles from a safe haven; and

Category 4 Vessels providing unrestricted service.

NB: Safe haven means a harbour or shelter of any kind that affords safe entry and protection from the force of weather.

3.1 Consultant competency

The person undertaking the inspection should have the following knowledge and experience:

Knowledge:

- current maritime and fisheries legislation for area(s) of operation;
- coastal State / flag State requirements for proposed area(s) of operation;
- types of vessels to be inspected, for example aquaculture support vessels, live fish carriers and fishing vessels.

Experience:

- two years supervisory experience at a senior level aboard ships, e.g. master or chief engineer;

[1] See Appendix 9.

- a qualified naval architect, with accredited experience in the design and construction of the types of vessels to be inspected or an accredited boatbuilder with experience in building such vessels;
- in both of the above cases, previous experience carrying out marine inspections and, where appropriate, have a diploma in ship/boat surveying.

4. INSPECTION PROCESS

The inspection should be planned and undertaken in liaison with the owner and skipper/master or vessel operator to maximize the use of resources, while creating least disruption to ongoing activities. Sufficient flexibility should be built into the programme to reflect changing operational demands. To this end, the consultant and the vessel owner, skipper or master should discuss in advance:

- the timing and programme (opening meeting, scope of inspection and closing meeting);
- approximate duration and format of the inspection;
- the personnel to be made available to the consultant; and
- the provision of vessel documentation required to be viewed (including the logbook and previous inspection reports, where available).

Throughout the inspection, the consultant, where possible and appropriate, should be accompanied by the relevant vessel personnel familiar with the area being inspected.

On conclusion, the consultant should provide the relevant vessel personnel with a verbal briefing and a brief written summary of the result of the inspection. Recommendations for action made as a result of the findings and observations should be prioritized:

High priority:	for immediate action/prior to the vessel's departure;
Medium priority:	to be completed within three months, with the exception of items that should be undertaken during a major overhaul period such as slipping/dry-docking**;**
Low priority:	consideration for improvement.

It is important that the consultant provides an inspection summary, which gives an overall impression of the vessel, its equipment and any other comments that may be useful to the reader of the report and which should accompany the formal report submitted to the administration.

APPENDIX 7

SEARCH AND RESCUE SERVICE

A recent amendment to the SAR Convention addresses the performance of distress monitoring, communication, coordination and search and rescue functions, including provision of medical advice, initial medical assistance or medical evacuation, through the use of public and private resources, including cooperating aircraft, vessels and other craft and installations.

1. INTRODUCTION

The most recent amendment to the Search and Rescue (SAR) Convention, which entered into force in 2006, sets out the definition of an SAR service that provides an overview of what parties to the Convention have to address. In particular, the definition given in paragraph 1.3.3 of Chapter 1 of the Annex states that a "search and rescue service" is: "The performance of distress monitoring, communication, co-ordination and search and rescue functions, including provision of medical advice, initial medical assistance, or medical evacuation, through the use of public and private resources including co-operating aircraft, vessels and other craft and installations". The document, produced by IMO, provides an essential tool to those developing and operating an SAR service.

It is important to note that, concurrent with the revision of the SAR Convention, the IMO and the International Civil Aviation Organization (ICAO) jointly developed the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, published in three volumes, covering: organization and management, mission coordination and mobile facilities. The IAMSAR Manual revises and replaces the IMO Merchant Ship Search and Rescue (MERSAR) Manual, first published in 1971, and the IMO Search and Rescue (IMOSAR) Manual, first published in 1978.

2. MARKING AND IDENTIFICATION

In 1989, the FAO Committee on Fisheries (COFI) endorsed a standardized system for the marking and identification of fishing vessels as an aid to fisheries management and safety at sea. The system calls for the international radio call sign (IRCS) assigned to the vessel to be painted on a horizontal surface (atop the wheelhouse) and on the port and starboard sides of the vessel to ensure recognition from the air and sea. In the event that a vessel has not been allocated an IRCS, such vessels should be marked with characters allocated to the flag State by the International Telecommunication Union (ITU) (that identify the flag State) followed by, as appropriate, the licence or registration number assigned by the flag State. In such cases, a hyphen shall be placed between the nationality identification characters and the licence or registration number identifying the vessel. During the adoption of the standards, COFI recognized the importance of such a marking system to SAR.[1]

3. SAR SERVICES AND COLLABORATORS

The principles of the SAR convention are equally important for the provision of SAR services in the case of large lakes and inland water systems. However, special attention would have to be given to communication arrangements due to the large number of small craft employed in capture fisheries and, quite clearly, SAR services are an important part of safety for all who go to sea. SAR is often the last effort when an accident has occurred and other means of mitigation have failed. Whereas an SAR activity is often carried out by the coastguard, the navy/military, fisheries patrol vessels or voluntary SAR organizations, in many cases SAR services are a combination of these entities. In addition, the fishing industry has a long history of participating in SAR activities, and it is recognized that in many countries fishers and their fishing vessels may be the sole seagoing support. In such cases, a trusted skipper/master takes the responsibility for the planning and coordination of an SAR operation at sea and, if the search is over a wide area, second in commands are established to cover the whole area of the search. It follows that the radio communication network also has to be regulated to ensure reporting accuracy, which means

[1] The Standard Specifications for the Marking and Identification of Fishing Vessels is attached as Annex II to the FAO Technical Guidelines for Responsible Fisheries, No.1 Fishing Operations.

that legislation must set requirements for compatibility between shore stations and vessels. Furthermore, when an SAR attempt is made from the base port, the lead fishing vessels would take on board additional equipment and medical supplies, including line-throwing apparatus.

4. TRAINING OF SEAFARERS

In general, the training of seafarers should always include how to react in the case of SAR and this applies equally to the rescuers and those in need of rescue. However, training should include certain basic elements, such as:

a) Prevention: It is the first line of defence and will save most lives if properly managed. Information and awareness building, the provision of suitable and affordable equipment, and training to assist fishers and other seafarers to make informed decisions will help seafarers to avoid trouble in the first place.

b) Survival and self-rescue: It is the second line of defence and is the result of well-managed prevention activities. Someone in distress will make the best use of skills, training and equipment, and have the attitude necessary to survive and carry out self-rescue when things start to go wrong.

c) Search and rescue: It is really the last line of defence but it relies on the ability of those to be rescued to understand that the previous stages of survival also depend on the effectiveness of and accuracy in communicating with other vessels and the SAR shore-based station.

5. COMMUNICATION SYSTEMS

The existence of communication systems is an essential component when it comes to reducing casualties and supporting SAR efforts because only through communication, ship-to-shore, shore-to-ship and ship-to-ship, can this be achieved.

When developing (and investing in) an SAR system where none exists, consideration should be given to the type of accidents that occur, as analysed during the activities mentioned in Chapter 1 of Part 2. In all probability, it may be essential to enhance the capability of the capture fisheries sector to participate in SAR efforts, while other options are being studied. Indeed, this might well be the case where fisheries and aquaculture sector development is at a simple ad hoc or basic level, as elaborated in Chapter 1 of Part 2. At the same time as the cooperation of the capture fisheries sector is sought, prevention and awareness-raising activities could be facilitated and a framework could be

developed. In parallel, the responsibility of the State with regard to the SAR convention and, in particular, regional responsibilities for cooperation must be studied.[2]

6. SAR SERVICES AND FISHERIES ADMINISTRATIONS

Fisheries administrations can also make a positive input to SAR services by ensuring that authorizations to fish and to participate in aquaculture operations clearly designate areas of operation and provide anticipated concentrations of fishing effort on a seasonable basis as well as knowledge of the distribution of aquaculture installations. In addition, they could also call for vessels to be fitted with vessel position monitoring systems and radio communication systems, and, furthermore, maintain a record of fishing/aquaculture support vessels and their distribution along the coast. With regard to the distribution of fishing vessels, fisheries managers should ensure that out-posted fisheries officers are also aware of SAR arrangements and their expected role.

7. SAR SERVICES AND GOVERNMENT AND REGIONAL COOPERATION

In short, taking into consideration the SAR convention as amended, regional and/or bilateral agreements should be established for SAR services for fishers and crews of vessels operating in support of aquaculture activities. Governments should also promote the establishment of voluntary SAR organizations and provide logistic and material support, as appropriate. In the case of small island States and neighbouring States, there should also be arrangements between governments to facilitate the return of fishers and their fishing boats and equipment (fishing gear, engine, etc.) to their places of origin as expeditiously as possible.

A regional approach could also apply in the case of inland waters where more than one country borders an inland sea, lake or river system. In this regard, it is worth noting that cooperative efforts have been very successful in many countries. One good example of these initiatives is the training and awareness-raising activities carried out in fishing villages for fishers, women and children

[2] Following the adoption of the 1979 SAR convention, the IMO divided the world's oceans into 13 SAR areas. In each area, the countries concerned have delimited SAR regions for which they are responsible. Provisional SAR plans for all of these areas were completed when plans for the Indian Ocean were finalized at a conference held in Fremantle, Australia, in September 1998.

by the National Lake Rescue Institute (NLRI) in Kampala, Uganda. The NLRI has also locally produced good, affordable life jackets.

National and voluntary SAR organizations often focus on preventive and mitigating work, as well as on training, education and awareness raising. There are many examples of the good work done by SAR organizations in both developed and developing countries. More information is available on the Safety for Fishermen website (www.fao.org/fishery/safety-for-fishermen).

APPENDIX 8

BOAT DRILL AND FIRE DRILL

It may appear to be a simple requirement, but it is not always the case that fire drills carried out on all fishing vessels and vessels used in support of aquaculture, no matter how essential such drills are for effective reaction to emergencies. It is recognized, however, that small fishing vessels and small aquaculture support vessels are unlikely to carry the range of equipment that larger vessels carry. Nevertheless, crews of small vessels must be prepared for every emergency and be familiar with the safety appliances at their disposal because their efficient and timely use can be crucial to the survival of those on board.

1. LEGAL REQUIREMENTS FOR BOAT AND FIRE DRILLS

Abandon ship drills and fire drills are required by national and international provisions on occupational health on board ships and must be planned, arranged and carried out in a way that is in every respect reasonable from a safety and health perspective. Musters, lifeboat and fire-fighting drills, and those drills prescribed by national laws and regulations and by international instruments must be conducted in a manner that minimizes the disturbance of rest periods and does not induce fatigue.

It is important that the members of the crew who are to operate safety equipment on board are familiar with the functioning and operation of such equipment. The International Convention for the Safety of Life at Sea (SOLAS) (Chapter III, regulations 35 and 36) requires that sufficiently detailed training manuals and instructions to be carried on board are easily understood by the crew. Such manuals and instructions must be accessible for everyone on board and the instructions must be observed closely during drills.[1]

[1] Chapter VIII of Part B of the FAO/ILO/IMO Code of Safety for Fishermen and Fishing Vessels of 24 m in length and over and Chapter 8 of the FAO/ILO/IMO Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels may be addressed.

2. GUIDANCE FOR BOTH THE SKIPPER/MASTER AND THE CREW IN THE USE OF SAFETY EQUIPMENT

Training in the use of the safety equipment should include instructions pertaining to personal safety, including issues to which particular attention should be paid such as the use of personal protective equipment. Some elements of drills can be risky such as launching arrangements for lifeboats. Therefore, particular caution should be exercised in connection with the risky elements and, if a drill cannot be carried out in a way that is in every respect reasonable from a health and safety perspective, personal protective equipment should be used.

The crew members should make themselves completely acquainted with the ship's training manuals and instructions and should follow closely the instructions given by the ship's management.

Particular caution should also be exercised when carrying out risky elements of a drill and especially when drills are carried out with lifeboats, launching arrangements and means of rescue.

3. GENERAL NOTE REGARDING EMERGENCY PROCEDURES

The skipper/master is responsible for all training regarding emergency procedures. A fundamental requirement is that particulars of all drills are to be entered in the ship's logbook. Reasons for not having drills or missing part of the drill are also to be logged. The logbook must:

- indicate special duties assigned to each crew member;
- indicate the emergency station and duties of each crew member;
- be dated and signed by the master, with the result of each drill clearly posted before the vessel sails.

Normally, an extract from the ship's log would be kept in the mess room for the crew, although other copies can be posted elsewhere on the vessel.

The special duties assigned to each crew member should include:

- closing of watertight and fire doors, valves and scuttles, etc.;
- equipping of lifeboats and life rafts, i.e. search and rescue radar transponder (SART), radio, etc.;
- launching of lifeboats/life rafts;
- preparation of a boat, such as a shepherding boat or marshalling boat; and
- duty on the fire team and the vent team.

In the event that the vessel is carrying fisheries scientists or is conducting aquaculture activities, crew should be assigned to lead non-crew at control stations and carry out such duties prior to sailing and to ensure that non-crew persons:

- are briefed on the means used to indicate boat drill;
- understand how to use life jackets, personal flotation devices and adequate dress, such as immersion suits and where such equipment is stored;
- are instructed regarding assembly procedures in an orderly fashion under control of the responsible crew member;
- are instructed on embarking procedures in relation to lifeboat and life rafts and the use of lifesaving appliances;
- assist the responsible crew member in ensuring that all cabins are empty and that all persons on board are accounted for; and
- ensure blankets are taken to lifeboats or survival craft.

The means to be used to call the crew members (and non-crew) to stations, such as a general alarm by the ringing of a bell or the blowing of a ship's horn, should be clearly stated in the logbook. Furthermore, care should be taken to ensure that the crew members are adequately trained to take over if the assigned crew member is not available, for example, to launch a lifeboat, life raft or buoyancy apparatus.

In the event that a vessel is not required to have a muster list, such as may be the case in vessels with a small crew or an undecked vessel, the responsible agency should address the issue as and when such vessels are inspected.

4. CARRYING OUT A BOAT DRILL

A boat drill consists of the following actions:

- preparation for the launching of a lifeboat and/or life rafts and buoyancy apparatus and required equipment (on-board appliance) and its stowage are to be checked;
- when the vessel is at sea, each lifeboat is to be swung out once a month. In the case of life rafts (whether inflatable, rigid or semi-rigid), the fastenings are to be checked for wear and tear and the launch area checked to ensure it is clear of obstructions;

- when a vessel is in port or safe haven, each lifeboat must be lowered into the water at least once every three months. Checks and testing of mechanical systems, engine, gear, fuel level, etc., are to be done at every drill. Emergency power systems and their connections must also be checked.

5. CARRYING OUT A FIRE DRILL

A fire drill consists of the following actions:

1. all crew members are to report to their assigned station and exercise their duties;
2. at least two fire hoses are to be run out and tested at working pressure during each drill, and where there are more than two hoses, each hose and nozzle are to be condition tested once every three months. In very small vessels, it is more than likely that only one hose would be carried;
3. where fitted, operations of fire doors, extended spindles, remote shutdowns, ventilation dampers, etc., are to be tested and the importance of their use explained to crew members responsible for the operation of this equipment;
4. fire extinguishers are to be checked and at least one is to be discharged during a drill;
5. emergency escape equipment is to be checked;
6. alarms, bells, whistles, sprinklers and their systems are to be tested; and;
7. when possible, combined fire and boat drills should be carried out simultaneously.

6. EQUIPMENT

Inspections of equipment must be carried out during every drill, and deficiencies reported to the officer-in-charge, who shall have defective equipment repaired or replaced. All equipment has to be stowed back in its proper place. Life jackets, immersion suits, personal floatation devices, lines, flares, line-throwing equipment, fire hoses and other equipment should be checked and properly stowed.[2]

[2] Should the area of operation be in the higher latitudes, refer to the IMO Guide for Cold Water Survival (MSC.1/Circ. 1185).

7. WATERTIGHT DOORS

Where fitted, watertight and/or weathertight doors and associated equipment are to be checked and due care should be taken to avoid a crew member from being trapped.

In general, fire hoses are intended to be self-wetting to resist damage by fire. This is not, however, universally accepted by many in the fishing industry, and it is often the case that the "fire hose" has been replaced by a more solid hose (not self-wetting) and used for washing down where pressure is needed. Crew members be warned! Government inspectors should be aware of the practice and ensure that proper fire hoses are on board and in good condition.

APPENDIX 9

FACTORS GOVERNING THE DEVELOPMENT OF NATIONAL RULES AND REGULATIONS FOR THE CONSTRUCTION AND THE EQUIPMENT OF SMALL VESSELS

The competent authority should be aware of the need to take many factors into consideration when developing rules and regulations for the design and construction of small fishing vessels and other small vessels engaged in the capture fisheries and aquaculture sectors, and also for equipment and outfit.

Examples are given of useful guidelines to be followed and competent authorities are encouraged to carry out in-depth studies when reviewing rules and regulations concerning the safety of life at sea.

1. RULES AND REGULATIONS

There are a number of factors to be addressed and studies to be undertaken before an administration introduces new rules and regulations concerning small vessels and the safety of vessel personnel. This appendix concentrates on some of the key factors to be addressed but does not set out to give specifications for the construction of vessels or to give the requirements for the safety equipment to be carried on board because these are well-covered subjects in the documents of the Food and Agriculture Organization (FAO), International Labour Organization (ILO) and International Maritime Organization (IMO) of the referred to below and in Annexes 3 and 4.

Even if a State does have rules and regulations for the construction of small vessels and safety equipment to be carried on board, there is a need to keep the rules under review due to changes in technology, the kinds of materials used in hull construction and developments with regard to equipment. In addition, there is a need to heed resolutions and recommendations made by international organizations, such as FAO, ILO and IMO.

In more specific terms, when developing new types of vessels and methods of construction, the designer will certainly be faced with the problem of which rules and regulations in use around the world would be appropriate if there are no adequate provisions in national legislation. An example of a typical problem is what alternative materials to scarce hardwoods are appropriate for boat construction. Similarly, an administration would have to decide on which of the international regulations/standards should be applied through national legislation in order to give approval for the construction of a vessel. This is not an easy task because many countries do not have regulations for small vessels, or the regulations that do exist are not necessarily applicable to every need or situation.

Furthermore, internationally agreed standards, under a legally binding instrument, do not exist for many classes of small vessels used in the fisheries and aquaculture sectors. Consequently, it would be worthwhile to have a clear perspective on the existing international conventions relating to safety at sea. For example, the International Convention on Safety of Life at Sea (SOLAS), in general, exempts fishing vessels but Chapter V, Safety on Navigation, applies to all ships on all voyages, except ships of war and ships solely navigating on the great lakes of North America and their connecting tributary waters. This chapter makes special reference to fishing vessels, and of particular importance is the following extract:

"Ships of less than 150 tons gross tonnage shall, as far as the Administration considers it reasonable and practical, be fitted with a steering compass and have means for taking bearings."

Although such a requirement is a valid starting point for safety at sea, a competent authority may have to address other requirements as and where these are incorporated in fisheries management directives that may include vessel position reporting systems.

The Collision Regulations,[1] however, are more specific with regard to the display of lights and shapes, and cover fishing vessels, as well as vessels used in support of aquaculture activities, and also refer to very small vessels.

International Convention on Maritime Search and Rescue (SAR)

This convention is supported by an SAR manual prepared by IMO that provides guidelines rather than provisions for a common SAR policy, encouraging all

[1] Convention on the International Regulations for Preventing Collisions at Sea, 1972 (Collision Regulations).

coastal States to develop their organizations on similar lines and enabling adjacent States to cooperate and provide mutual assistance. The manual also takes into account that maritime and aeronautical SAR organizations are complementary.

Most of the international ship classification societies have rules for the construction of small craft, and some have separate rules regarding the different materials to be used to build hulls. In the absence of national regulations, designers can make use of such rules on a voluntary basis if the vessel to be designed is not required to be built under class supervision or entered into class. In many developed countries, however, the national rules for the construction of small fishing and aquaculture support vessels are now closely aligned with class requirements. This was not the case in earlier years when the formulation of most national rules reflected the "risks" as seen by those operating grant and loan schemes and by insurance underwriters. They also reflected the vagrancies of weather. This last factor is indeed important to an administration, given the responsibility under convention to formulate rules and regulations regarding safety equipment to be carried and safe construction.

While this could be important for the larger vessels, it does not necessarily address the needs for the safety of small fishing vessels or small vessels engaged in aquaculture activities. Of course, with regard to the construction of vessels in general, the classification societies have taken into account areas of operation and developed rules that differ for inland waterways, harbours, bays and sounds, and open seas, and these also differ for the various types of vessels. In addition, the International Organization for Standardization (ISO) has produced detailed requirements for small vessels, including work boats and pleasure craft, which could be used as a guide when designing small fishing and aquaculture support vessels.

Therefore, given the lack of specific international conventions or other legal instruments for the construction of smaller vessels serving the fisheries and aquaculture sectors, and in recognition of the need to provide guidance to administrations, the responsible international organizations have produced codes of practice and other guidelines, which are as follows:

- The Code of Safety for Fishermen and Fishing Vessels, Part A was formulated by FAO, ILO and IMO as a follow-up to a resolution taken by the ILO Committee on Conditions of Work in the Fishing Industry in December 1962. Part A of the Code of Safety deals with safety and health practice for skippers and crew. It was revised in 2005 and much of the Code of Safety could be applied to vessels of all sizes.

- The Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels were also formulated by FAO, ILO and IMO and revised in 2005. They only apply to decked vessels of over 12 m but less than 24 m in length.
- Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels (FAO/ILO/IMO), 2012.
- The Standard Specifications for the Marking and Identification of Fishing Vessels as an aid to fisheries management and safety at sea were endorsed at the Eighteenth Session of COFI, April 1989, for adoption by States on a voluntary basis.

Given the obligation of States that have ratified international conventions to implement regulations and given the flexibility to allow an administration to take into consideration local operating and climatic conditions as mentioned above, the formulation of national rules should be preceded by carefully executed studies. These studies should reflect the various operational modes and local standards. Furthermore, the application of any rules should be at reasonable cost to the small vessel owners and implementation should be achievable. In this regard, consideration should be given to the factors shown in Table A9.1 when considering development of rules for the construction and operation of small types of craft.

Table A9.1. Factors to guide formulation of rules for the construction and operation of small-scale vessels

Inland waters		
Lakes Rivers	Exposed Sheltered Fast flowing	Sluggish Deep Shallow
Coastal waters		
Lagoons Bays	Beach landing Sheltered landing places Small harbours	Surf Safe havens
Vessel hulls		
Dugout Planked Plywood Composite materials Metal	Single trunk Mono Multihulled With outriggers	Decked Undecked Displacement Semi-displacement
Means of propulsion		
Outboard engines Inboard engines Long-tailed engines Sails Paddles/oars	Petrol Kerosene Diesel Other	
Climatic conditions		
Maritime Tropical hurricane/typhoon Subtropical Equatorial Temperate Arctic	Trade winds Storm frequency Predictability	
On matters of equipment and outfit for the safety of the vessel and the crew, the requirements should be reviewed in the light of: a) existing search and rescue systems b) casualty records and analysis c) weather forecasting d) communications, ship-to-shore / ship-to-ship e) area and mode of operation, i.e. close proximity of other vessels at all times (pair seining, pair trawling, etc.) f) distance from land and safe haven or nearest port g) seasonal drift and direction h) vessel size and constraints imposed by design and/or construction i) locally available material, equipment and maintenance facilities j) mode of propulsion k) education and training of the crew		

2. SMALL ISLAND STATES AND SAFE HAVENS

Safe havens are mentioned in Table A9.1. They are not to be confused with sheltered landing places. The particular problem of a lack of safe havens is faced by many small island States and in certain regions of the world where mainland areas face the brunt of hurricanes or typhoons. In the case of the small island States, in areas such as the Caribbean Sea and the Pacific Ocean, most harbours were established on the leeward side of the islands in the days of sailing ships. The fish resources are often distributed around the islands in various concentrations according to species and, in most cases, migratory pelagic are important resources.

With few exceptions, small-scale fisheries predominate and a large number of small vessels is in use. The small-scale fishers rarely benefit from the safety afforded by the larger, safe harbours and are forced to operate from relatively poorly sheltered landing places in order to be as close to the target species as possible. Consequently, many have to operate from the weather side of the island. Small island States have characteristics that set them apart from large land masses with respect to fisheries, in general, and to the safety of fishers. These characteristics include, *inter alia*:

1. a small total population, creating a high level of competition for skilled labour;
2. a relatively small number of fishers even though they may represent a large portion of the population;
3. very small vessels, outdated in design and propelled by sails and outboard engines;
4. a small number of fishers per boat; and
5. large sea areas in proportion to the land mass and 360 degrees of search area.

Consequently, ways and means have to be found to ensure that safe havens are established and on the most suitable sites. It also means that early warning systems have to be established to give vessels time to reach a safe haven **in safety**.

The characteristics (5) given above must also be seen in the light of greater areas of sea (or oceans) to be considered, as a consequence of economic groupings of small island States that can affect safety. For example, where fish resources are seriously overexploited, fishers tend to move farther afield under various forms of fishing agreements, and this tendency often percolates

down to the small-scale fisheries sector, further complicating the management of safety at sea. In this connection, the term "advanced artisanal fisheries" is linked to fishing in vessels and using fishing gear and methods more appropriate to the large fishing areas. However, in too many instances, to refer to the small-scale fisheries as advanced artisanal fisheries is a misnomer because unsuitable vessels are still being used and fishing farther away from land. Furthermore, in most cases, the fishers have not been properly trained! Given this situation, competent authorities should note that some of the solutions to enhancing safety at sea are directly linked to the development or legal process and some solutions will require a commitment to training[2] and safety management. Similarly, the expansion of aquaculture activities, particularly in the marine environment, should be given careful consideration.

3. STUDIES TO BE CONDUCTED AS A PRELIMINARY TO DEVELOPING RULES FOR SMALL-VESSEL CONSTRUCTION AND EQUIPMENT

The studies to be conducted when reviewing the rules to be applied to the construction, equipment and outfitting of small fishing vessels and other craft used by fishing and aquaculture communities are interrelated. This would be evident at the planning stage when matrices are being developed.

A further study to be carried out considers the responsibility of an administration to implement rules and regulations and to maintain a survey system. Establishing a survey service involves setting up a survey office to cover the approval of drawings, site inspections, testing, vessel measurement (for licence/registration purposes), annual and special surveys of vessels and equipment, etc., and, last but by no means least important, finding the funds to operate the service. Also, an administration would have to employ a sufficient number of qualified officers and this could prove to be difficult, as experienced by some developed countries. Indeed, these factors have been shown to be a constraint in some instances to the expansion of a survey service to include small fishing vessels. It is also worth noting that some developed countries admit to being unable to cope with the additional workload that would be imposed by the expansion of the survey system service to include small vessels of all sizes.

In many cases, however, the owners of small vessels would find it difficult to finance the additional costs of construction and special equipment (which would inevitably become the norm) and this would be true for owners of

[2] Appendix 10, Training – a small-scale fisheries approach.

fishing vessels ranging down to craft size used for subsistence fishing and aquaculture activities. At that level, there is no commercial market to support the extra costs, and small-scale fisheries in general are a far cry from the ships of the world of international commerce for which most rules were originally intended. Thus, an administration should be aware that the scaling down of "big ship" rules is not likely to ensure the safety of small-scale fisheries operations, aquaculture activities and the vessels involved in these endeavours.

Furthermore, if rules and regulations are to be binding, adequate training would be essential not only for the officers of an administration but also, more importantly, for the fishers and aquaculture workers using very small vessels. In the case of the latter, it is likely that many of them have had a rather basic level of education and this should be given special consideration.

As mentioned at the beginning of this appendix, no attempt has been made to set the rules for the construction of vessels or to specify the equipment and outfit to be carried on board for the safety of life at sea. Nevertheless, it is recommended that studies as outlined above be carried out whenever rules and regulations are being reviewed or developed for the first time. The safety of life at sea is a serious matter, and all of those who go to sea have a right to return safely to land.

APPENDIX 10

TRAINING – A SMALL-SCALE FISHERIES APPROACH

Fishing is one of the most dangerous professions and it is well known that the industry heads league tables of accidents and deaths. It is, however, much more difficult to obtain statistics on small-scale fisheries than on industrial fisheries. It is also evident that most small-scale fishers lack the knowledge and training to reduce the risk of accidents,and most small-fishing vessels do not carry even the minimum of safety equipment which is certainly the case in many small island States.

Furthermore, it is recognized that the risk factor increases as competition for depleting, nearshore resources increases (a factor that should not be overlooked by fisheries management), and this applies to fisheries in both developed and developing countries.

1. SAFETY TRAINING PROGRAMMES FOR SMALL-SCALE FISHERIES

In reviewing how small-scale fishers are trained, it would be prudent to also include how workers in the small-scale aquaculture sector are trained. In each case, a safety training programme should take the following questions into consideration:

- Within which type of structure or framework would a training programme operate?
- Who will be trained and how many trainees will be included in the programme?
- Which authority will be responsible for training in the standards of safety and for certification of competency?
- Who will do the training?
- What subjects/topics will be included in the curricula?
- Where will the training be conducted?
- How long should the interval between refresher courses be?

2. THE FRAMEWORK FOR A TRAINING PROGRAMME ON SAFETY AT SEA

For small-scale fishers and those working from small vessels in the aquaculture sector, the legal provisions for vessel safety, where they exist, would dictate the framework within which a training programme should be conducted. However, where such legal provisions do not exist, most available standards and guidelines are likely to fall short of meeting the needs of this target group, although some of the standards may be applicable to fisheries officers and those involved in search and rescue (SAR). Similarly, formal requirements for certification are hardly applicable where the trainees have not had an adequate level of education.

3. THE TRAINEES IN A PROGRAMME ON SAFETY AT SEA

Although small-scale fishers and aquaculture workers using small vessels are in the prime target group for training, administrations must also consider the wider needs in matters of safety regarding these small-scale sectors, for example:

- fisheries officers, whether acting in the capacity of extension officers or ensuring that regulations are followed;
- fisheries protection officers;
- maritime safety officers (in the event that small vessels used in aquaculture activities fall under the maritime administration);
- boat designers and boatbuilders, with regard to safety construction and equipment to be carried; and
- SAR officers.

4. THE AUTHORITY RESPONSIBLE FOR TRAINING AND CERTIFICATION OF COMPETENCY

The authority responsible for training and certification would be designated by the lead agency. Nevertheless, given the low number of personnel in public service within the fisheries and aquaculture sectors, the actual responsibility might fall on entities that are not normally responsible for fisheries or aquaculture activities. Under such conditions, numerous links between departments would be necessary for effective training.

5. THE TRAINERS IN A PROGRAMME ON SAFETY AT SEA

In many developing countries, the number of persons with a background appropriate to training personnel, including fisheries and maritime officers

and boat designers and builders, is limited. For example, with regard to the prime target group (small-vessel personnel), the natural choice of instructors would be a coastguard employee, a harbour master or a fisheries extension officer. However, the "big boat" mentality should be avoided, and it should be understood that it is the problems of small vessel personnel that have to be tackled.

6. CURRICULA

Small-vessel personnel

The curriculum should be related to the local situation and the level at which instruction can be assimilated by those to be trained. It should be kept in mind that although many of the trainees might be illiterate, they are seldom innumerate, and in safety matters common sense is of much more use than literacy. As stated above, small vessels predominate in the fisheries and aquaculture sectors, therefore, the curriculum should be based with such vessels, their operations and equipment, particularly safety equipment, in mind.

Space is a valuable commodity on small vessels, and bulky items of equipment should be avoided. In addition, the everyday work of those on board these vessels should be taken into account in specifying the items of safety equipment to be carried on board for the simple reason that if the ability of the crew to work in safety were compromised, non-compliance with safety regulations would be the order of the day! However, items of equipment that can have several uses are readily acceptable and include the sail which can be used as a sea anchor or provide shade, and the radar reflector, which can also be a heliograph.

Fisheries officers

With regard to small-scale operations in the fisheries and aquaculture sectors, fisheries officers need to have a clear understanding of their role with regard to safety at sea and the implications of fisheries management objectives. In particular, in cases where they act as extension officers, they need to undergo a "training of trainers" course and be well equipped to interact with individuals and groups owning/operating small vessels in the capture fisheries and aquaculture sectors.

Fisheries protection officers

Given the possibility that fisheries management decisions may have an impact on safety at sea, particularly safety in capture fisheries, these officers should

undergo training related to the art of communication and interaction with the small-scale operators in the fisheries sector. They should also be given an understanding of the operational aspects of capture fisheries and the possible effects of enforcement of management objectives in relation to safety at sea.

Maritime safety officers

Maritime safety officers, who are responsible for the implementation of maritime legislation, may also have a wide mandate as regards fishing vessel safety and the examination of fishers for certificates of competency.[1]

Boat designers and boatbuilders

Training should be offered at the appropriate levels, recognizing that the qualification of instructors in boatbuilding and boat design should be equal to, and preferably higher than, the level of the qualification to be offered to course participants. Furthermore, it is stressed that a training institution should be prepared to supplement the skills of the instructor through additional inputs on electronics, engineering, welding and electrical technology.

SAR officers[2]

SAR officers should be given instruction on the way fishing vessels and aquaculture support vessels operate. With regard to fishing vessels, the different types of operations should be covered, putting emphasis on the composition of the fleet and the areas of operations. The officers should be made aware of the safety equipment required on board by law. In addition, they should be made aware of the existence of industry organizations and responsible contact points in their area of operations. Furthermore, the officers should be encouraged to meet with those working in the capture fisheries and aquaculture sectors.

7. TRAINING LOCATIONS

Training of small-vessel personnel should be conducted close to the ares of concentration of fishers or aquaculture activities. Often, this is simply a matter of economics. For example, it is more economical for one instructor to travel to a village than for 20 or 30 persons working on small vessels to travel to a central institute. The justification for centralized institutes, such as radar simulator or

[1] They may also have a mandate with regard to vessels that are not registered as fishing vessels nor used in support of aquaculture activities.

[2] See also paragraph 1.5.9 of Chapter 3 of Part 2.

firefighting centres, which may exist and offer training for mariners of larger vessels, is not really valid for personnel of small craft. Consequently, where possible, pre-entry training, should be based on a well-defined group such as a fishers cooperative. Further training, however, should be conducted off-season or during non-working hours, for example, in the evening at a local school.

With regard to the training of fisheries officers, it would be appropriate to include matters conerning safety at sea in their general training, which is more likely to be institional. The same might apply for the training of boatbuilders and boat designers, whereby safety issues are emphasized during formal training. Although the same would apply to SAR officers, it should be kept in mind that indiviual officers and crew members are often volunteers and these persons and others may elect to enrol on a standby basis. Consequently, training is an ongoing (and hands on) activity and would take place at the local station.

Nevertheless, those persons responsible for administrative and operational matters would be required to attend national briefings, as would be the case in large countries, and regional briefings.

APPENDIX 11

FISHERIES MANAGEMENT

Fisheries management aims to achieve the optimal and sustainable utilization of the fishery resource for the benefit of humankind, while safeguarding the ecosystem. Modern fisheries management is based on scientific information that is used to develop the rules under which the fisheries are conducted. Typically, management is directed at maintaining a stock size that gives the maximum sustainable yield (or catch) through the application of various management regulations (e.g. total allowable catch [TAC], number of boats in the fishery) aimed at controlling, either directly or indirectly, the level of fishing mortality.

Fisheries management involves not only direct regulations but also management of access rights, influencing of fishers' attitudes toward the resources, and other broader issues. The scope of fisheries management has widened in recent years to consider aspects beyond the extent of a fishery resource, implying an ecosystem approach.

However, in managing fisheries, due consideration should be given to the risk factor to fishers from the point of view of safety at sea, when making management decisions.

1. THE CODE OF CONDUCT FOR RESPONSIBLE FISHERIES (CODE)

Article 6, paragraph 6.1, of the Code makes the point that "The right to fish carries with it the obligation to do so in a responsible manner so as to ensure effective conservation and management of the living aquatic resources." The Code also calls for the provision of standards of conduct for all persons involved in the fisheries sector. This principle is further expanded in Article 7 in relation to fisheries management measures and calls for the interests of fishers, including those engaged in subsistence, small-scale and artisanal fisheries, to be taken into account. Furthermore, Article 10 (10.1.2) clearly states that:

> "In view of the multiple uses of the coastal area, States should ensure that representatives of the fisheries sector as well as fishing communities are consulted in the decision-making process and involved in other activities related to coastal area management and development."

Article 7 of the Code also provides for representatives from relevant organizations, both government and non-governmental, concerned with fisheries to be afforded the opportunity to take part in meetings of subregional and regional fisheries management organizations and arrangements as observers or otherwise, as appropriate, in accordance with the procedures of such organizations or arrangements.

These principles have been carried forward in each of the FAO Technical Guidelines for Responsible Fisheries, stressing the need for fisheries managers and the fishing sector to be aware of the needs of the other. For example, the **ecosystem approach to fisheries (EAF)** has evolved, based on an appreciation of the interactions that take place between fisheries and ecosystems. The EAF focuses on fisheries management but broadens the perspective beyond seeing a fishery as simply "fish in the sea, people in boats", beyond consideration only of commercially important species and beyond management efforts directed solely at the harvesting process. The EAF requires the inclusion in the management paradigm of interactions between the core of the fishery, fish and **fishers**, as well as other elements of the ecosystem and the human dimension relevant to management.

Because of the ability of management of a marine protected area (MPA) to address multiple objectives, e.g. fisheries management and nature conservation, the MPA fits well into an ecosystem approach. It is also a multipurpose fishery management and conservation tool, and some of the common reasons for establishing MPAs include:

- to protect a specific life-history stage;
- to control fishing mortality;
- for the spillover effect of fish migrating across the boundaries of an MPA so that they can be fished,
- to serve as a source and/or sink for fish eggs and larvae to improve recruitment;
- to protect habitat, food web integrity and biodiversity;

- to reduce bycatch, discarding and other negative impacts on harvested species, other species, endangered species and species that society wants to protect;
- to reduce competition between user groups or to enhance opportunities for certain groups of users (by establishing rights); and
- to serve as a potential hedge against uncertainty.

As for reducing competition and establishing user rights, this is clearly an area that needs the hand of an experienced negotiator! However, in terms of solving MPA fishery management issues, the MPA does not necessarily address some key elements of fisheries management, such as the assignment of fishing rights or the overall management of an area beyond the boundary of an MPA. This approach also has different effects on different species. If MPAs are used as the sole mechanism for conservation and for limiting the amount of fish that can be caught, the extent of the area that would need to be protected may be unrealistically large, particularly the area for mobile fish species. It is also, in many circumstances, inferior to other fishery management tools in terms of potential yield and economic performance. Thus, the best results will be achieved when an appropriate mix of fisheries and ecosystem management tools are applied and **there is interaction with fishers and safety in fishing operations.**

The integration of fisheries into coastal area management also raises concerns, with issues of pollution, habitat degradation and spatial conflict. Pollution may lead to a risk to human health, and decreased productivity would certainly adversely affect the financial health of the fisheries sector. Habitat degradation may occur as a result of clearance of mangroves for other activities, soil runoff due to deforestation, or poor land-use practices. In addition, spatial conflict may arise where coastal fisheries and aquaculture, both having insecure property rights, are gradually squeezed from their traditional areas by other coastal development and are forced to fish farther afield, thus, adversely affecting the level of safety at sea and increasing the risk factor.

What is clear from the provisions of the Code is that fisheries managers have to meet with representatives of the fishing industry when reviewing management regulations. They should also bear in mind that technical developments, required by management or introduced by the industry, may modify the practices of fishery workers. Therefore, to achieve the full benefits of such technology and to ensure the safety of fishery workers, training in the proper use of new technology should be provided.

Relevant publications within the FAO Technical Guidelines for Responsible Fisheries include:

No. 2. Precautionary Approach to Capture Fisheries and Species Introductions
No. 3. Integration of Fisheries into Coastal Area Management
No. 4. Fisheries Management
No. 4. Suppl. 1, Conservation and Management of Sharks
No. 4. Suppl. 2, The ecosystem approach to fisheries
No. 4. Suppl. 2, Add. 1, 2. The ecosystem approach to fisheries
2.1 Best practices in ecosystem modelling for informing an ecosystem approach to fisheries

In addition to the above-mentioned technical guidelines, the FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas contain many references to the operation and equipment, as well as to the safety of fishing vessels participating in the fishery. Furthermore, they also include requirements for socio-economic surveys that include providing the number of fishing vessel personnel involved in deep-sea fisheries.

What is equally important is to ensure that accident and health information in the deep-sea fisheries sector is properly documented and analysed, and that corrective measures are adopted and implemented.

APPENDIX 12

VESSEL OPERATIONS IN AQUACULTURE

Aquaculture remains a growing, vibrant and important production sector for high-protein food. The reported global production of food fish from aquaculture, including finfishes, crustaceans, molluscs and other aquatic animals for human consumption, reached 63.6 million tonnes in 2011 (46.09 percent of the world's fish food production for human consumption).[1]

Although the major part of the activities are carried out in freshwater areas, there is a growing interest in marine fish production in coastal areas and an increasing trend to move activities farther offshore within the marine environment. In general, stocking of cages may be carried out manually at one end of the spectrum and by helicopters at the other end of the spectrum.

For the purpose of these guidelines, however, this appendix concentrates on seagoing activities as defined in Part 1.

1. THE AQUACULTURE SECTOR

The marine aquaculture sector is growing rapidly. Offshore aquaculture installations are drawing increasing attention from researchers, industry and policy-makers as a promising opportunity for large-scale expansion of the aquaculture industry. Simultaneously, there has also been increased interest in both land-based and nearshore aquaculture systems, such as integrated multitrophic aquaculture (IMTA) systems. However, the challenges facing IMTA in nearshore environments are also relevant for offshore aquaculture; moreover, the exposed nature of the open ocean adds a number of technical and economic challenges, as well as the need to ensure safety in operations.

However, in the marine environment and large-scale fish farming operations, owing to ever-stricter environmental regulations and the desire for cost reduction, there is a distinct trend towards using larger cages. Furthermore,

[1] FAO. 2012. *The State of World Fisheries and Aquaculture 2012*. Rome, 209 pp.

provided appropriate living conditions can be maintained, more fish per cage would be farmed. The consequences of these trends are:

- production in rougher conditions;
- higher risk to vessels and crew owing to the increased value of fish; and
- fewer and more difficult possibilities for regular inspection and maintenance of cages.

2. PLACEMENT OF CAGES

In both offshore and nearshore operations, the cages are towed into place and, although a variety of vessels is used, the industry is turning to newer designs of vessels that are more adequately equipped for the purpose and address concerns of operational safety. In addition, the vessels are well equipped for the maintenance of the cages by the crew members, which could require "over the bulwark work". In the case of a submersible cage, immersed in mid-water or moored on the sea bed, high levels of skills are required of the crew members.

Most likely, these vessels would fall under the jurisdiction of maritime administrations. Thus, training and certification of vessel personnel would reflect the requirements as set out in the International Maritime Organization (IMO) STCW convention.[2] It is possible, however, where a vessel still registered as a fishing vessel is used in support of aquaculture activities, that it would be crewed in accordance with the IMO STCW-F convention.[3] In addition, whether a vessel be registered as a fishing vessel or as a vessel in support of aquaculture activities, there may be a need for additional safety training with regard to the specific duties to be carried out, including underwater work, and also a need for close cooperation between fisheries management and maritime administrations.

From the point of view of safety of navigation, cages should carry lights, shapes and radar reflectors, as required by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). Such requirements should be incorporated in legislation.

Where cages are used in freshwater areas, they may also be put in place using vessels and, although in most cases small vessels are used, the operational conditions are more likely to be less severe than experienced in the marine environment.

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[2] International Convention on Standards of Training, Certification and Watchkeeping.

[3] International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel.

3. USE OF VESSELS IN SUPPORT OF AQUACULTURE ACTIVITIES

Vessels in use to stock cages are commonly referred to as well boats because the hold of the vessel is subdivided into wells. Such an arrangement ensures that an acceptable ratio of fish to water in the well can be attained. In addition, the wells are so designed that there are no appendages that may cause damage to the fish during loading, in transit and discharging. Transportable tanks are also used for smaller shipments and may be carried by a variety of vessel types.

When the fish in the cages reach marketable size, the same means of transport in well boats is usually used to transfer the fish to shore for slaughter. It should be noted that the transit time is generally of short duration. However, there is a growing trend to use vessels of substantial size to carry large quantities of live fish over long distances.[4]

Thus, well boats vary in terms of sophistication and many are fitted with systems for oxygen supersaturation of the water in the wells and the removal of toxic gases, such as carbon dioxide (CO_2) and ammonia. They may also be equipped with refrigeration systems to maintain the temperature of the water in the wells at the prescribed level for the species being transported and the area of operation.

With regard to the monitoring of the health of fish during transit, visual monitoring may be used depending on the distance from cages to the point of discharge. However, for longer voyages, video systems, together with remote sensing of water quality and alarm systems, are also used to detect when the water quality falls below, or exceeds, the desired level. At point of discharge, any dead fish are set aside for checking for traces of disease, prior to disposal in a manner set by the competent authority. However, there is a growing trend in some parts of the world to have well boats fitted with vacuum pumps, which means that dead fish have to be removed after the live fish are discharged to shore or into aquaculture cages. Furthermore, the disposal of the water from within the well boat must follow set procedures to reduce the possibility of the spread of disease. In the most modern well boats, shipping water passes through an ultraviolet (UV) filtration system prior to its return to the sea. Thereafter, the wells or tanks (whether part of the vessel or those of the transportable type) must be thoroughly cleaned and disinfected after discharge of fish, and inspected again before taking on board another consignment.

[4] The construction of a new type of well boat, which was completed in 2014, has a length of 76 m and a capacity of 3 000 m^3, and is capable of transporting up to 450 tonnes of live fish. The vessel is fully equipped for the transport of fish in a closed system.

Given the level of sophistication of equipment and techniques in use, it is essential that the crew members of these vessels be given additional training to that required under the IMO requirements as mentioned above.

At the artisanal level, well boats are of a more basic design, often simply being constructed with watertight compartments fore and aft and with openings in the hull to flood the hold. These boats, although generally limited to the transport of large fish on lakes and rivers, require a high level of skill in order to navigate at a reduced level of risk.

4. VESSEL SAFETY

The provisions of the International Convention on the Safety of Life at Sea (SOLAS) would probably apply to many vessels used in support of aquaculture activities. In addition, such vessels that engage in international voyages and are 24 m in length and over (if new ships) or 150 GT and over (if existing ships) may be subject to the provisions of the Load Lines Convention regarding loading and safety. Such vessels (ships) would normally fall under maritime administrations; nevertheless, all vessel inspectors/surveyors who have responsibilities within port state control regimes should be aware of the requirements under the Load Lines Convention.

In the case of live fish being transported by well boats, it is important to note that a free surface area condition in the wells or tanks should be avoided because it would adversely affect the stability of the vessel. Similarly, in all water conditions except flat calm water conditions, it would cause the fish to become agitated and, thus, adversely affect their health and welfare.

Stacking arrangements for transportable tanks carried above deck should be secure to prevent the tanks from falling overboard. The actual number of tanks to be carried on deck and the stacking height should be limited, with consideration for the possible effect of an increase in the center of gravity, thus reducing the vessel's range of stability.

Certain types of live fish and crustaceans may be transported by sea in a non-aquatic environment by inducing a hibernation state in the fish prior to transport and transferring the live fish in the induced hibernation state into a sealable container. Although the container is adapted to maintain the live fish in the induced hibernation state under non-aquatic conditions, it is important to ensure that the gills of the live fish are exposed to oxygen. Crustaceans may also be transported live in wet packages using wet sawdust or other means to

keep the atmosphere surrounding the live animals humid and cool. In both instances, the safety of the vessel has to be considered in relation to weight distribution and stability of the cargo. However, it is unlikely that well boats would be used for this type of cargo.

5. VESSEL STABILITY

It is important to ensure that vessels used in support of aquaculture activities are provided with a stability booklet, or a stability document, at the time of their delivery from the boatyard/shipyard. Furthermore, in the event that any alterations to the vessel or change in work activity are being considered that may alter the position of loads in the vertical, horizontal and/or fore and aft directions, the details of the changes should be submitted to the appropriate authority for approval. If approved, the inclining test should be repeated upon completion of the alterations and a new stability booklet or stability document provided to the vessel. The test should be carried out under the supervision of the vessel inspector or a qualified surveyor. Many administrations have specific requirements for carrying out an inclining test, including how it should be supervised.

APPENDIX 13
INSPECTION OF A VESSEL

These guidelines for the inspection of a fishing vessel and a vessel used in support of aquaculture activities are focused, in the main, on the need for inspection during the construction of a vessel and when it is in service. They are considered to be applicable to fisheries and aquaculture operations at the simple ad hoc or basic levels of development as given in Chapter1 of Part 2 and to the qualifications and experience of inspectors as described in Appendix 2:

> ***Simple ad hoc level:*** *Applicable for a small fleet of vessels, manual accident reporting from local level to national focal points and without established routines; and*
>
> ***Basic level:*** *Applicable for countries with a large fleet of small vessels used in fisheries and aquaculture activities, with established routines for accident reporting from local to provincial to national level, including basic data compilation and facilities for accident investigations, statistical analysis and feedback mechanisms.*

1. GENERAL

Under ideal circumstances, a prospective boat owner would apply to the responsible authorities for capture fisheries or aquaculture management for permission to build a vessel. In the case of a positive reply that the proposed vessel would be authorized to participate in the named activities, it would be subject to the vessel meeting the standards for construction set out in legislation. Following the confirmation **in principle** of the request, the prospective owner would make a formal application, submitting plans and technical specifications to the competent authority and indicating the names of boatyards under consideration. The competent authority would address the formal application and determine whether the boatyards proposed were on the accredited list. Following the formal approval of the specifications and

contractual arrangements to construct the vessel, the nominated **inspector** should meet with the owner or owner's representative and the boatbuilder to review the contract specification and construction schedule. In reviewing the construction schedule, the builder should provide information on delivery times of the materials and how these would be stored (very important in the case of timber and materials used in fibreglass construction). In the case of new construction, the inspector would carry out an inspection to determine the suitability of:

- the building premises, including for the storage of timber;
- construction materials selected by the builder; and/or
- the mould and lay up arrangements in the case of a vessel to be constructed of fibreglass.

There should then be a draft programme of inspection prepared and agreed with the builder that allows the inspector to follow vessel construction. Key inspection times should include:

- the laying of the keel / laying up of the hull (glass reinforced plastic [GRP]);
- the erection and alignment of the stem and stern frame and sections or frames;
- the fitting and alignment of the stern tube and engine beds;
- the fitting and alignment of the main engine;[1]
- the planking or plating[2] of the hull (including the arrangements made for the application of preservative or paintwork);[3]
- the stern gear assembly (measurement of propeller tip clearances);
- the rudder assembly and a check on the alignment;
- the pipe work (ad hoc checks); and
- the erection of superstructure (jointing surfaces to deck and/or hull).

The inspector should also attend certain tests, some of which may be carried out in a workshop prior to fitting on board, such as the pressure testing of "stand alone" fuel tanks and water tanks. Random checks may also be made on

[1] The final alignment of the propeller shaft is to be carried out with the vessel afloat.

[2] Note that mild steel plating that does not carry the stamp of a classification society should be carefully checked for lamination.

[3] The inspector should also control the type and quality to ensure that toxic substances are not used in prohibited areas of the vessel.

the levels of humidity (wood and GRP), evidence of wood decay and quality of welding. Furthermore, where dissimilar metals are to be joined together, such as aluminium and steel, the inspector should ensure that the means to reduce the effect of galvanic corrosion reflect the provisions given in the approved specifications.

In scheduling inspections, care should be taken to ensure that the inspector expresses satisfaction and/or dissatisfaction at key stages of construction. Dissatisfaction should be expressed as soon as the inspector has any doubt, to avoid the builder continuing with work that might have to be undone at a later stage.

Prior to placing the vessel in the water, the inspector should ensure that the position of sea suctions, echo sounder transducers and sonar devices (where fitted) are clearly marked on the shell expansion/general arrangement of the vessel.

At an appropriate time, when the vessel is in the water and before any sea trials are carried out, an inclining test should be carried out. When the builder has offered the vessel for acceptance, a series of harbour and sea trials would then be carried out for approval by the competent authority[4] and by the owner in the form of acceptance. It being noted, however, that the marking of the vessel (e.g. name, number and port of registry), as required in legislation, must be completed prior to the commissioning of the vessel.

From the point of view of the owner, an agreement should be written into the contract that acceptance of the vessel would also be subject to the builder meeting all of the requirements of the competent authority. Furthermore, for the purpose of registration, the builder must provide documentation giving proof of sale, details of the construction of the vessel and the carving note.[5] With regard to construction details, the inventory should include the name of the manufacturer and the serial numbers of the machinery and equipment so installed. However, a fishing vessel may also be inspected for a number of other reasons, and these should be clearly understood by the owner, builder/repairer and the designated fishing vessel inspector, in order to achieve a workable level of cooperation.

[4] The term competent authority refers to the government; responsibility for various actions within the fishing vessel sector could be assigned to different departments or divisions.

[5] It is quite common for the contract to specify that the builder shall make the request and provide details for the measurement of the tonnage of the vessel.

If a vessel is to be used exclusively in support of aquaculture activities,[6] the appropriate authority within the administration (if not fisheries) would follow a similar course of action. Within the simple ad hoc level of fisheries/aquaculture development, it is likely that the vessels may be relatively small and unpowered, with the hull being of a basic design and construction. Thus, the inspector would be called upon to determine whether or not the craft is seaworthy. If such a craft is fitted with a sail, the inspector would have to control the mast, fittings and stays, as well as the attachments to the hull. The inspector would also need to check the sail and, in particular, the sail area in relation to the size and shape of hull, as well as the steering mechanism. Should the inspector have any doubts about the sail or sail area, a sail maker and/or a naval architect should be consulted. With regard to the carriage of navigation lights, these should be in accordance with the requirements set out in legislation. The power source should be inspected and the lights tested.

If such small vessels are motor powered and of the undecked type, they are more than likely to be fitted with an outboard engine. In such cases, a vessel inspector should be satisfied that the arrangement to secure the engine to the hull is appropriate for the weight and power of the engine and that the engine is in good condition. The placement of the fuel tank should also be inspected, as well as the fuel piping, the fuel filter and the quick-closing shut-off valve. As with a sailing vessel, navigation lights should be in line with legislation, the power source inspected and the lights tested. In both cases, the means of anchoring and mooring the vessel should meet national requirements, and the inspector may require the crew members to deploy the anchoring device.[7]

2. PERIODIC INSPECTION

Cautionary note

It is not unusual for the atmosphere within the interior of vessels, in areas such as the forepeak and under certain conditions, a fish room or transom space, to become contaminated, especially in areas poorly ventilated. Furthermore, the situation can become quite dramatic if a vessel has been laid up for a protracted period of time. Consequently, an inspector must inform those persons in charge of a vessel that is to be inspected, to ensure that such spaces are well ventilated prior to the inspection. Nevertheless, at all times an inspector should

[6] Such a small vessel would most likely fall under a maritime administration and may have to meet different design criteria required for a fishing vessel.

[7] Gulbrandsen, O. 2012. *Fuel savings for small fishing vessels. A manual.* Rome, FAO.

be prepared to have the atmosphere in such enclosed spaces tested to make certain that it is safe to enter.

Periodicity

It is likely that the timing of periodic checks will differ from country to country as well as for vessels of different categories. Nevertheless, in most cases, there is a requirement for:

- an annual safety equipment inspection;
- a hull inspection;
- a propeller shaft inspection;
- a special periodic inspection.[8]

Documentation

In all cases, the vessel's documents should be checked in the presence of the skipper/master or the representative of the owner, and pertinent information entered in the inspection report. Such documentation should include:

- the certificate of registry (where vessel registration is a requirement);
- the local fishing vessel licence / authorization to fish;
- the safety certificate / previous revalidation report;
- the record of the vessel. It is possible that a vessel built before new standards came into force would not meet all of the new regulations concerning the design and construction of a fishing vessel. Therefore, the inspector must take care to check the record of the vessel for any dispensation granted or conditions imposed;
- where applicable, the safe manning certificate; and
- the inventory of machinery and equipment.

When checking whether or not all machinery is in good working order, it is important to cross-check serial numbers and the names of manufacturers with the inventory of the vessel and the entries in the report completed at the date of the last inspection. Should there be any change that would have required formal approval, the inspector should take appropriate action.[9]

[8] For small vessels, the competent authority would establish the timing for a periodic survey and may take the material of the hull structure into consideration. For larger vessels, surveys may be made every four to five years. Any vessel that is in class with a ship classification society would have to follow the timing for surveys set by the society.

[9] It may be, for example, that the owner has installed a new main engine that is of greater power than allowed for that particular class of vessel.

3. SAFETY EQUIPMENT INSPECTION

Together with the owner, or a representative of the owner, and the skipper/master, a check of the safety equipment should be made against the requirements for that class of vessel.[10] Further checks should be made on, *inter alia*:

- the inventory of the vessel;
- the condition of equipment;[11]
- the expiry dates of flares and fire extinguishers;
- the inflatable life rafts and rigid appliances;
- the life-saving appliances, for example, lifebuoys, life jackets, personal flotation devices, signalling lamp/suitable torch, radar reflector and the emergency position-indicating radio beacon (EPIRB);
- the first-aid kit;
- the operation of radio equipment, vessel monitoring system (VMS), where required for fisheries management measures, and the automatic identification system (AIS), where fitted;[12]
- the magnetic compass;[13]
- the functioning of all navigation lights and bridge visibility to ensure it has not been impaired; and
- all machinery to ensure it is in working order.

If the inspector is not totally satisfied with the state of a vessel that is otherwise seaworthy, conditions may be entered in the record of the vessel, requiring the owners to take action prior to the next scheduled periodic survey.[14]

4. PROPELLER AND TAIL SHAFT INSPECTION

For all practical purposes, this inspection would normally coincide with the maintenance schedule of a fishing vessel for normal cleaning and painting of the hull, as well as the annual safety inspection or special inspection. The main

[10] The inspector should have the regulations to hand for the class of vessel being inspected.

[11] When there is reasonable doubt, an inspector may, for example, require an extinguisher to be activated.

[12] The report of the International Maritime Organization (IMO) Maritime Safety Committee (MSC) on its eighty-seventh session, Annexes 29 to 33, provides guidance in relation to smaller vessels.

[13] In the event that major repairs or alterations to a vessel have been carried out, the inspector may require the compass to be adjusted and a new card supplied certifying that such adjustments had been made.

[14] In all cases, it is recommended that the inspector enhance the inspection report with photographs and sketches.

purpose is to have the shaft drawn for inspection, although, in general, the rudder assembly would also have to be dismantled and be inspected at the same time.

The inspector should:

- control the shaft taper for signs of uneven fit of the propeller and the key for signs of looseness and lateral wear;
- check the condition of the thread and locking nut;
- measure and record the diameter of the shaft in the way of bearings and glands/seals;
- inspect the wear on the stern tube bearings and record wear pattern;
- check the condition and fit of the forward coupling; and
- inspect the blade areas for signs of bubble impingement and erosion.

The inspector may require the shaft to be tested for straightness and for cracks. In doing so, the inspector would also take the opportunity to note the general condition of the hull and the condition of sacrificial anodes, and include comments in the report of the vessel. In the case of aluminium hulled vessels, such anodes may differ from the type used on steel hulls.

If the inspector is not totally satisfied with the condition of a vessel, which is otherwise seaworthy, conditions may be entered in the record of the vessel, requiring the owners to take action within a limited time period and before the next scheduled periodic survey.

5. SPECIAL PERIODIC INSPECTION

The special periodic inspection is a thorough inspection of the hull and machinery of a vessel, and all deficiencies found should be rectified before the vessel is authorized to proceed to sea. Thus, the skipper/master and/or the owner (should the owner be other than the skipper/master) must be in attendance during the entire inspection.

6. WOODEN-HULLED VESSEL – GENERAL

To the extent possible, the hull should be viewed as the vessel is removed from the water. The hull should be inspected externally above and below the waterline for signs of grounding and/or collision; at the same time, the condition of the paintwork should be noted. Sighting of any damage could influence the inspection procedure for the interior of the hull. Detailed inspection by

visual means, sounding[15] and probing[16] of the hull planking and seams above and below waterline (as well as a transom, where fitted) should be made to determine:

- the condition of the timber
- the fairness of surface
- the condition of fastenings
- the condition of caulking
- signs of wood decay and/or worm infestation
- sighting of any damage could influence the inspection procedure for the interior of the hull.

Hull exterior

The inspector should note the disposition and condition of butt joints and mark their positions on a diagram (port and starboard [P&S]). Any repair work carried out since the last inspection should also be noted, and particular attention should be paid to the distance between the butts of adjacent planks where there is a deviation from the rule for that class of vessel.[17] On the same drawing, the position of hull fittings should be noted, for example, sea suctions, overboard discharges, earth plates. If through bolts are fitted, the condition of the bolts should be checked by sounding (the same test would be carried out during the inspection of the interior of the hull). Where reasonable doubt exists, a bolt or bolts may be drawn for inspection.

The keel should be inspected for damage/deterioration and the condition of joints. If there is any suggestion of wood decay and/or worm infestation, the keel strap, if fitted, should be removed for access to the underside of the keel. The same procedure should apply to the stem.

Propeller aperture

The propeller aperture should be treated as a unit, with particular emphasis placed on the condition of the sternpost, deadwood and skeg, as well as the stern tube fitting and fastenings, propeller shaft and propeller.

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[15] The term sounding refers to tapping with a hammer to judge the soundness of the material and the tightness of fastenings and fittings.

[16] The term probing refers to the use of a thin, sharp pointed steel probe that is pressed into the timber. If the timber is sound the probe will not penetrate, but if decay is present, the probe will penetrate, and the ease and depth will reflect the degree of decay to the experienced inspector.

[17] A drawing of the developed surface of the hull (P&S) should be part of the inspector's report.

Rudder and steering gear

The inspection of the rudder and the steering mechanism should be done together. Within the aperture, exposed parts of the rudder stock and bearings, as well as adjacent timber, should be examined, sounded and probed for signs and where the upper bearing forms part of a gland, the state of the gland should also be checked. The inspection should cover:

- bearing fastenings for wastage/security;
- corrosion/pitting of the rudder blade;
- excessive clearance in bearings;
- distortion or misalignment of the pintle bearing; and
- looseness of the jumper band and/or signs of its position having been moved to compensate for wear of the rudder carrier.

The means of attaching the blade of the rudder to the stock should be inspected and sounded to ensure that they are secure. If the blade is made of steel, the welding should be checked for signs of cracking and the blade surface inspected for signs of pitting and general corrosion. In like manner, steelwork on the skeg and rudder fittings should be replaced if there are signs of excessive waste by corrosion.

The steering gear should be tested for ease of operation (for this test, the inspector should witness the rudder movement, as well as the operational mechanism topside). Stiffness or juddering should cause the inspector to question the alignment/bearing condition. Where rod and chain steering is used, the condition of the chain and fittings (shackles, etc.) should receive special attention.[18] The maximum allowable wear in pins should be no more than 20 percent of the original cross-section.

The emergency steering operation should be tested to ensure that it operates freely and easily between and up to the rudder stops. As a guide, the maximum effort required to operate the steering gear should not exceed 160 N.[19]

For a transom-mounted rudder, the bearing attachments to the transom should be checked for alignment through the bearings and for any distortion of the rudderstock. Excessive clearance in the bearings should be rectified. All fastenings should be checked to ensure that they are securely fastened.

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[18] For example, the inspector could require the chains to be annealed.

[19] N = Newton, the absolute unit of force in the International System of Units (SI units). The unit/number would be set out in the specification of the equipment.

Stern gear

The stern gear should be inspected for the proper positioning of the various components and for signs of cavitation and excessive vibration. In particular, the inspection should note:

- damage to the propeller;
- the effect of bubble impingement on the surfaces of the propeller blades and the condition of the tips and the edges of the blades;
- signs of electrolytic corrosion, as well as the condition of sacrificial anodes;
- clearances in the propeller shaft bearing(s): also in water, lubricated bearings, noting the propeller tip clearance and cross-checking against the record of the last inspection of the vessel. Blade tip clearance to the hull should not be less than 10 percent of the propeller diameter;[20]
- the length of exposed shaft between the propeller and the bearing; if it is more than twice the shaft diameter, the record of the vessel should be checked and the matter investigated; and
- the ease with which the propeller turns when swung by hand, with the shaft disengaged from the engine. Before refastening the shaft coupling to the engine, check the alignment **when the vessel is afloat.**

Bulwarks

Any damage through contact with a berth or other vessel should first be noted during the inspection of the hull and the matter brought forward for closer scrutiny of the bulwarks. In particular, the inspector should:

- compare the freeing port area with that noted in previous reports to ensure that the total area, as well as the area of each individual freeing port, is not less than the rule for that class of vessel;
- control rail capping for cracking and/or excessive wear;
- inspect and sound stanchions for cracking and breakage and for the condition of fastenings; and
- control the securing arrangements of handrails.

[20] See the instruction under the heading Documentation. Any vessel constructed under new standards would have the correct clearance originally. It is possible that a vessel built before new standards came into force would not have the correct clearance and this may be reflected elsewhere during the inspection. The inspector must take care to check the record of the vessel for any dispensation granted or conditions entered in the record.

Deck

The deck should be inspected to determine:

- the condition of the timber;
- the fairness of the surface;
- the condition of the fastenings;
- the condition of the caulking; and
- the condition of the hatches and hatch coamings.

Where a hatch should be weathertight or watertight under the rules, the seal and means of securing the hatch should be inspected and, in case of doubt about tightness, they should be spray/hose tested. Other deck penetrations, such as ice scuttles, should be checked and, if reasonable doubt exists, the area around the scuttle should be hose tested. Any repairs made since the last inspection should be noted.

Hull interior

The inspection of the interior of the hull should be carried out on a section-by-section / compartment-by-compartment basis. Any readily movable items that would otherwise hinder the work of the inspector should be moved. The inspector may also require the removal of covering boards, panels and linings.

The inspector should note the general condition of each section or compartment as regards regular maintenance (including painted surfaces), recent repairs, the presence of oil and/or water and the condition of the atmosphere, particularly in poorly ventilated spaces. In each section or compartment, the deck seams should be checked for leakage. Deck planking, beams, knees and frames must be checked for damage.

Transom space

If the steering mechanism is located in a transom space, the interior inspection could be done at the same time as the inspection of the steering gear.

Where a gland is fitted in the rudder stock tube, fastenings and the adjacent timber should be closely inspected in any areas where water could accumulate. In vessels fitted with a transverse bulkhead, the arrangement for draining the compartment should be checked.

Fish hold

The inspector should require that the fish hold is free of obstructions, and any limber boards or floorboards be removed for access to the bilge, keelson and keel. If the stern gland is accessed from the fish hold, the fastening of the gland should be tested for tightness and the gland condition (packing/seal) examined. Where exposed, the condition of the propeller shaft and/or intermediate shaft should be noted and the tightness of coupling bolts controlled.

In sounding and probing timber, particular attention should be paid to all areas where timbers meet or are jointed, such as deck beams, carlings and beam shelves, and where stringers cover frames.

Where the sides and/or bulkheads of a fish hold are insulated, the insulation should be checked for defects and the thickness measured at one point in every 0.5 m^2 and the results entered in the record of the vessel. Should there be reasonable doubt on the soundness of the insulation or the condition of the hull behind it, the inspector may require sections of the insulation to be removed.

The means of draining the fish hold should be checked and tested if the vessel is afloat or tested when the vessel is put into the water (at a later time).

Engine room

The interior of the hull in the engine space/compartment should be checked in the same manner as the other sections or compartments. In addition, special attention should be given to timber in the way of engine beds and fastenings, as well as where the exhaust pipe(s) passes through the deck or hull.

The bilge should be inspected for signs of water and/or oily water accumulation (actual/recent/old). In the case of actual or recent evidence, the cause should be investigated.

The serial number of the machinery should be checked against the record of the vessel and, if different, the reason should be investigated.

All valves should be checked to ensure that they operate properly and that interconnecting piping is in good condition. Where fitted, filters in the sea suction should be opened and the grid inspected. Sea-suction and overboard discharge valves should be tested in the closed position for leaks by hose testing on the outside of the hull and opening the pipe connections to the valves.

Strum boxes in the bilge system should be opened and the grids inspected for corrosion. Other types of strainers should be inspected for deterioration/damage. Where changeover cocks are fitted to the suction side of a bilge pump, to separate the bilge from the sea suction as well as to the pump discharge

(to prevent bilge water being pumped on deck), these should be tested to ensure that they do operate.

The electrical system should be inspected to establish the condition of the wiring, distribution boards and circuit breakers/switches, and the condition of storage batteries. If the inspector has reasonable doubt regarding the condition of the electrical system, the insulation may be tested and the results compared with the record of the vessel. If the vessel is afloat, the electrical system should be tested to check that the battery starting and charging system is operational and that the ammeter(s) and voltmeter(s) function properly. At the same time, any main engine-driven pump should be tested. Bilge alarms and engine alarms should also be tested.

Alternative means of staring the main engine and auxiliaries should be demonstrated. The general condition of the engine compartment, or section in which the engine is located, should be noted in relation to the safety of a person or persons having to operate machinery or otherwise working in close proximity to moving machinery. For example, proper protective covers over external belt drives should be noted.

Fuel tanks should be examined for their general external condition and any signs of movement. The connections to the tank should be examined and all valves tested. For vessels subject to rules requiring quick-closing valves with a tripping device located outside the engine compartment, the device should be tested.

Air vents from fuel and water tanks (venting to atmosphere outside the compartment) should be checked for damage and/or corrosion and to ensure that the closing piece (plug) is attached to the gooseneck of the pipe. Where the air vent from a fuel tank is required by the rules to be fitted with a non-return device and/or flame retarder, these items should also be checked.

The means of escape from the engine compartment or section should be demonstrated and an escape witnessed.

Accommodation

If the vessel falls under regulations for accommodation, the inspector should be satisfied that no alterations have been made that adversely affect the standard of the accommodation.

The means of escape from the accommodation should be demonstrated to the satisfaction of the inspector.

Forepeak

In the event that the forward part of the vessel is fitted with a bulkhead, it may be treated as a forepeak for the purpose of inspection. The space should be capable of being pumped or otherwise drained and the arrangement should be tested. The access hatch should be inspected and the air vent checked. If the construction is such that no air vent is required under the rules, there may be pockets below the deck of poor air circulation, and these poorly ventilated areas should be closely inspected for signs of wood decay.

Particular attention should be paid to any signs of damage due to contact of the bow with the jetty or other obstruction. The inspector should look closely at the fastenings and planking for signs of distortion due to any sideways blow to the stem.

The mooring post attachment, as the windlass fastenings, where fitted, should be checked.

Superstructure

The seals and locking arrangement for doors in the superstructure should be checked and their operation demonstrated. The glazing and frames of windows should be controlled for signs of damage/deterioration of the sealing compounds. Particular attention should be paid to the side joints at deck level.

In the wheelhouse section of the superstructure, safety equipment and outfit (horn, signal flags, safety lines and radar reflector) should be inspected and all navigation lights inspected and tested.

Where the main engine is controlled from the wheelhouse, the control system should be inspected and tested. If the main engine is normally started from the wheelhouse, the starting system should be demonstrated (this would be done in starting the engine for the test described in the section related to engine compartments).

The view from the wheelhouse conning position should be controlled to ensure that no obstruction has been added since the last inspection that would impair the view.

Masts and rigging

Masts, rigging and stays should be inspected and their attachments checked for wear and corrosion. The shackles should be measured and the wear recorded if within the allowable tolerance; otherwise, they should be renewed. Where a derrick is fitted, the inspector should ensure that it is adequate for the load to be lifted. Often, however, the safe working load (SWL), which should be marked

on the derrick, is omitted. Unless such a requirement is included in legislation, the inspector must use a high level of judgement and carry out a SWL test on the basis of the operational use of the derrick as explained by the owner/skipper. Accidents as a result of derrick failure are not uncommon; therefore, the need for close inspection and testing of derricks should be applied to all vessels covered by these guidelines, irrespective of the material that the derrick is made of.

Anchors, chains and wires

Anchors should be lowered and chains and wires ranged, cleaned and made ready for inspection. Anchor pins and pins of D shackles should be removed and measured. Pins must be renewed as and when the wear reaches 25 percent of the section of pin when new. However, the inspector may decide that the pins have to be replaced if the wear rate is such that the 25 percent limit would be reached prior to the next appropriate periodic inspection. In addition, the inspector may require chains to be annealed. Wires should be carefully inspected for signs of fraying, stretching and kinking. On reassembly, the anchor chain should be turned end for end.

Sacrificial anodes

The surfaces of anodes should be clean and unpainted, and should be renewed if the wastage is more than 50 percent. Hull anodes should be connected to the stern gear and engine. Anodes on rudder blades and other steelwork below the waterline should be secured with bolts and in good contact with the metal.

Freeboard

With the vessel afloat, the draft and freeboard (fore and aft) should be measured and entered in the record of the vessel, together with information concerning its loading at the time of measurement.

Gas bottles

The location of bottled gas cylinders should be inspected for compliance with the rules, and the securing arrangement should be checked. The condition of the connecting hoses should also be checked and the closing valve tested to ensure that there is no leakage. The venting arrangement should be checked to ensure that there are no obstructions to the free flow of air. The fittings and valves of the appliances, to which the bottles are attached, should be tested in the same way.

Vessel marks

Draft marks and other marks assigned by the competent authority, such as the port of registry and the vessel identification marks, should be examined. Such marks and the name of the vessel must correspond to the details given in the documentation of the vessel.

Stability

Where it is obvious from the inspection that alterations have been made to the vessel that would affect the stability criteria, it may be necessary to incline the vessel and to revise the stability information for the vessel. Where it is an obligation for the vessel to carry a stability booklet (as referred to under the section New construction), the revised booklet should be placed on board and the former booklet removed by the inspector.

Trials

On completion of the inspection, it may be sufficient to attend mooring trials, during which all machinery would be operated and the main engine tested under load in both the ahead and astern modes.

However, if repairs have been made to the vessels that warrant a sea trial, the inspector may require the vessel to move from the mooring.

7. STEEL HULL – GENERAL

Unless otherwise stated, the inspection routine for a steel-hulled vessel would follow the same pattern as that set out above for a wooden-hulled vessel and must include references to stability and trials.

Hull exterior

To the extent possible, the hull should be viewed as the vessel is removed from the water. The hull should be inspected externally above and below the waterline for signs of grounding and/or collision. At the same time, the condition of the paintwork should be noted. Sighting of any damage could have an influence on the inspection procedure for the interior of the hull. Detailed inspection by visual means and sounding of the hull plating and welding above and below waterline (as well as a transom) should be made to determine:

- the condition of the plating;
- the fairness of the surface;
- the condition of openings in the hull;
- the condition of all sacrificial anodes.

The inspector should note all indents, inserts and doublers, and their positions should be marked on the shell expansion drawing of the vessel (P&S). At the same time, comparison should be made with the record of the previous inspection. On the same drawing, the position of hull fittings should be noted, as well as sea suctions, overboard discharges, earth plates, etc. If through bolts are fitted, the condition of the bolts should be checked by sounding (the same test should be carried out during the inspection of the interior of the hull). Where reasonable doubt exists, a bolt or bolts may be drawn for inspection.

Where there is wastage and/or pitting, the thickness of the plating may be measured using ultrasonic test instruments operated by an experienced technician. The inspector must witness the measuring and be satisfied with the calibration of the instrument. On completion of the test, the inspector must carry out a drill test on 10 percent of the number of spots so checked with the ultrasonic instrument. The difference between the result of the drill test and the ultrasonic test (at the same spot) must not be more than 0.5 mm.

The forebody should receive close attention to approximately 25 percent of the length of the vessel from the stem for signs of buckling as a result of slamming. A separate record of this area of the hull should be kept and any changes closely monitored because excessive distortion can result in areas of high stress that would ultimately lead to cracking and hull failure. As a general rule, if the distortion exceeds 50 mm, consideration should be given to the replacing the plating and resetting the frames.

The bottom of the vessel amidships should also be checked for the effects of stress buckling.

Particular attention must be given to the risk of corrosion and, consequently, special attention must be given to the condition and placement of sacrificial anodes.

Aperture, rudder and stern gear

Particular attention must be given to the risk of galvanic corrosion and, consequently, special attention given to the condition and placement of sacrificial anodes.

Deck and bulwarks

The deck should be inspected and, where thought necessary, sounded or drill tested to determine:

- the condition of the steel plating;
- the fairness of the surface;

- the condition of hatch and superstructure coamings;
- the condition of deck fittings such as bollards, sheaves and leads;
- the condition of hatch covers; and
- the condition of air vent pipes passing through the deck.

The means for mooring and anchoring the vessel should be checked. Where a windlass or capstan is fitted, the inspector may require its operation to be demonstrated in the release and hauling modes and to test the safety devices.

Any damage to the vessel through contact with a berth or other vessel, which should have first been noted during the inspection of the hull, must be brought forward for closer scrutiny of the bulwarks. In particular, the inspector should:

- compare the freeing port area with that noted in previous reports to ensure that the total area, as well as the area of each individual freeing port, is not less than the rule for that class of vessel;
- where fitted, ensure that the freeing port flaps are free to swing and that they are not unduly distorted;
- control the condition of the rail;
- inspect and sound stanchions in relation to distortion and integrity;
- where there is a section of the bulwark that can be swung inboard (for fishing operations), check the bearings and locking devices; and
- where a section of the bulwark is otherwise open (for fishing operations), the chains or handrails, which protect the opening when the vessel is not fishing, must be checked for effective operation.

Hull interior

The inspection should be carried out on a section-by-section or compartment-by-compartment basis. Any readily movable items that would otherwise hinder the work of the inspector should be moved. The inspector may also require the removal of covering boards, panels and linings.

The inspector should note the general condition of each section or compartment with regard to regular maintenance (including painted surfaces), recent repairs and the presence of oil and/or water in the bilge, as well as the condition of the atmosphere, particularly in poorly ventilated spaces.

Transom space

If the steering mechanism is located in the transom space, the interior inspection could be done at the same time as the inspection of the steering gear.

In general, steelwork should be closely inspected for damage and/or wastage. Particular attention must be paid to the lower sections of cant frames, as well as the seating for the rudder carrier and steering gear, which may have been standing in water.

The lower sections of plating should be cleaned in order to inspect for cracks that are likely to appear in the plating between the cant frames and at welds.

Where a gland is fitted in the rudder stock tube, the adjustment arrangement for the packing should be checked. In vessels fitted with a transverse bulkhead, the arrangement for draining the compartment should be checked and tested.

Where the emergency steering consists of a portable extension to the rudderstock, the capping at deck level should be removed for inspection of its seals. Although this would normally be done during the testing of the emergency steering, it should be carried out at the time of inspection of the transom space if, for some reason, the testing of the emergency steering gear had to be delayed.

Fish hold

The inspector should require that the fish hold be free of obstructions and any limber boards or floorboards be removed for access to the bilge, shaft tunnel (if the shaft passes through the hold) and all bare steelwork. If the stern gland is accessed from the fish hold, the gland condition (packing/seal) should be controlled. Where exposed, the condition of the propeller shaft and/or intermediate shaft should be noted and the tightness of coupling bolts controlled. Similarly, the condition of the hull plating and floors should be checked for signs of corrosion, and all limber holes should be checked to ensure they are clear.

Timber structures in the fish hold should be sounded and probed, as necessary, to detect signs of deterioration and/or wood decay. Where the sides and/or bulkheads of a fish hold are insulated, the insulation should be checked for defects and the thickness measured at one point in every 0.5 m^2 and the measurements recorded. Should there be reasonable doubt regarding the soundness of the insulation or the condition of the steelwork behind it, the inspector may require sections of the insulation to be removed.

The means of draining the fish hold should be checked and tested if the vessel is afloat or tested when the vessel is put into the water (at a later time).

Where fitted, electric lighting should be checked and tested.

Engine room

The inspection procedure should follow the guidance given for a wooden-hulled vessel and take into consideration the following issues that relate to steel-hulled vessels.

Special attention should be given to the electrical system and, in particular, to systems that have to be earthed.

Fuel tanks should be examined internally and externally, and where these are part of the hull, the condition of the hull plating should be given careful attention.

Forepeak

A forepeak should not be used for carrying fuel oil, except where specially approved by the competent authority. In the event that such authority has been granted, such oil that remains should be properly removed and the forepeak cleaned prior to inspection.

The integrity of the collision bulkhead should be checked. The valve connecting the forepeak to the drainage system and its extension to the deck should be operated to the satisfaction of the inspector. It should be noted that in the case of oil having being stored in the forepeak, the inspector should ensure that any means to drain the forepeak should be independent of other drainage systems.

The access hatch, which should be watertight, should be inspected and the air vent checked. In the event that oil has been stored within the forepeak, the air vent should comply with the regulations for an oil tank.

Particular attention should be paid to any signs of damage due to contact of the bow with the jetty or other obstruction. The stem and bow plating, including breast hooks and welding, should be carefully inspected for signs of cracks.

Superstructure

The seals and locking arrangement for doors in the superstructure should be checked and their operation demonstrated. The glazing and frames of portholes and windows should be controlled for signs of damage or deterioration of the sealing compounds.

Particular attention should be paid to the side joints at deck level (whether bolted or welded). Where the superstructure is of a dissimilar metal to that of the hull/deck, special attention should be paid to signs of galvanic action at the joint and/or the securing bolts. Should there be signs of galvanic action, the cause should be investigated and defects rectified.

Masts and rigging

The inspector should determine the condition of the attachment to the deck of masts and rigging attachments placed elsewhere. The reference to derricks as set out in section 6 above also applies to steel vessels.

8. ALUMINIUM HULLS

In certain parts of the world, the use of aluminium to construct a vessel is common for both fishing vessels and vessels used in support of aquaculture activities. Consequently, in the case of aluminium boats, the vessel inspector should be well versed in construction techniques and, because welding is used in most cases, the inspector should be familiar with the welding process and equipment in common use, for example:

- gas tungsten arc welding (GTAW) or tungsten inert gas (TIG) welding; and
- gas metal arc welding (GMAW).

The vessel inspector should also be familiar with pre-welding practices for cleaning and deoxidizing the aluminium prior to welding, as well as standard safety measures. In particular, as already mentioned, close attention should be given to the possible effects of galvanic corrosion where dissimilar metals are joined together. Essentially, the aluminium should not be sacrificed, which means that greater attention should be placed on the control of the means for insulation between the parts, especially where the aluminium is the least noble of the two parts.

In addition, there would be a need to ensure that in the selection of sacrificial anodes these are less noble than the aluminium.

In general, a periodic survey may follow the guidance given above for a steel vessel and the reference to derricks given in section 6 above, which also applies to aluminium vessels.

9. GRP HULLS – GENERAL

The most difficult problem in any inspection, and for GRP vessels in particular, is the determination of the overall status of the hull. Once the mechanical process of observing, classifying and recording individual defects is completed, the inspector must determine the overall effect of these defects on the structural integrity of the vessel. The inspection should include a very thorough examination of the hull laminate and framing in all areas physically accessible, with particular attention given to the risk of osmosis and delamination.

It should also include an intensive search for stress concentrations, through a very close inspection of all areas subjected to high loads. The hull thickness should be determined for comparison with the laminate construction specified on the plans or for comparison with other vessels of similar size and type. A thorough inspection of joints and attachments should be carried out.

Unless otherwise stated, the inspection routine should follow the same pattern as that set out above for a wooden vessel and must include reference to stability and trials.

Hull exterior

To the extent possible, the hull should be seen as the vessel is being removed from the water and when placed ashore or in dry dock the hull should be taken as a whole and inspected for:

- damage to the hull due to collision or grounding;[21]
- the condition of the gel coat;
- signs of void spaces and delamination;[22]
- the condition of the hull in the way of skin fittings;

[21] The damage and thickness measurements should be marked on the shell expansion drawing, which is similar in layout to that for a steel vessel.

[22] Delaminations may best be evaluated by considering the area of the delamination compared with the area of the panel (space bounded by adjacent frames) in which it occurs. The area of a single delamination should not exceed 5 percent of the total area of the panel, and the combined areas of all the delamination in a particular panel should not exceed 10 percent of the total panel area. These are maximum figures applicable to delamination that does not occur in areas of maximum stress at the centre and edges of the panel. When eliminations occur in the centre 10 percent of the panel area, or within 75 mm of the edge of the panel, it is recommended that the actual delamination area be multiplied by two in order to determine the effective area to be used in applying the criteria listed above. Face-to-core delamination in sandwich construction is critical when the sandwich is edge loaded in compression, as are bulkheads in a vessel. Tests have indicated that a circular delamination 25–37.5 mm in diameter is the maximum acceptable with sandwich construction. A delamination larger than 25–37.5 mm in diameter severely reduces the compressive strength. This reduction can be as much as 50 percent for a delamination 75 mm in diameter.

- evidence of resin richness and hard spots;[23]
- surface wrinkles or ripples in a single skin laminate;[24] and
- osmosis.

The underside of the hull of high-speed vessels should be inspected for the effects of bottom impact, which usually, but not always, results in cracking of poorly designed or poorly constructed hulls.

Deck

The deck should be inspected to determine the:

- the surface condition of the deck;
- the fairness (not smoothness) of the surface;
- the condition of the laminate in way of fastenings; and
- the condition of material at hatches and hatch coamings.

Hull interior

Where water/oil has been seen to accumulate, the area should be carefully cleaned and inspected for deterioration (in all probability from hydrolysis).

Transom space

Special attention should be paid to the hull in way of the propeller for signs of cracking and crazing and the possible effects of hydrolysis.

Engine room

The bilge should be inspected for signs of water and/or oily water accumulation (actual/recent/old). In the case of actual or recent evidence, the cause should be investigated and, as elsewhere, the area should be inspected for the possible effects of hydrolysis.

[23] The vast majority of fibreglass vessel defects are due to the stress concentrations induced by hard spots, and the existence of a serious hard spot will have a major effect on the evaluation of a vessel, even though cracking or other evidence of failure is not present at the time of the inspection.

[24] Such wrinkles or ripples should be limited to a maximum of about 3 mm of the depth of the laminate.

Forepeak

Particular attention should be paid to any signs of cracking and grazing from the effects of slamming.

The mooring-post attachment, if fitted, should be checked.

Masts and rigging

Special attention should be given to attachments for masts, stays and rigging to the hull or superstructure. The reference to derricks in section 6 above also applies to GRP vessels.

ADDENDUM TO APPENDIX 13

Many of the procedures for the inspection of a vessel, as set out for the ad hoc and basic levels of fisheries/aquaculture development, may also apply in more developed fisheries or aquaculture sectors. Other factors, however, may need to be addressed in developed fisheries/aquaculture sectors, as described in Chapter 1 of Part 2. For example, fishing vessels and certain types of vessels in support of aquaculture activities may have been built under the supervision of a ship classification society and thereafter entered into class. The purpose of a classification society is to provide classification and statutory services, as well as assistance to the maritime industry and regulatory bodies with regard to maritime safety and pollution prevention based on the accumulation of maritime knowledge and technology. The objective of ship classification is to verify the structural strength and integrity of essential parts of the ship's hull and its appendages, as well as the reliability and function of the propulsion and steering systems, power generation and the other features and auxiliary systems that have been built into the ship in order to maintain essential services on board. Classification societies aim to achieve this objective through the development and application of their own rules and by verifying compliance with international and/or national statutory regulations on behalf of flag administrations.

Consequently, such vessels operating in developed fisheries and aquaculture sectors would be subject to periodic surveys by the ship classification society, as well as to surveys carried out by the responsible administration within the flag State.[25] In both cases, records of surveys carry detailed information and in the case of aquaculture support vessels (that are **not registered as fishing vessels**), they would be subject to the provisions of relevant international conventions related to merchant ships, including "port state control". In addition, the provisions of the International Convention for the Prevention of Pollution from Ships (MARPOL) and the International Convention for the Control and Management of Ships Ballast Water and Sediments could apply.

Furthermore, the International Convention for Safety of Life at Sea (SOLAS) would apply to a greater extent to vessels used in support of

[25] As a vessel may be declassed and no longer subject to the inspection regime of the classification society.

aquaculture activities than they do to fishing vessels. In this regard, certain classes of vessels would be fitted with automated identification systems (AIS) through which the position of a vessel at sea is reported at relatively short intervals. Indeed, an AIS can be given wider consideration for application because the position of a vessel is transmitted on a regular basis and it is an important tool in emergency response situations.

In the case of fishing vessels, the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (the Agreement) was adopted by the FAO Conference in 2009. The main purpose of the Agreement is to address illegal, unreported and unregulated (IUU) fishing through the implementation of robust port state measures. The Agreement is binding and stipulates the minimum measures to be implemented by a port State. However, States are free to adopt more stringent measures than those outlined in the Agreement. Furthermore, as and when the Cape Town Agreement of 2012[26] enters into force, fishing vessels of 24 m[27] in length and over would be subject to port state control.

The experience and qualifications required for surveyors/inspectors at the developed level of fisheries and aquaculture are set out in Appendix 2.

[26] Cape Town Agreement of 2012 on the Implementation of the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977.

[27] Length as defined in the Cape Town Agreement.

APPENDIX 14

MARINE INSURANCE

Flag States should promote access to insurance coverage by owners and charterers of fishing vessels. Owners or charterers of fishing vessels should carry sufficient insurance cover to protect the crew of such vessels and their interests, to indemnify third parties against loss or damage and to protect their own interests.

(Article 8, paragraph 8.2.8, of the Code of Conduct for Responsible Fisheries [Code])

The same considerations should be extended to owners of vessels used in support of aquaculture activities that are not classified as fishing vessels.

1. BACKGROUND

The implementation of the provisions of Article 8, paragraph 8.2.8, of the Code places certain responsibilities on a State and owners and charterers of vessels. It also implies that inspectors of vessels must have an understanding of marine insurance when inspecting a vessel, as well as when carrying out an accident investigation. Consequently, although this appendix provides a background to marine insurance, it may be noted that the emphasis placed on insurance by legislators and industry with regard to capture fisheries and aquaculture activities applies equally to the three stages of fisheries/aquaculture development as set out in 2.1.2 of Chapter 1.

2. INTRODUCTION

History records that marine insurance dates back to the year 50 B.C. at the time of the Phoenicians, when traders sought to protect their interest in the cargoes that were carried by sea throughout the Mediterranean basin. However, it was not until the seventh century that "underwriting" began to develop into the system we know today. At that time, interested persons meeting in a coffee house in London, owned by a certain Edward Lloyd and known as Lloyd's Coffee House, set the foundation for an organized form of underwriting

marine risks. The date of the first meeting is not known but 1688 is generally considered to be close to, if not, the actual year.

The persons who met together at Lloyd's had the same interests as the early Phoenicians, that is to insure cargoes and, in some instances, the ships. The system was simple: a policy was drawn up and each person with an interest signed the policy, each signature appearing below the previous one. This led to the term underwriters being applied to each of the signatories, and this reference has remained unchanged ever since that time.

However, it was not until 1871 that the Society of Lloyd's was incorporated by the Lloyd's Act, thus providing the legal basis and laying the foundation for today's marine insurance market. It is important to remember that only members at Lloyd's could accept insurance business (at that time).

Since those early days of Lloyd's, many other marine insurance **markets** have been established. Not all of them, however, offer the breadth of cover that can be underwritten at Lloyd's, and for this reason and partly because the other insurers follow a similar pattern or even use the same services, Lloyd's is cited in this publication as a prime example of a marine insurer. Lloyd's organization and services are as follows.

- The Lloyd's global network of agencies and their subagents comprise more than 400 Lloyd's agents and more than 800 subagents.
- The primary role of the Lloyd's agent is to provide a surveying service, and evidence of this is usually reflected in the wording of insurance certificates.
- Whereas Lloyd's agents are traditionally known for conducting a wide variety of marine surveys, some agencies have widened the scope of their interests to cover aviation and other non-marine insurance activities. However, in carrying out surveys, whether for insurers or other parties, the agents of those agencies offering non-marine insurance would be employed directly by the parties purchasing insurance and would not be acting as an agent of Lloyd's underwriters, unless specifically instructed by Lloyd's to act on its behalf.
- Many of Lloyd's agents employ their own staff surveyors to carry out day-to-day surveys. Nevertheless, on occasions when specialist knowledge is required, they will find and appoint the appropriate person to conduct the survey.

3. MARINE MUTUAL INSURANCE

Protection and indemnity (P&I) insurance

This type of insurance is arranged through so-called P&I clubs, which are mutual insurance associations, and many of these clubs have been in existence for more than 100 years. They enable ship owners to protect themselves against many legal liabilities for which the normal policies on vessels, freight, etc. do not offer protection. In addition, whereas the insurance markets mentioned above set out to make a profit, the clubs are not motivated in the same way. Although the usual cover offered by the clubs is for merchant ships, the underlying principles of the coverage also relate to commercial fishing vessels and vessels used in support of aquaculture activities. Under certain circumstances, the clubs may also be of interest to operators that have an interest in catch transshipped or otherwise transported by sea. The basic divisions within the cover are:

- protecting risks;
- indemnity risks;
- freight, demurrage and defence class.

Mutual insurance societies

The system of marine mutual insurance societies is widespread and based on cooperation among the members (in rendering assistance to one another) to keep down expenses in order to obtain appropriate cover at a reasonable cost. Because the basic idea is that the members will collectively meet the cost of claims and expenses, the final premium cannot be established until the end of any given financial period. Often, clauses, such as the sister ship clause, play an important part in keeping down the cost of claims. The mutual insurance society often employs its own surveyors or it may contract a company of consultant marine surveyors to be readily available at all times to the mutual insurance society.

Considering the relatively high level of risk associated with commercial fishing operations, a surplus of funds at each year end would be beneficial. Similarly, consideration is usually given to reinsurance in one of the markets.

4. PRINCIPLES OF MARINE INSURANCE

Despite the long history associated with marine insurance, as yet there is no international marine insurance convention or even voluntary rules governing

marine insurance along the lines of the York Antwerp Rules.[1] Consequently, the provisions in national legislation often give different interpretations to conditions set out in the policy, such as breach of warranty.

However, the principles embodied in law of marine insurance are common and are seen as follows.

- There must be an insurable risk.
- A marine insurance policy is a contract of indemnity.
- A marine insurance contract is known as a contract *uberrimae fidei*, which means that both parties have entered into the contract in good faith. If good faith is lacking, such as the non-disclosure of material facts by one party, the other party may avoid the contract.
- The doctrine of subrogation permits the insurer, after indemnifying the loss, to be entitled to the rights, remedies, benefits and advantages of the insured.
- The doctrine of constructive total loss is unique to marine insurance. Constructive total loss has been judicially distinguished from an actual total loss "where the subject matter insured is destroyed or so damaged as to cease to be a thing of the kind insured or where the assured is irretrievably deprived thereof".
- The doctrine of abandonment allows that where indemnification has been made for a constructive total loss, the insured is not entitled to retain the property but must abandon it to the insurer.

There are generally two types of marine insurance policies, one type covering the hull and machinery (and cargo) and the other type covering third-party liabilities. Both types of policies can be complicated and difficult to understand; hence, the proposed assured (and the inspector of a vessel) may have to seek the advice of the experts on marine insurance matters.

However, a casualty, whether or not from an insured peril, would be addressed by the inspector of a fishing vessel or a vessel used in support of aquaculture activities as referred to in Appendix 2.

5. TERMS USED IN MARINE INSURANCE

In order for the fishing vessel inspector to have a clearer sense of marine insurance, an understanding of the terminology in common use would be

[1] York Antwerp Rules are essentially a set of rules to enable conformity to be achieved in the adjustment of general average.

helpful. Some of these commonly used terms are listed below for guidance. The list is not exhaustive.

6. THE SALVAGE ASSOCIATION

The Salvage Association has been in existence for more than 150 years and is regarded as the world's leading organization of marine casualty and investigative surveyors. It has a series of exclusive offices in key parts of the world. It accepts instructions from underwriters in markets worldwide, as well as from ship owners, cargo owners, P&I clubs and the many other parties with interests in maritime trade. Furthermore, it is a separate entity from Lloyd's of London and **is not** part of the network of ship classification societies.

Staff surveyors staff the offices of the association and all of them are qualified and highly experienced marine engineers, naval architects or master mariners.

7. SHIP CLASSIFICATION SOCIETIES

Lloyd's Register of Shipping is one of the better-known ship classification societies. It was formed in 1760 for the purpose of obtaining for use by merchants, ship owners and underwriters a faithful and accurate classification of mercantile shipping[2] and for the administration of which, rules and regulations have been adopted from time to time. As a classification society, it is not part of Lloyd's of London.

The concept of classifying merchant ships, first established in 1760, has been adopted by other classification societies. These societies are, therefore, generally an independent voluntary association of interested parties constituted as a society. They are concerned with the establishment of the technical requirements for the safe and satisfactory standards of manufacture construction and operation of ships, their equipment and machinery. They also determine rules for the control of these standards and survey during manufacture and construction to ensure compliance and to issue relevant certificates,

Most, if not all, of the classification societies have rules for the construction of fishing vessels and vessels used in support of aquaculture activities. Some rules cover vessels built in steel, wood, and composite materials, as well as

[2] Classifying a vessel does not mean classing or certifying it. Etymologically speaking, "classification" means assessing, evaluating and estimating a vessel's reliability and the financial risk it presents. Classifying means assigning a rating that can vary, depending on the surveyor's opinion of its trustworthiness.

aluminium. Some rules relate to very small fishing vessels and those vessels used in support of aquaculture activities. One word of caution, however: even if a vessel is built in accordance with the rules, a classification society does not accept responsibility for stability, trim, vibration or other mechanical characteristics that are not covered by the rules.

Why highlight classification societies if they are not directly linked with the underwriters? One reason is the existence of the institute classification clause used on open covers and open policies (although it is unlikely to be used in relation to small vessels). This clause, which may be incorporated, specifies the minimum standards required if the premium is to remain as stated in the schedule attached to the insurance.

8. MARINE INSURANCE AND THE ROLE OF A VESSEL INSPECTOR

Whereas marine insurance and its consequences appear to be the prerogative of the underwriters and their associations and agencies, the vessel inspector is duty bound to monitor all incidents arising from the operation of fishing and aquaculture vessels of his or her flag State. Apart from reacting to the matter of insurance so required by the regulations and/or by the lending institutions,[3] the inspector must investigate any incident resulting in loss of life or bodily harm to the crew members and/or third parties and/or loss or damage to property. In addition, the inspector would monitor performance under the terms of the insurance[4] and may take part in a survey[5] regarding a claim, depending upon the nature of the casualty.

Therefore, the vessel inspector should have an understanding of the insurance process, the types of cover required by law and the implications of a casualty with regard to:

- the safety certificate of the vessel;
- loss of life and/or injuries to persons;
- the competence of the skipper/master and/or crew; and
- possible negligence by the owners or their managers.

[3] It is common practice for a lending institution or private lender to require a vessel to be insured until the amount borrowed has been repaid. In such cases, a lien would be recorded by the registrar of ships/vessels in favour of the lender.

[4] In particular, the warranties so expressed or implied in the policy.

[5] Joint surveys are regularly organized where more than one party has an interest.

The cause of the damage is one element to be investigated. If the incident has resulted in loss or partial loss, or damage to property or persons, the inspector should make an assessment on the extent to which those in charge of the vessel have acted properly. The surveyor for the insurance company concerned and/or the surveyor for the salvage association might find fault with the behaviour of the skipper/master and/or the crew. It may also be found that the owners or their managers have not exercised due diligence in relation to operational practice or maintenance.[6] Either way, the inspector has a duty to report the facts and make a recommendation that, in turn, could lead to further investigation by the appropriate authority.

The surveyor(s) for the insurer could find that there has been a breach of warranty. This often happens, particularly in cases where the vessel has exceeded the agreed navigational warranties. Should this be the case, there may also be an infringement of the conditions attached, for example, to the licence to fish, thus requiring action to be taken by the competent authority.

As a breach of warranty, for whatever reason, would relieve the insurer of any further interest in the policy, the vessel would be uninsured. Consequently, the inspector of a vessel would have to take appropriate action, in accordance with national legislation on marine insurance, that could result in the vessel being refused permission to go to sea.

For many reasons, when action is taken against an owner, the case may end in legal proceedings, and the inspector of a vessel could be called in support of the prosecution or perhaps as an expert witness. At this point, the integrity and professional skill of the inspector might well be tested.

Therefore, the good inspector of vessels covered by these guidelines must demonstrate integrity, both personal and professional, rationality, decisiveness and communicability.

9. PROTECTION AND INDEMNITY (P&I CLUBS) COVER

Protecting risks

They cover the following:

- loss of life, personal injury and life, salvage claims in respect of the crew and third parties;
- hospital, medical, funeral and repatriation expenses in respect of sick or injured members of the crew;

[6] The negligence clause is often referred to as the Inchmaree clause (being the name of the ship that was the subject of the case that led to the establishment of the negligence clause).

- repatriation expenses, unemployment indemnities and loss of effects of shipwrecked crew;
- extraordinary expenses incurred owing to the outbreak of plague or other disease, and quarantine and disinfection expenses;
- loss of or damage to any other ship, boat or craft, or to property on board them so far as not covered by the usual form of Lloyd's policy with the institute time clauses, hulls, including the running down clause;
- damage to any other vessel or property thereon without actual contact;
- damage to docks, piers, jetties, buoys, cables or other objects of a like nature, and property thereon;
- cost of compulsory raising, removing or destroying the wreck of the entered ship or any other ship sunk in collision with or by fault of the entered ship;
- loss of damage for which a member may become liable under an indemnity given to the owners or operators of tugs, craft, cranes or other appliances used for towing, loading or discharging, etc.;
- oil or any other polluting substance escaping from an entered ship, resulting in loss, damage or contamination, for which the member may become liable; and
- four-fourths collision liability, available by special arrangement.

Indemnity risks

They cover the following:

- claims for loss, short delivery or pilferage of or damage to goods intended to be or being, or which have been carried in the entered ship, including, by special arrangement, claims under a contract of through-traffic;
- fines imposed by governments or customs authorities in respect of short cover or over delivery of cargo, smuggling, breach of immigration regulations, etc.;
- cargo's proportion of general average and/or special charges not recoverable by reason of a breach of the contract of carriage;
- ship's proportion of general average and salvage charges not otherwise recoverable by reason of excessive evaluation of the ship in a foreign country;
- other claims, losses or damages incident to the business of ship owning that the committee considers come within the scope of the association.

- costs of defence in a governmental or other enquiry incurred with the approval of the committee, and in any other case that the committee considers involves a question of importance or principle to the members of this class; and
- third-party liability in respect of owned or leased containers.

Freight, demurrage and defence class

This class covers the legal costs and expenses with respect to disputes that members may have with third parties.

Under this class of cover, the club offers assistance to members in contesting sums that are wrongly claimed from them in respect of vessels that they have entered. It also covers legal advice and the costs and expenses relating to:

- the defence of actions, proceedings or arbitration brought against the member in respect of the entered ship;
- the recovery of damages for breach of charter or contract relating to the entered ship and for the detention of the ship;
- legal representation at coroners' inquests, departments of transport enquiries in the United Kingdom of Great Britain and Northern Ireland and corresponding enquiries in other countries, and formal investigations;
- supply of inferior or wrongly described bunkers, stores or negligent repairs;
- claims by or against the master, officers, crew or passengers and claims arising in connection with building, purchase, sale or mortgage; and
- information and legal advice on matters of general concern to ship owners.

10. TERMS USED IN MARINE INSURANCE

Abandonment means the right to abandon property (a fishing vessel or aquaculture support vessel) in order to establish a constructive total loss.

Act of god refers to an event occurring without human intervention.

Actual total loss means:

- insured property that is completely destroyed;
- insured property of which the owner has been deprived;
- insured property the category of which has been totally changed;
- insured property in a vessel posted missing.

All risks means an insurance policy that covers loss through any cause.

Arbitration means the independent judgement of matters of dispute.

Arrest is the detention of a vessel.

Average

- Average means partial loss.
- General average means sacrificial partial loss to avoid an actual total loss.
- Particular average means fortuitous partial loss that is not general average.

Average adjuster is a person who calculates or adjusts general average claims.

Average bond is an agreement acknowledging a general average liability.

Breach of warranty means non-compliance with an implied or express warranty in a policy by the insured, thereby relieving the insurer of any liability.

Collision clause is a clause that covers liability in the event of a collision.

Constructive total loss is:

- insured property that is lost and incapable of recovery;
- insured property about to become an actual total loss;
- where the cost of preventing an actual total loss exceeds the insured value.

Deductible is the amount or percentage deducted from a partial loss claim, also called excess.

Derelict is a vessel abandoned by its crew but which has not sunk.

Deviation means departure from an agreed or customary voyage, which, if taken without lawful reason, may relieve the insurer of all liability.

Duty of assured clause places an obligation on the assured to care for insured property as if it were uninsured.

Franchise is the level of the amount to be reached before a claim becomes payable.

Frustration of adventure refers to the circumstances where insured property is not lost but the purpose of the voyage cannot be fulfilled.

Implied warranty means warranty that is not expressed in a policy but implied such as seaworthiness and/or the legality of the proposed voyage.

Indemnity means the liability of an insurer for loss under a policy.

Institute clauses are standard clauses published by the Institute of London Underwriters.

Insurable interest is the interest of assured in relation to property exposed to peril.

Insured value means the value expressed in an insurance policy.

Latent defect means a defect in the construction of the vessel or its machinery that is not immediately detectable by normal competent inspection but which may be the cause of subsequent loss.
Notice of abandonment is the notification served by the assured of an intention to pursue a claim of constructive total loss.
P&I club (protection and indemnity) are mutual ship owners' associations providing cover against substantial loss, especially normally non-insurable liabilities (in the ordinary marine market), to one member by contribution by others.
Peril is a risk or hazard insured against.
Running down clause covers legal liabilities consequent upon collision.
Uberrimae fidei means utmost good faith and is the underlying principle of all insurance transactions.
Underwriter is one who agrees to compensate another for loss from an insured peril in consideration of payment of a premium.
Warranty means an undertaking by an assured promising that something shall or shall not be done or that some conditions will be fulfilled.
York Antwerp Rules are internationally accepted rules for the adjustment of general average.

ANNEX 1

LIST OF PARTICIPANTS AT THE EXPERT CONSULTATION ON BEST PRACTICES FOR SAFETY AT SEA IN THE FISHERIES SECTOR

(Rome, Italy, 10–13 November 2008)

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ANNEX 2

EXTRACTS FROM THE CODE OF CONDUCT FOR RESPONSIBLE FISHERIES (FAO, 1995)

ARTICLE 6 GENERAL PRINCIPLES

6.17 States should ensure that fishing facilities and equipment, as well as all fisheries activities, allow for safe, healthy and fair working and living conditions and meet internationally agreed standards adopted by relevant international organizations.

ARTICLE 7 FISHERIES MANAGEMENT

7.1 General

7.1.7 States should establish, within their respective competences and capacities, effective mechanisms for fisheries monitoring, surveillance, control and enforcement to ensure compliance with their conservation and management measures, as well as those adopted by subregional or regional organizations or arrangements.

7.1.8 States should take measures to prevent or eliminate excess fishing capacity and should ensure that levels of fishing effort are commensurate with the sustainable use of fishery resources as a means of ensuring the effectiveness of conservation and management measures.

7.6 Management measures

7.6.5 States and fisheries management organizations and arrangements should regulate fishing in such a way as to avoid the risk of conflict among fishers using different vessels, gear and fishing methods.

ARTICLE 8 FISHING OPERATIONS

8.1 Duties of all States

8.1.5 States should ensure that health and safety standards are adopted for everyone employed in fishing operations. Such standards should be not

less than the minimum requirements of relevant international agreements on conditions of work and service.

8.1.6 States should make arrangements individually, together with other States or with the appropriate international organization to integrate fishing operations into maritime search and rescue systems.

8.1.7 States should enhance through education and training programmes the education and skills of fishers and, where appropriate, their professional qualifications. Such programmes should take into account agreed international standards and guidelines.

8.1.8 States should, as appropriate, maintain records of fishers, which should, whenever possible, contain information on their service and qualifications, including certificates of competency, in accordance with their national laws.

8.2 Flag State duties

8.2.5 Flag States should ensure compliance with appropriate safety requirements for fishing vessels and fishers in accordance with international conventions, internationally agreed codes of practice and voluntary guidelines.[1] States should adopt appropriate safety requirements for all small vessels not covered by such international conventions, codes of practice or voluntary guidelines.

8.2.8 Flag States should promote access to insurance coverage by owners and charterers of fishing vessels. Owners or charterers of fishing vessels should carry sufficient insurance cover to protect the crew of such vessels and their interests, to indemnify third parties against loss or damage and to protect their own interests.

8.2.9 Flag States should ensure that crew members are entitled to repatriation, taking account of the principles laid down in the "Repatriation of Seafarers Convention (Revised), 1987 (No.166)".

8.2.10 In the event of an accident to a fishing vessel, or persons on board a fishing vessel, the flag State of the fishing vessel concerned should provide details of the accident to the State of any foreign national on board the vessel involved in the accident. Such information should also, where practicable, be communicated to the International Maritime Organization.

[1] Refers to FAO/ILO/IMO Code of Safety for Fishermen and Fishing Vessels (Parts A and B) and the Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels.

8.3 Port State duties

8.3.2 Port States should provide such assistance to flag States as is appropriate, in accordance with the national laws of the port State and international law, when a fishing vessel is voluntarily in a port or at an offshore terminal of the port State and the flag State of the vessel requests the port State for assistance in respect of non-compliance with subregional, regional or global conservation and management measures or with internationally agreed minimum standards for the prevention of pollution and for safety, health and conditions of work on board fishing vessels.

8.4 Fishing operations

8.4.1 States should ensure that fishing is conducted with due regard to the safety of human life and the International Maritime Organization International Regulations for Preventing Collisions at Sea, as well as International Maritime Organization requirements relating to the organization of marine traffic, protection of the marine environment and the prevention of damage to or loss of fishing gear.[2]

8.11 Artificial reefs and fish aggregation devices

8.11.1 States, where appropriate, should develop policies for increasing stock populations and enhancing fishing opportunities through the use of artificial structures, placed with *due regard to the safety of navigation*, on or above the seabed or at the surface. Research into the use of such structures, including the impacts on living marine resources and the environment, should be promoted.

8.11.4 States should ensure that the authorities responsible for maintaining cartographic records and charts for the purpose of *navigation,* as well as relevant environmental authorities, are informed prior to the placement or removal of artificial reefs or fish aggregation devices.

[2] Included, because lost and/or abandoned fishing gear can be a navigational hazard.

ARTICLE 10 INTEGRATION OF FISHERIES INTO COASTAL AREA MANAGEMENT

10.1 Institutional framework

10.1.5 States should promote the establishment of procedures and mechanisms at the appropriate administrative level to settle conflicts which arise within the fisheries sector and between fisheries resources users and between them and other users of the coastal area.

ANNEX 3

EXAMPLES OF RELEVANT INTERNATIONAL AGREEMENTS, BOTH BINDING AND VOLUNTARY

The following are examples of international conventions and other legal instruments, agreements or arrangements having a bearing on those engaged in fishing/aquaculture activities. The design and construction of vessels, as well as their operations, are also supported by many resolutions and recommendations.

Standard specifications for the marking and identification of fishing vessels (FAO, 1989) (voluntary)

The purpose is to provide an aid to fisheries management and safety at sea through the marking of fishing vessels for their identification on the basis of the international radio call sign (IRCS) system. The said marks should be visible on both sides of a vessel (hull or sail as the case may be) and on a horizontal surface. The word "vessel" in the specifications refers to any vessel intending to fish or engaged in fishing or ancillary activities operating, or likely to operate, in waters of States other than those of the flag State.

Code of Conduct for Responsible Fisheries (Code) (FAO, 1995) (voluntary, although part of the Code is mandatory)

One of the objectives of the Code is to ensure the long-term sustainability of living marine resources so that these can be harvested by generations to come, thus making a substantial contribution to world food security and employment opportunities. Article 8 of the Code (see Annex 2) further develops the provision regarding fishing operations.

Convention on the International Regulations for Preventing Collisions at Sea (COLREGs), 1972

COLREGs establishes principles and rules concerning lights and shapes to be displayed by ships, as well as establishing traffic rules at sea.

International Convention for the Safety of Life at Sea (SOLAS), 1974, its amendments and protocols

SOLAS promotes safety at sea by establishing a common agreement, uniform principles and rules. Whereas the regulations would apply to many vessels/ships used in support of aquaculture activities, they do not apply to fishing vessels, unless expressly provided otherwise. Therefore Chapter V – Safety of Navigation has to be addressed in the case of fishing vessels (except for those navigating the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of the St Lambert Lock at Montreal in the Province of Quebec, Canada).

International Convention on Maritime Search and Rescue (SAR), 1979

SAR establishes an international maritime search and rescue (SAR) plan covering the needs for ship reporting systems, SAR services and the rescue of persons in distress at sea.

Torremolinos International Convention on the Safety of Fishing Vessels, 1977, the Torremolinos Protocol of 1993 relating thereto (not in force) and the Cape Town Agreement of 2012 on the implementation of the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977

These documents provide uniform principles and rules concerning construction, equipment, stability, radio communications and other safety aspects of fishing vessels.

Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code), IMO, 16 May 2008

Code of Safety for Fishermen and Fishing Vessels, Part A (as revised) (voluntary)

The purpose of Part A of the Code of Safety for Fishermen and Fishing Vessels is to provide information with a view to promoting the safety and health of crew members on board fishing vessels. It may also serve as a guide for those concerned with framing measures for the improvement of safety and health on board fishing vessels but it is not a substitute for national laws and regulations. It addresses decked and undecked fishing vessels of all sizes and recognizes the important role of fisheries management in relation to fishing vessel and

crew safety. Part A of the Code of Safety for Fishermen and Fishing Vessels is amply supported by 20 relevant appendixes with regard to operational safety and health.

Code of Safety for Fishermen and Fishing Vessels, Part B (as revised) (voluntary)

Part B of the Code of Safety for Fishermen and Fishing Vessels provides information on the design, construction and equipment of fishing vessels with a view to promoting the safety of fishing vessels and the safety and health of the crew. The Code of Safety is not a substitute for national laws and regulations, nor is it a substitute for the provisions of international instruments in relation to the safety of fishing vessels and crew, although it may serve as a guide for those concerned with framing such national laws and regulations. The Code of Safety is voluntary. It is wider in scope than the Torremolinos Protocol, and only the minimum provisions to ensure the safety of fishing vessels and the safety and health of the crew are given in this part of the Code of Safety for Fishermen and Fishing Vessels of 24 m in length and above.

Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels (as revised) (voluntary)

These guidelines provide information on the design, construction and equipment of fishing vessels with a view to promoting the safety of fishing vessels and the safety and health of the crew. They are not intended as a substitute for national laws and regulations but may serve as a guide for those concerned with framing such national laws and regulations. It is emphasized that each competent authority responsible for the safety of fishing vessels should ensure that the provisions of the guidelines are adapted to its specific requirements, with due regard to size and type of vessels, their intended service and area of operation. Unless otherwise stated, the provisions of the guidelines are intended to apply to new decked fishing vessels of 12 m in length and above, but less than 24 m. Nevertheless, even where not otherwise stated, the competent authority should, as far as is reasonable and practical, give consideration to the application of these provisions to existing decked fishing vessels.

Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels (voluntary)

These recommendations provide information on the design, construction and equipment of small vessels. They also address the training and protection of the

crew of small fishing vessels, with a view to promoting the safety of the vessel, as well as the safety and health of the crew. These safety recommendations are not intended as a substitute for national laws and regulations but may serve as a guide for those concerned with framing such national laws and regulations. Each competent authority responsible for the safety of fishing vessels should ensure that the provisions of these safety recommendations are adapted to its specific requirements, with due regard to size and type of vessels, their intended service and area of operation. Unless otherwise stated, the provisions of the recommendations are intended to apply to new decked vessels of less than 12 m in length and new undecked vessels of any length intended to operate at sea. Nevertheless, even where not otherwise stated, the competent authority should, as far as is reasonable and practical, give consideration to the application of these provisions to existing vessels.

Implementation Guidelines on Part B of the Code, the Voluntary Guidelines and the Safety Recommendations (voluntary)

The guidelines may address, but need not be limited to: legal implications; administrative requirements; capacity building; enforcement; operational safety; understanding of the technical provisions; and the human element.

International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995 (not in force)

In establishing, by common agreement, international standards of training, certification and watchkeeping for personnel on board fishing vessels, the Convention desires to help promote the safety of life at sea and the protection of the marine environment. It makes provisions for personnel serving on fishing vessels of 24 m in length and above, for skippers/masters and officers in charge of a navigational watch and for chief and second engineer officers where the main propulsion machinery of a fishing vessel is 750 kW or more.

Document for Guidance on Training and Certification of Fishing Vessel Personnel (voluntary)

This document makes provisions for training of personnel serving on fishing vessels of all sizes.

International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)

Detailed regulations covering the various sources of pollution are contained in five annexes to the MARPOL. Annex V – Prevention of Pollution by Garbage from Ships has a bearing on safety at sea whether or not the garbage comes from a ship or a fishing vessel. In the case of fishing vessels, accidentally lost, discarded and otherwise abandoned fishing gear may be a hazard to the safety of navigation.

ILO Work in Fishing Convention, 2007 (not in force)

The new ILO Work in Fishing Convention (No. 188), with the Recommendation (No. 199) that accompanies it, provides a global labour standard that is relevant to all fishers (both male and female), whether on large vessels on international voyages or in small boats operating in domestic waters close to shore. The Convention addresses, in particular, working situations and conditions faced in the fishing industry. The Convention is flexible, so that it is relevant to all types of commercial fishing and can be implemented by governments around the world, whatever their particular circumstances.

ANNEX 4
REFERENCES

FAO PUBLICATIONS

CODE OF CONDUCT FOR RESPONSIBLE FISHERIES, Food and Agriculture Organization of the United Nations, Rome, 1996

FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES 1–12, Food and Agriculture Organization of the United Nations, Rome, 1996–2009:

1. Fishing Operations, 1996
   a. Suppl. 1, Vessel Monitoring Systems, 1998
   b. Suppl. 2, Best Practices to Reduce Incidental Catch of Seabirds in Capture Fisheries, 2009
   c. Suppl. 3, Best Practices to Improve Safety at Sea in the Fisheries Sector, 2015
2. Precautionary Approach to Capture Fisheries and Species Introductions, 1996
3. Integration of Fisheries into Coastal Area Management, 1996
4. Fisheries Management, 1997
   a. Suppl. 1, Conservation and Management of Sharks, 2000
   b. Suppl. 2, The Ecosystem Approach to Fisheries, 2003
      i. Add. 1, Best Practices in Ecosystem Modelling for Informing an Ecosystem Approach to Fisheries, 2008
      ii. Add. 2, The Human Dimensions of the Ecosystem Approach to Fisheries, 2009
   c. Suppl. 3, Managing Fisheries Capacity, 2008
5. Aquaculture Development, 1997
   a. Suppl. 1, Good Aquaculture Feed Manufacturing Practice, 2001
   b. Suppl. 2, Health Management for Responsible Movement of Live Aquatic Animals, 2007
   c. Suppl. 3, Genetic Resource Management, 2008 and Suppl. 4, 5
   d. Suppl. 4, Ecosystem Approach to Aquaculture, 2010
   e. Suppl. 5, Use of Wild Fish as Feed in Aquaculture, 2011
   f. Suppl. 6, Use of Wild Fishery Resources for Capture-based Aquaculture, 2011

6. Inland Fisheries, 1997
   Suppl. 1, Rehabilitation of Inland Waters for Fisheries, 2008
7. Responsible Fish Utilization, 1998
8. Indicators for Sustainable Development of Marine Capture Fisheries, 1999
9. Implementation of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, 2002
10. Increasing the Contribution of Small-Scale Fisheries to Poverty Alleviation and Food Security, 2005
11. Responsible Fish Trade, 2009
12. Information and Knowledge Sharing, 2009

FAO Fisheries (and Aquaculture) Reports:

FAO/SPC Regional Expert Consultation on Safety at Sea in Small Fishing Vessels, FIIT/R737

Expert Consultation on the Role of Small-Scale Fisheries in Poverty Alleviation and Food Security, FAO Fisheries and Aquaculture, FIIP/R749

Regional workshop on safety at sea for small-scale fisheries in the South West Indian Ocean, (FAO/SWIOFC), FIIT/R840

Regional workshop on safety at sea in artisanal and small-scale fisheries in Latin America and the Caribbean, FIIT/R851

Expert Consultation on Best Practices for Safety at Sea in the Fisheries Sector, FIIT/R888

FAO Fisheries Circulars:

Safety at sea as an integral part of fisheries management, FIIT/C966

Aspects of Sea Safety in the Fisheries of Pacific Island Countries, FIIT/C993

Study on Safety at Sea for Small-Scale Fisheries 1. South West Indian Ocean, FIIT/C1024/1

Estudio sobre la seguridad en el mar para la pesca artesanal y en pequena escala 2. America Latina y el Caribe, FIIT/C1024/2

FAO Fisheries and Aquaculture Technical Papers:

Fishing Boat Construction 1, Building a sawn-frame fishing boat, FTP 96

Fishing Boat Construction 2, Building a fibreglass fishing boat, FTP 321

Fishing Boat Construction 3, Building a ferrocement fishing boat, FTP 354

Fishing Boat Construction 4, Building an undecked fibreglass reinforced plastic boat, FTP 507
Fishing Boat Designs 1, Flat bottom boats, FIIV/T117
Fishing Boat Designs 2, V-bottom boats of planked and plywood construction, FTP 134
Fishing Boat Designs 3, Small trawlers, FTP 188
Fishing Boat Designs 4, Small steel fishing boats, FTP 239
Fuel and financial savings for operators of small fishing vessels, FTP 383
Models for an ecosystem approach to fisheries, FTP 477
Human dimensions of the ecosystem approach to fisheries: an overview of context, concepts, tools and methods, FTP 489
Safety practices related to small fishing vessel stability, FTP 517
Fishing harbour planning, construction and management, FTP 539

Other FAO and FAO supported documents:

Safety Guide for Small Fishing Boats, BOBP/REP/112, (BOBP, Sida, IMO, FAO), FAO 2009
The Standard Specifications for the Marking and Identification of Fishing Vessels, FAO, Rome, 1989
Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels, (FAO, ILO, IMO), IMO, London, 2006
Code of Safety for Fishermen and Fishing Vessels, Part A (Safety and Health Practices) and B (Safety and Health Requirements for the Construction and Equipment of Fishing Vessels, (FAO, ILO, IMO), IMO, London, 2006
Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels, (FAO/ILO/IMO), 2012
Document for Guidance of Training and Certification of Fishing Vessel Personnel, (FAO, ILO, IMO), IMO, London, 2001
Safety Recommendations for Decked Fishing Vessels of less than 12 metres in Length and Undecked Fishing Vessels, (FAO, ILO, IMO), FAO, Rome 2012.
Implementation Guidelines on Part B of the Code, the Voluntary Guidelines and the Safety Recommendations, (FAO, ILO, IMO), FAO, Rome 2014.

IMO PUBLICATIONS[1]

International Convention on Load Lines, 1966 and the Protocol of 1988. In force.

1993 Torremolinos Protocol and Torremolinos International Convention for the Safety of Fishing Vessels, IMO, London, 1995

STCW International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, IMO, 1978

STCW-F International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, IMO, London, 1995

Collision Regulations for the Prevention of Collisions at Sea (COLREGS), IMO, London

International Code on Intact Stability, 2008 (IMO Sales Number IB874E)

Report of the Maritime Safety Committee on its eighty-seventh session (Annexes 29 and 33)

Guide for Cold Water Survival (.1/Circ.1185)

Guidelines for Ships Operating in Polar Waters

ILO/IMO PUBLICATIONS

Guidelines on investigation of human factors in marine casualties and incidents

OTHER PUBLICATIONS

Proceedings from the 1st International Symposium for Safety and Working Conditions aboard Fishing Vessels, Université de Québec à Rimouski, Canada 1989

Proceedings from the 2nd International Symposium for Safety and Working Conditions aboard Fishing Vessels, European Commission, El Instituto de La Marina (ISM), Spain Université de Bretagne Occidental France, University of Quebec, Rimouski (Tehcnomar), Canada, in conjunction with ILO, IMO and FAO, Spain, 1992.

Proceedings of the International Fishing Industry Safety and Health Conference DHHS/NIOSH Publication 2003-102

International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)

[1] Note that the Cape Town Agreement of 2012 on the Implementation of the Provisions of the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels was adopted at a Diplomatic Conference held under the auspices of the IMO on 11 October 2012.

ANNEX 5

ELEMENTS FOR CONSIDERATION IN THE DEVELOPMENT OF AN INTERNATIONAL PLAN OF ACTION ON SAFETY AT SEA

The FAO Committee on Fisheries (COFI) members in 1997 found that it would be necessary to have some form of agreement in order to manage the concerned issues in compliance with the Code of Conduct for Responsible Fisheries (Code), which led to the development of international plans of action (IPOAs) being developed through the consultation process and for the approval of COFI.

IPOAs are voluntary in nature and may be followed by individual States, as well as in situations where a regional approach to safety at sea would be beneficial, such as large inland water systems bounded by two or more States. There is also provision within the IPOA concept for individual States to develop a national plan of action (NPOA), which, in essence, becomes a more binding commitment.

Effectively, States should develop, implement and monitor NPOAs for the improvement of safety at sea in the capture fisheries and aquaculture sectors and in doing so, take into account, inter alia*, the effect different resource management systems may have on accidents at sea.*

Outline of an International Plan of Action to Promote Safety at Sea (IPOA–Safety at Sea) within the capture fisheries and aquaculture sectors

PART I BACKGROUND

COFI has regularly addressed the issues of safety at sea and at its Twenty-seventh Session[1] a large number of members expressed concern regarding the fisheries sector, especially small-scale fisheries. It was suggested that FAO

[1] Paragraph 82 of the Report of the Twenty-seventh Session of the Committee on Fisheries (COFI 27), held at FAO headquarters from 5 to 9 March 2007.

should develop guidelines on best practices for safety at sea and that COFI should consider developing an international plan of action (IPOA) on the subject. Furthermore, FAO was also urged to maintain close collaboration with the International Maritime Organization (IMO) on related issues.

The guidelines for Best Practices to Improve Safety at Sea in the Fisheries Sector were completed by FAO in 2014, their purpose being to enable relevant authorities to develop and implement strategies aimed at improved safety, health and conditions of service in capture fisheries and aquaculture activities. They are intended to be applied to all commercial fishing activities and to activities within the aquaculture sector, with particular reference to the operation of water-borne craft.

For the purpose of an IPOA for the reduction of accidents and loss of life in the capture fisheries and aquaculture sectors, the following definitions (as set out in the Part 1 of the Guidelines) would be applicable:

1. "sea" means **all** marine waters, rivers and inland waters;
2. "fishing operations" means an authorized activity in connection with the harvesting of aquatic living resources;
3. "aquaculture" means activities carried out by individuals at sea, including stocking cages and attending to the growing out process and the transfer of grown fish to market;
4. "a casualty investigator" is a person qualified and appointed to investigate a casualty or incident, under procedures laid down in national law for the furtherance of safety at sea and protection of the aquatic environment;
5. "Code" means the FAO Code of Conduct for Responsible Fisheries as adopted by the Twenty-eighth Session of the FAO Conference on 31 October 1995.

ORIGIN

Whereas FAO, together with the ILO and IMO, has had a long interest in issues of safety at sea, by the late 1980s FAO, conscious of an increasing trend in accidents at sea in the fisheries sector, solicited information from flag States regarding the numbers and types of accidents aboard fishing vessels. From the data received, it was estimated that at least 24 000 fishers lost their lives annually, it being noted, however, that there were indeed gaps in the information received. Later, in 1999, the ILO provided a more formal estimate of losses of life in the fisheries sector at 24 000 fishers. In the case of aquaculture activities,

no global estimates are available with regard to accidents and losses of life aboard vessels used in support of the sector.

NATURE AND SCOPE

An IPOA–Safety at Sea would be voluntary. It would be elaborated within the framework of the Code as envisaged under Article 2 (d). The provisions of Article 3 of the Code apply to the interpretation and application of an IPOA on Safety at Sea and its relationship with other international instruments.

The scope of the IPOA–Safety at Sea would extend to all vessels engaged in capture fisheries and vessels used in support of aquaculture activities.

All concerned States would be encouraged to implement it.

OBJECTIVE

Taking into account the objectives of Article 6, paragraph 6.17, of the Code (and brought forward to Article 8, paragraph 8.1.5), the objective of an IPOA–Safety at Sea would be a reduction in the numbers of accidents and loss of human life within the capture fisheries and aquaculture sectors as a consequence of vessel operations.

IMPLEMENTATION

In implementing an IPOA–Safety at Sea, States would carry out a set of activities and, as appropriate, do so in conjunction with relevant international organizations. The exact configuration of this set of activities would be based on an assessment of an analysis of data collected with regard to accidents and loss of life as set out in the guidelines for Best Practices to Improve Safety at Sea in the Fisheries Sector. On the basis of such assessments, if a problem exists, States should give consideration to the adoption of a National Plan of Action to Reduce the Level of Accidents and Loss of Life at Sea in Capture Fisheries and Aquaculture. (See below the Technical Note on the Development of a National Plan of Action on Safety at Sea.)

However, States that determine that an NPOA–Safety at Sea is not necessary should review that decision on a regular basis, particularly taking into account changes in their fisheries, such as the expansion of existing fisheries and/or the development of their capture fisheries and/or the aquaculture sector.

When developing an NPOA–Safety at Sea, experience acquired in the region may be taken into account, as appropriate. Furthermore, FAO would provide a list of experts and a mechanism of technical assistance to countries for use in connection with the development of an NPOA–Safety at Sea.

Each State would be responsible for the design, implementation and monitoring of its NPOA–Safety at Sea.[2]

ROLE OF FAO

FAO would, as and to the extent directed by its Conference, support development and implementation of an NPOA–Safety at Sea through specific, in-country technical assistance projects with Regular Programme funds and by use of extra budgetary funding made available to the organization for this purpose.

Technical Note on the Development of a National Plan of Action on Safety at Sea to Reduce the Level of Accidents and Loss of Human Life in Capture Fisheries and Aquaculture. (NPOA–Safety at Sea)

To reduce the accident rate and loss of life at sea, it is essential to know what happened, how it happened, why it happened and what can be done to prevent it from happening again. To answer these questions, it is necessary to address historical and current records.

LONG-TERM OBJECTIVE

The principal objective of the NPOA–Safety at Sea is improved safety and health of those working in the fisheries and aquaculture sectors, achieved through the development of national strategies and their implementation.

IMMEDIATE OBJECTIVES

The immediate objectives include, but need not be limited to, the attainment of:

- a decrease in the incidence of accidents and loss of life aboard vessels in capture fisheries and aquaculture activities;
- higher levels of professionalism within the fisheries and aquaculture sectors;
- decent and productive working conditions, equity, security and human dignity for women and men; and
- safe and healthy working practices that contribute positively to food security and economic growth.

[2] The basic principles set out above for an NPOA may be readily incorporated in a regional programme, where appropriate, examples being a large lake system or a common fishing zone.

ADMINISTRATIVE AND TECHNICAL MEASURES

Given the cross-sector involvement within government, it is recognized that there would be a need for coordination between relevant government agencies with regard to the development and implementation of a safety strategy related to activities at sea. Consequently, there would be a need to have a single lead agency, nominated by government, to be responsible for an overarching operational safety programme for safety at sea in capture fisheries and aquaculture activities.

There would also be a need to revisit maritime and fisheries legislation regarding the implementation of provisions of international conventions[3] to which the State may be a party such as the:

- United Nations Convention on the Law of the Sea;
- ILO Work in Fishing Convention, No. 188;
- IMO International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW);
- IMO International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F);
- International Convention on Maritime Search and Rescue, 1979;
- International Convention for the Safety of Life at Sea (SOLAS), 1974, its amendments and protocols;
- Convention on the International Regulations for Preventing Collisions at Sea (COLREGs), 1972;
- International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1955 (in force); and
- United Nations Convention on the Law of the Sea of 10 December 1982.

With regard to pertinent voluntary instruments related to safety at sea, Annex 3 of these guidelines for Best Practices to Improve Safety at Sea in the Fisheries Sector may be referenced. Furthermore, particular attention should be paid to the role of fisheries management in relation to safety at sea.

[3] It should be kept in mind that the "Cape Town Agreement of 2012 on the Implementation of the Provisions of the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels" was adopted at a Diplomatic Conference held under the auspices of the IMO on 11 October 2012.

MISSION

The immediate objective of an IPOA–Safety at Sea should be for States and, as appropriate, regional fisheries organizations to achieve a worldwide reduction in the accident rate and loss of life in capture fisheries and the aquaculture sectors.

APPROACHES

States should develop, adopt and make public national plans for the management of safety-at-sea programmes that would take into consideration the composition of the fleet, the requirements for training and certification of sea-going personnel and the availability of safety equipment.

States should also give due consideration to socio-economic issues as a consequence of accidents that directly affect the livelihood of dependent families.

At least every four years, States would be expected to review the implementation of their national plans to address safety at sea for the purpose of identifying more cost-effective strategies for increasing effectiveness.

In implementing the IPOA–Safety at Sea, cooperation among States, which are also addressing safety at sea issues, is recommended, given the global nature of the issue. States should also strive to collaborate through FAO and through bilateral and multilateral arrangements in training and the production of information and promotional material.

LEGAL FOUNDATION

An IPOA–Safety at Sea would be voluntary. It would be elaborated within the framework of the Code as envisaged by Article 2 (d). The provisions of Article 3 of the Code apply to the interpretation and application of this IPOA–Safety at Sea and its relationship with other international instruments.

The IPOA–Safety at Sea document would reflect a furtherance of the commitment of all States to implement the Code. States and regional fisheries organizations should apply the provisions of an IPOA in a manner consistent with international law and within the framework of the respective competencies of the organizations concerned. An IPOA constitutes an element to improve safety at sea in the capture fisheries and aquaculture sectors.

GENERAL PRINCIPLES

States should, to the extent permitted by national laws and regulations, ensure that decision-making processes are transparent and achieve timely solutions

to urgent matters. States, in accordance with appropriate procedures, should facilitate consultation and the effective participation of industry, fish workers and environmental and other interested organizations in decision-making with respect to the development of laws and policies related to fisheries management, development, international lending and aid.

States should ensure that facilities and equipment, as well as all fisheries activities, allow for safe, healthy and fair working and living conditions and meet internationally agreed standards adopted by relevant international organizations.

States should ensure that health and safety standards are adopted for everyone employed in fisheries operations. Such standards should not be less than the minimum requirements of relevant international agreements on conditions of work and service.

States should make arrangements individually and together with other States or with the appropriate international organization to integrate fishing operations and, where appropriate, aquaculture activities into maritime search and rescue systems.

States should enhance, through education and training programmes, the education and skills of fishers and those engaged aboard vessels in aquaculture activities, taking into account the need for professional qualifications. Such programmes should also take into account agreed international standards and guidelines.

States should, as appropriate, maintain records of vessel personnel, which should, whenever possible, contain information on their service and qualifications, including certificates of competency, in accordance with their national laws.

In the event of an accident to a vessel or persons on board a vessel, the flag State of the vessel concerned should provide details of the accident to the State of any foreign national on board the vessel involved in the accident. Such information should also, where practicable, be communicated to the IMO.

States should ensure that fishing and aquaculture activities are conducted with due regard to the safety of human life and the IMO International Regulations for Preventing Collisions at Sea, as well as IMO requirements relating to the organization of marine traffic, protection of the marine environment and the prevention of damage to or loss of fishing gear and aquaculture cages.

States should report on the progress of the assessment, development and implementation of their NPOA–Safety at Sea as part of their biennial reporting to FAO on the Code.

ANNEX 6

IMO SHIP IDENTIFICATION NUMBER SCHEME

INTERNATIONAL MARITIME ORGANIZATION

E

ASSEMBLY
28th session
Agenda item 10

A 28/Res.1078
15 January 2014
Original: ENGLISH

Resolution A.1078(28)

Adopted on 4 December 2013
(Agenda item 10)

IMO SHIP IDENTIFICATION NUMBER SCHEME

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety and the prevention and control of marine pollution from ships,

BELIEVING that the enhancement of maritime safety and pollution prevention and the prevention of maritime fraud could be facilitated if a permanent identification number were assigned to a ship which would remain unchanged upon transfer of its flag and would be inserted on the ship's certificates,

RECALLING ALSO that, by resolution A.600(15), it adopted the *IMO Ship Identification Number Scheme*,

RECOGNIZING the need for the *IMO Ship Identification Number Scheme* to be revised to allow its voluntary application to ships of 100 gross tonnage and above, including fishing vessels,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its ninety-second session,

1 ADOPTS the *IMO Ship Identification Number Scheme*, for implementation on a voluntary basis, as set out in the annex to the present resolution;

2 INVITES Governments concerned to implement the scheme, as far as it is practicable, and to inform the Organization of measures taken in this respect;

3 REQUESTS the Maritime Safety Committee to keep the scheme under review for further improvement as may be necessary;

4 REVOKES resolution A.600(15).

Annex

IMO SHIP IDENTIFICATION NUMBER SCHEME

Introduction

1 The purpose of the scheme is to enhance maritime safety and pollution prevention and to facilitate the prevention of maritime fraud. It is not intended to prejudice matters of liability, civil law or other commercial considerations in the operation of a ship. The scheme may be applied by Administrations on a voluntary basis for new and existing ships under their flag which are engaged in international voyages. Administrations may also wish to assign the IMO numbers to ships engaged solely on domestic voyages and to insert the number in the national certificates.

Application

2 The scheme applies to seagoing ships of 100 gross tonnage and above, with the exception of the following:

- ships without mechanical means of propulsion;
- pleasure yachts;
- ships engaged on special service[1];
- hopper barges;
- hydrofoils, hovercraft;
- floating docks and structures classified in a similar manner;
- ships of war and troop ships; and
- wooden ships in general.

Assignment of IMO number

3 The IMO number is a number, allocated by IHS Maritime[2] at the time of build or when a ship is first included in the Register of Ships, with the prefix IMO (e.g. IMO8712345). Administrations which have decided to implement the scheme are invited to assign all appropriate ships flying their flags, or cause them to be assigned, the IMO numbers and to insert them on ships' certificates.

4 For new ships, the assignment to the IMO number should be made when the ship is registered. For existing ships, the assignment of the IMO number should be made at an early convenient date, such as when the renewal survey is completed or new certificates are issued.

5 Administrations implementing the scheme are invited to inform the Organization accordingly, for circulation to other Governments.

1 For example, lightships, floating radio stations, search and rescue vessels.
2 Formerly known as IHS-Fairplay (IHS-F).

6 Official publications and other information from IHS Maritime are sources for referencing the identification number. If the particulars of a ship do not correspond to those shown in the Register of Ships and its supplement because, for example, the ship had changed name, or the port State control officer had doubts as to whether the numbers given on the certificates were genuine, further clarification may be sought from IHS Maritime, the IMO Secretariat or the flag State.

Certificates on which the IMO number is to be inserted

7 The IMO number should be inserted on a ship's Certificate of Registry which includes the particulars identifying the ship, and on all certificates issued under IMO conventions when and where appropriate. It is recommended that the IMO number also be inserted in other certificates, such as classification certificates, when and where appropriate. The IMO number should preferably be included in the box headed "Distinctive number or letters" in addition to the call sign.

How to obtain the IMO number

8 To obtain an IMO number for both new and existing ships and to make ad hoc enquiries, please contact the following website www.imonumbers.ihs.com or requests can be sent to IHS Maritime at the following address:

IHS Maritime
(Part of IHS Global Limited)
Sentinel House
163 Brighton Road
Coulsdon, Surrey CR5 2YH
United Kingdom

Email: ship.imo@ihs.com
Tel: +44 (0) 203 253 2404
Fax: +44 (0) 203 253 2102

New ships (on order and under construction)

9 The IMO number can be obtained by one of the following methods:

.1 inquiries should be addressed to IHS Maritime by telephone, email or facsimile. In making such inquiry particulars of the ship should be presented[3].

Based on the above information, IHS Maritime will provide the necessary IMO number free of charge. If there is no data in the IHS Maritime new construction file on the ship concerned, a new record on that ship will be created and the IHS Maritime number will be assigned;

.2 online access to the new construction file through Sea-web (IMO has access to this system); or

.3 application through IHS Maritime, which will provide a service of regular listings of the order book with selected data items, produced for a client's specification.

[3] A list of particulars can be found in the form annexed to circular letters on the *IMO Ship Identification Number Scheme* (e.g. Circular Letter No.1886/Rev.4).

Existing ships

10 For existing ships, IHS Maritime is prepared to answer ad hoc requests free of charge up to a reasonable point of acceptability.

Inquiry to the IMO Secretariat

11 The IMO number may also be obtained free of charge from the IMO Secretariat (Maritime Safety Division – facsimile: +44(0)20 7587 3210 or email: IMOnumbers@imo.org) which has access to the Sea-web system. In making such an inquiry to the IMO Secretariat, information on particulars of the ship (as in paragraph 9.1) should be provided. The quickest route for the issuing of a number is to contact IHS Maritime directly at the address in paragraph 8.

These guidelines have been produced to support implementation of the Code of Conduct for Responsible Fisheries with regard to safety at sea in the fisheries sector. Their purpose is to enable relevant authorities to develop and implement strategies aimed at improved safety, health and conditions of service at sea in capture fisheries and aquaculture operations. They apply to all commercial fishing activities, as well as activities at sea within the aquaculture sector. Furthermore, the principles therein, may also be applied to vessels engaged in fisheries research. However, while these guidelines are not directed at sport and recreational activities carried out within the aquatic environment, administrations responsible for such sectors may well take note of the safety and health issues therein.

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