A GUIDE FOR THE IMPLEMENTATION OF SAFETY PROGRAMMES IN FISHERIES

Safety training for fishermen tends to focus on institutional training in fisheries schools established for those serving in the larger size of fishing vessel (>24m). This has been brought about because of international convention, and consequent legislation being introduced, setting minimum standards in the construction and equipment of vessels and for the certification of the crew of these vessels. Most education authorities of the coastal states had to introduce courses to meet the training required for the certification of crew members, and most placed a high emphasis on safety. Whereas the minimum levels for these courses were more readily set for the larger vessel, no internationally acceptable guidelines for the smaller vessel were available prior to 1988. At that time the member governments of FAO/ILO/IMO approved a "Document for Guidance on Fishermen's Training and Certification". This document addresses all vessels irrespective of length, divided into three categories.

It would be helpful to review the manpower needs created by the new categorization . In the Lloyd's Register of Shipping there are 88,000 vessels over 100 ton (ie. approx. 24m), of which some 24,000 are fishing vessels, employing approximately 500,000 fishermen. The number of fishing vessels in the 25 - 100 ton class(ie. approx 12 - 24m) is estimated to be 300,000, employing 2,000,000 fishermen. On the other hand, the class in the category of less than 12m is estimated to employ above 10 million fishermen mainly at artisanal or subsistence level and mostly in the developing countries. Thus the Document for Guidance has set considerable responsibilities before the responsible authorities worldwide.

In order to assess the global implications concerning occupational safety for fishermen, it is proposed to categorize the countries of the world into four classes.

CLASS 1

This group consists of flag States with very large industrial fisheries and distant water fleets which have more than 60 vessels over 500 tonnes. These large vessels are similar to merchant ships and the training and certification is similar. Included in this category are U.S.S.R, Japan, Korea (Rep.), Poland, Spain, Norway, Canada and China. These countries account for 75 percent of this class of vessel and the countries owning these vessels land 47 percent (ie landings from all sizes of vessel) of the world's total catch. Since certification and training of crews for this class of vessel are similar those of its merchant marine, these countries should have sufficient experienced personnel and resources to mount effective safety training programmes taking into account the type of accident and size of vessels involved.

CLASS 2

The second group of flag States are those which have on register at least 100 vessels larger than 50 tons, and which have developed economies. This

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group would include most European countries, the U.S.A., Mexico, South Africa, Australia and New Zealand. Again these countries usually have legislation for the construction of vessels and for the certification of seafarers in force and have sufficient expertise for training the relatively small number of personnel for industrial and artisanal fisheries.

CLASS 3

The third grouping is for the medium-sized industrial fleets (i.e. more than 100 vessels over 50 tonnes) and which have developing economies and/or which have a significant artisanal fishery.

CLASS 4

These are the countries which have little or no industrial fisheries and have moderate to small artisanal fisheries. They sometimes lack the demand to establish training institutes are geographically and/or politically isolated. This group includes most of the Pacific and Caribbean island states and the coastal countries of Africa and Asia not listed in the previous groupings.

A list of the countries is shown in Appendix 1.

It can be seen that the countries in Class 1 and Class 2 are able to look after their own needs. The countries where problems with lack of training or extension occur are those in Classes 3 and 4.

The countries in Classes 3 and 4 have the vast majority of fishing craft which are under 12 m. It is very difficult to obtain exact figures, but it is estimated that 10 million fishermen are in this category and if we apply the same accident rate as is found in some fisheries , which is about 1 percent, then that 'estimate' would give around 70,000 deaths per year. Such fishermen find that the dangers that they face are quite different from fishermen working in trawlers in the North Atlantic or tuna pursers operating in the Pacific.

Most of the countries in Class 3 have fisheries training institutions (many established initially with FAO assistance) and legislation enacted for certification (even though in many cases they are inappropriate and unenforceable). Currently institutes are being established in Yemen (PDR), Pakistan and Mozambique. However, the success of established fisheries institutes in continuing their role in training and extending their activities to the artisanal fisheries is of differing standards:

- Some with several fisheries institutes (i.e. China, Thailand, Indonesia, India, Philippines) have been remarkably successful in training fishermen for industrial fisheries, but are faced with a massive problem in extending their safety programmes to the artisanal fishermen (6 million fishermen in this group of countries, 4.3 million in China alone).

- Another group of countries which have relatively successful training institutes is in South and Central America. This is perhaps aided by the majority of countries having a common language and an established network of training institutes and standards.

The Pacific islands are a prime example of Group 4, where there are

numerous islands which are now considering implementing legislation but face great problems in meeting the training requirements of such legislation. They have the political and economic cohesion of the South Pacific Fisheries Forum, but because of the low demand find it difficult to justify one small training institute, if at all, and the need might be better met by using peripatetic lecturers/examiners utilizing local education institutes.

If anything can be learned from a comparison of the successful and unsuccessful institutes over the last twenty years, it is that there would appear to be a minimum size of institute below which it is unlikely that success can be achieved on a continuing basis without inputs from donor agencies. This critical size would appear to be determined by the core of professionals involved in instruction, which if too small (ie. below 5) tends to lack a breadth of experience needed and a regular infusion of new blood. On the other hand, above a critical level (ie. above 10) the institutes tend to be continually revitalised by the occasional new recruitment and potential promotion prospects of its staff. One method that can be used to increase the numbers of professional staff to meet this 'critical size' is to create a network of institutes and to encourage the flow of staff and ideas between the institutes in the network, or alternatively, combine the training and extension service where this does not already exist.

The problems of extension programmes to the artisanal fishermen comes firmly within the mandate of FAO, and it is intended to build on the foundations of the training institutes to provide methodologies and guidelines to meet the extension needs of the artisanal fishermen. Where the training institute is considered weak, this will be strengthened institutionally at the same time as strengthening the extension service. Safety should be made a central focus of these extension programmes, and it is surprising that at the moment few of them consider safety as an extension topic.

Responsibility of Administrations in Safety Programmes

Some of the responsibilities of the higher levels of administration should also be addressed. Ministries responsible for training, extension, accident monitoring, legislation enforcement, and search and rescue should be identified. It is very rarely that all these will come under the same Ministry. (ie the responsible authority for fisheries is often unaware of the existance of arrangements for Search and Rescue). The need for legislation should be discussed and the recurrent cost of enforcing the legislation estimated. As a broad outline, if legislation is going to produce more problems for the fishermen than it solves then it should not be considered.

If it is decided to introduce legislation for certification of fishermen, then certificates of service should be awarded to fishermen who have served in a position for a given period of time. This could be accompanied by a short course on safety without examination. Certificates of Competency should only be awarded after examination.

Governments should also provide good information services to fishermen and fishing communities with particular items of interest to the target group. Regular radio programmes have been particularily successful in some developing countries in carrying general information (eg. fish prices) to fishermen. These then become very effective when weather or navigational warnings have to be transmitted to the regular audience of fishermen.

Methodology of Implementing Safety Programmes in Classes 3 and 4

It is obvious that for small boats and canoes, training, if training is required, has to be very different from the safety training courses already conducted in fisheries colleges in industrialized countries. In order to assist the competent authorities to carry out a safety programme for fishermen which includes both training and extension, they should follow a systematic approach to the problem, e.g.

(1) A survey of the fishing craft and their range of operation.

(2) A survey of the types of accident that has happened in the past.

(3) An analysis of (1) and (2) above and estimate of work programme involved in establishing a safety programme.

(4) Agreement on responsibility for each component of the programme, and quantification of training/extension required and expertise to carry out programme.

(5) Obtaining funds and implementation of the programme.

(6) Subsequent monitoring of the effectiveness of the programme.

(1) Survey of craft and their range of operation

This activity has to be completed first and the subsequent survey on accidents will have to be assigned to what type of vessel and where the accident occurred. It will be useful to include the locations of the fishing craft to be used in the subsequent logistics of the training programme. Most fisheries departments will have this data available for other purposes so the exercise might not involve more than a desk study of the data available. The area of operation is required as the further from shore the fisherman operates the greater the danger and therefore the more safety precautions he has to adopt. The results will be used in the estimation of the magnitude of the training/extension programme. (Extension, in this case, is defined as training activities taken to the fishermen rather than taking the fishermen to the training.)

It is suggested that a classification of the type of craft and the area of operation should be as follows:

Type of Craft	Range of Operation
(1) Paddle canoe	Inland waters
(2) Sail canoe	Inshore (1 - 3 mi)
(3) Canoe with outboard	Coastal (3 - 20 mi)
(4) Boat with outboard (less than 12 m)	Offshore (20-200 mi)
(5) Boat with inboard engine (less than 12 m)	Oceanic (>200 mi)
(6) Decked boat over 12 m but less than 24 m or fishing vessels powered by less than 750 kW	
(7) Decked boats over 24 m or powered by 750 kW or more	

(2) Survey of the accidents on fishing craft

This activity has to deal with the type of accident that has occurred in the past. The data might be available from the Department of Marine Transport for larger boats or might have to be obtained by hearsay from local fishermen or from the local fisheries officer. The data collected should include accidents to fishermen and occupational illness, in addition to accidents to craft.

Accidents to the Craft	Accidents to the Fishermen
Fire	Drowning
Foundering	Injuries from machinery
Capsizing	Injuries from fishing gear
Mechanical breakdown	Burns and scalds
Collision	Falls
Missing	Occupational illness
Stranding	

(3) Analysis of collected data

Although the classification scheme outlined above might appear unwieldy, when the accident data is collected it should readily highlight the "problem" areas. This might have been obvious previously, but the problem will have now been quantified and its relative importance established. It will now be easy to answer the questions of "how many accidents caused by mechanical breakdown ?" or "How many fishermen lost?". With the data from the two previous stages, it will now be possible to see if a problem exists - if it does not, then no further action is required; however, this would be the exception rather than the rule. If there is a safety problem, then the fishing craft can be sub-divided into separate sections that require different remedial action. Normally this will be on the basis of vessel size, but on occasions it might be according to the type of fisheries operation, or into different geographical regions for administrative reasons.

Alternatives or activities complementary to training/extension should be examined. Examples of measures taken by administrations to increase safety in the fishing sector are:

- better weather forecasts
- reporting systems for vessels overdue (i.e. S.A.R.)
- carrying sails
- accident reporting systems
- leading lights and sectored lights
- construction of safe landing places
- compulsory surveys

etc.

For the purposes of the present exercise, the safety programme will have to be divided into two sections: one which requires full-time attendance at a training programme for fishermen requiring certificates and safety courses, and the other which requires an extension programme carried out by the

APPENDIX 1

CLASSIFICATION OF COUNTRIES

CLASS 1

U.S.S.R., Japan, Korea (Rep), Poland, Spain, Norway, Canada and China

CLASS 2

Europe - Belgium, Denmark, France, Germany (FR), Greece, Iceland, Ireland, Italy, Netherlands, Portugal, Sweden, U.K.

Others - U.S.A, Mexico, South Africa, Australia, New Zealand

CLASS 3

Europe	Africa	N. Amer.	S. Amer.	Asia
Yugoslavia	Ghana	El Salvador	Argentina	Indonesia
	Morocco	Honduras	Brazil	Malaysia
	Nigeria	Panama	Chile	Phillipines
	Senegal		Peru	Thailand
	Egypt			Turkey
				India

CLASS 4

Africa		N. Amer	S. Amer	Asia	Oceania
Algeria	Cameroon	Guatemala	Colombia	Bangladesh	All
Congo	Cote D'Iv	Nicaragua	Guyana	Cyprus	countries
Gabon	Kenya	St. Pi & M	Suriname	Israel	except New
Liberia	Libya		Uruguay	Sri Lanka	Zealand and
Madagascar	Mauritania			Yemen	Australia
Mauritius	Senegal				All
S. Leone	Tanzania				Caribbean
					islands

Note:- Land-locked or partially land-locked countries which for geographical reasons have not or cannot develop fisheries have not been included in the Tables. The designations "developed" and "developing" economies are intended for statistical convenience and do not necessarily express a judgement on the stage reached by a particular country or area in its development process.

REFERENCES

"Document for Guidance on Fishermen's Certification and Training" is available from the International Maritime Organisation, 4 Albert Embankment, London SE1 7SR, United Kingdom.

FAO Bulletin of Fisheries Statistics - Fishing Fleet Statistics 1986

APPENDIX 2

ACTIVITIES AND SUB-ACTIVITIES ASSOCIATED WITH THE IMPLEMENTATION OF A TRAINING/EXTENSION PROGRAMME

ACTIVITIES	SUB-ACTIVITIES
1. SURVEY OF CRAFT AND RANGE OF OPERATION	Preliminary desk study
2. SURVEY OF ACCIDENTS	(a) Annual questionnaire to Fishery Extension Officers (b) Details from Marine Department (c) Information from Statistical Department
3. ANALYSIS OF COLLECTED DATA	(a) By size of vessel (b) By range of operation (c) By fishing method (d) By accident (e) If programme exists compare with historical data to evaluate performance
4. AGREEMENT ON THE RESPONSIBILITY AND QUANTIFICATION OF TRAINING PROGRAMMES	(a) Liaison with other Departments (b) Alternatives and complementary activities considered (c) Allocation of responsibilities for various sectors (d) Identification of facilities, materials and training/extension expertise and also constraints for each sector (e) Decide whether training/extension should be for a limited period or if there is a continuing recurrent need
5. OBTAINING FUNDS AND IMPLEMENTION OF PROGRAMME	(a) Preparation and costing of project proposal (b) Submission of government (or donor) (c) Compile training objectives, syllabi and module descriptors (d) Train trainers/extension officers and acquire facilities and materials (e) Production of training/extension materials (f) Compile teaching extension programme (g) Recruitment of trainees and implementation
6. MONITORING AND EVALUATION	(a) Assess students to determine whether teaching objectives are met (b) Evaluation of trainers/extension workers (c) Evaluation of materials (d) Return to Activities 2 and 3 at regular intervals and if considered necessary repeat Activities 4, 5 and 6.

A GUIDE FOR THE IMPLEMENTATION OF SAFETY PROGRAMMES IN FISHERIES

ABSTRACT

In response to the many recommendations brought to the attention of FAO and other UN agencies for further studies related to "Safety at Sea" as it concerns fishermen, FAO has made preliminary investigations through its field programme. This revealed a lack of information concerning acidents, those involved and, in many cases lack of appropriate regulations at national level.

This paper reflects some thoughts on how FAO considers the problems associated with fishermens safety may be tackled. It quantifies the problem through the categorisation of vessels by size and the distribution of fishermen within these categories. It outlines a methodology for the implementation of safety programmes.

Discussion is invited on the concept in order to assist FAO to prepare a comprehensive proposal as a working document to be presented to the appropriate international organisation. In this connection the guidance of IMO and ILO would be welcome since both organisations and FAO have standing Joint Technical Working Groups on safety and conditions of work and service in the fishing industry.

This version was translated into French for the final presentation - Hence the editing remarks

DRAFT
18/7/89.

THE TYPE OF ACCIDENT ASSOCIATED WITH SMALL VESSELS IN DEVELOPING COUNTRIES AND SUGGESTED PREVENTATIVE MEASURES

Fishing vessel safety in developed countries has a relatively long history, a wealth of literature and teaching methodology. Courses have been organized to cover Fire-Fighting, Survival at Sea, First Aid and Elementary Safety Precautions, as well as other associated subjects. The courses have been introduced over a period of time so that the courses are modified and adapted according to the type of accident that is occurring. To complement this system an effective and comprehensive method of accident reporting has been introduced. Legislation has been introduced to cover the certification of crew members, standards of construction, equipment to be carried and regular surveys to ensure the seaworthiness of the vessel. All these measures have taken into account the history of past accidents.

In developing countries a somewhat different profile of accident ~~are~~ is believed to exist, especially on smaller vessels. The factors which lead to differences in safety standards, even for vessels of the

same class, between developed and developing countries are as follows

(a) Educational standards in some of the developing countries ~~is~~ are. very low and illiteracy among practising fishermen in rural areas. is very high. This means that dissemination of material written for developed countries, even though translated into local languages, is inappropriate.

(b) Many developing countries have foreign exchange problems, which means that spares and equipment have to be purchased with 'hard currency', which involves a great deal of bureaucracy and red tape and a loss of time if the purchase has to be imported. Under these circumstances it is not unusual for vessels to go to sea with known defective equipment on board, even though the owners have the money in local currency to pay for the required item. This applies to safety equipment such as fire extiguishers and lifejackets. [Although it is easy to scoff at such measures, the simple calculation of the cost of supplying every fisherman with a life-jacket and every boat or canoe with a fire extinguisher would be in the region of US$ 750 million.]

(c) In many cases poor workmanship or maintenance is responsible for emergency situations. Electrical faults cause fires and plumbing faults cause leaks.

(d) In many countries vessels are not allowed to fit radios because of security regulations. This is especially restrictive in the

possibility of such a vessel wishing to transmit a MAYDAY message.

(e) In developing countries, there is a different value given to human life and to human labour (i.e. life is cheap). Under such conditions, when little or no employer/employee agreements are in force and there is high unemployment, abuses and bad working conditions are the norm, resulting in a high accident rate.

In addition to the factors outlined above, there is a distinct difference in the proportion of the total fishermen employed on industrial vessels in the developed countries and the comparative proportion in developing countries. As an example of this, we can compare a developing country and a developed country in the size profile of their vessels.

Why a new page?

Country	Number of vessels in each class			
	<25 tonnes	25–50 tonnes	50–100 tonnes	>100 tonnes
UK	620	957	463	272
Indonesia	31,645	45	149	83

This means that the vessels which are used in developing countries are usually smaller than those in industrial countries and that the differences in the type of accident occurring will reflect this difference. Hence, we shall first deal with the difference in the type of accident between large and small vessels.

(a) It is generally accepted that the smaller the vessel then the reaction time in the case of an emergency is much less. This is true in the case of fire, foundering, collision, capsizing etc. This is such that actions in a small vessel have to be instantaneous and instinctive.

(b) In smaller vessels, little or no survival equipment is carried so that the craft itself has to act as the 'escape module'. In some cases this is assisted by the positive buoyancy of the hull under all conditions (i.e. log canoes, unmotorised boats). However, in such cases there has been reported ~~some instances,~~ difficulties in the crew being able to climb onto the upturned hull ~~have been reported.~~

(c) In the ~~very~~ smallest class of fishing vessel, where trips may be only a day or more in duration, the need for safe practices is not so fully appreciated as in larger vessels undertaking longer trips, and therefore legislation only applies to larger vessels (even in developed countries). This type of legislation discriminates against safety training in small vessels as the authorities tend to concentrate on the sectors of the industry in which there is a known and quantified demand identified. [Given the large number of smaller vessels in the developing countries, it is doubtful whether these countries could afford to run the courses even if legislation was in place.]

Revise ~~ments~~ at end.

education.

Having dealt with some of the circumstances that are different, we can now look at some particular types of accidents that occur and how they differ between developed countries and developing countries. These will be classified as follows

(a) Injury to personnel and survival at sea
(b) Fire
(c) Foundering
(d) Collision
(e) Stranding
(f) Machinery breakdown or disabling
(g) Capsizing
(h) ~~Occupational illness~~

(a) Injury to personnel and survival at sea

The presence of winches and machinery on industrial vessels means that accidents tend to be more serious on these larger vessels than on smaller vessels. On the other hand, the lower degree of training in the developing countries and their lack of experience would mean that the accident rate would probably be higher if this sector only was industrial compared.

In the smaller boats, simple injuries such as cuts, burns, fish bites and injuries caused by fish spines are thought to be more common because the crew are involved in a greater variety of tasks and they have, in general, less protection by clothing and protective gear than their counterparts in developed countries. These injuries include injuries to the feet, knife cuts (sometimes caused by blunt knives), and ~~burns through coming up against hot engine parts.~~ accidental amputation of fingers in manually hauling fishing nets. This type of accident is exacerbated by the fact that very few of the boats in developing countries carry medical kits and simple injuries might well become septic due to lack of elementary cleansing of the wound at the time of the incident.

From p 7

It is believed that the light clothing worn by native fishermen might well contribute to heatstroke and, on the other hand, to hypothermia, if the fisherman is immersed in the water for extended periods. Hypothermia has been increasingly identified as a major cause of death in temperate waters, but has not been well documented in tropical waters. The most indicative incident occured off the Madeiras, when the cruise ship LAKONIKA went on fire. Two hundred passengers in light clothing jumped into the water which was recorded

as 16-17 deg Centigrade. Three hours later when the rescue ships arrived 123 were dead from hypothermia. It has since been found that only at temperatures greater than 20 deg Centigrade can a person survive for long periods without suffering from hypothermia. This also explains why in many cases small canoes and boats are found floating without any crew (i.e. if the crew are not able to climb out of the water, they die). For this reason, there should be some thought given as to how crew members can be kept clear of the water and not only supported by the hull.

For larger boats that are likely to sink when the watertight integrity is breached, a float-off raft can be stowed across the top of the deckhouse where it will not take up valuable deckspace. Alternatively, hatch covers can be designed as an emergency raft by being made from a thick layer of polystyrene (also good for fish hold insulation). On small prawn trawlers the sorting tray can be another possibility for a life raft, and indeed in some shark-infested waters many fishermen say that they would prefer to be on a sorting tray rather than in a liferaft. All these should be constructed so that they can keep personnel clear of the water.

The carrying of a first aid kit would solve a lot of the problems, but the provision of such simple items of equipment is difficult in developing countries. Even though they were provided directly to the fishermen, it is likely that they would find their way into the village pharmacy to be sold for cash. ~~Nevertheless, it would appear to be a good idea to encourage engine manufacturers to provide~~

To Page 6.

first-aid kits along with the spares kit when they supply an engine. This has the advantage of supplying an appropriate size of kit along with each engine, the cost would be a small proportion of the total cost of the engine, and could be regarded as a good public relations exercise by the engine manufacturers.

The small relative size of the canoes makes them vulnerable not only to large sea animals such as sharks, whales and turtles, but also to crocodiles, hippopotami and in one reported case to tigers. In the case of large animals being caught in the fishing gear, the fishermen will often cut the gear away, thereby avoiding the danger. However, in many cases, he will attempt to clear the animal from his 'valuable' gear or to land the animal, thereby creating a dangerous situation. A similar type of accident occurs in African lakes or swamps, where hippopotami attack canoes when they think their young are being threatened. Paradoxically, in some African countries there is more concern about the fishermen killing the crocodiles than there is about the crocodiles killing the fishermen.

(b) Fire

Fire on a vessel is far more dangerous than a fire on a land-based establishment, with probably an exception made for skyscrapers or mines. This is because in most cases the fire has to be fought from within the vessel with only one escape to an equally hostile environment, the sea, if the fire is not extinguished. There are different categories of fires on vessels and the most common in

small vessels is caused by the leakage of fuel - usually petrol for outboard motors. Because of the volatile nature of petrol, fires tend to be explosive (sometimes because of the build up of petrol vapour). Larger vessels with inboard diesel engines are safer from this form of incident, because of the lower volatility of diesel.

Emphasis should be placed on safe practices and cleanliness on all sizes of vessel, and fuel and oil spills should not be allowed to soak into the hull. Electric wiring is a potential source of fire in small boats, where, in the interests of cost, the wiring is not in conduits. The perpetual motion of the vessel leads to the abrasion of the insulation of the wire, causing short circuits and hence a fire. Guidelines should be drawn up on the most elementary methods of installing safe electrical systems in small craft, taking into account that it has to be provided at as low a cost as possible.

Training

Other incidents leading to fires on larger vessels is the leakage of lubricating oil or hydraulic oil onto hot parts of the engine (e.g. exhaust) and catching fire. Only increased standards in construction and periodic surveys would solve these problems and they would have to be enforced by legislation. Safety equipment tends to be concentrated on countering the effects of a fire once it has started (i.e. the proper types of fire extinguisher). For the smallest class of vessel in a developing country, the best means of extinguishing a fire is by sand which can also be used on the boat as ballast in small bags or as weights for the fishing gear.

(c) Foundering (not capsizing)

The most common event leading to a canoe foundering is a wave breaking aboard and swamping the vessel. This normally occurs when the canoe or boat is broached (i.e. the canoe or boat is parallel to the crest of the advancing wave) or in coming through the surf (or both). In such a situation the craft might roll over and lose its load (i.e. catch, fishing gear, fisherman, and possibly the engine), perhaps even injuring the fisherman in the process. In some cases, it is possible for the fisherman to right the canoe and to bale it out. One simple modification that can be made to canoes and open boats to aid this task is to fill some of the unused spaces in the craft with expanded polystyrene and/or plastic bottles to increase both buoyancy and stability. Empty petrol cans lashed to the thwarts would serve the same purpose. This type of buoyancy would also keep the boat clear of the water in a swamped condition thereby decreasing the fisherman's exposure to hypothermia, as mentioned previously.

For the small motorized boat, a swamped condition generally means that the boat sinks due to the additional weight of the inboard engine. However, similar methods of filling the unused space as buoyancy could be considered as a method of keeping the boat afloat.

In bad weather, it is important that small boats should not be allowed to broach. The use of simple items of equipment, such as a bucket as a sea anchor, could prevent this happening.

(c) Collision

Collision between two small boats or canoes rarely results in anything more than flared tempers and angry words. However, the collision between a large cargo vessel and a small fishing vessel is hardly felt by the former and overwhelmingly catastrophic to the other. In many cases, there is unlikely to be any survivors and little recognisable wreckage and the small craft is simply listed as missing

The International Rules for the Prevention of Collision at Sea lays down the rules for the avoidance of such collisions and merchant vessels on passage are required to keep clear of vessels engaged in fishing. The problem arises from two factors:

(a) The dilemma of the merchant navy officer when faced with numerous fishing craft all going in different directions, and in deciding how to manoeuvre his relatively cumbersome vessel through the fleet of highly manoeuvrable fishing vessels. More often than not, he decides to steer a straight course through the fishing fleet on autopilot, and assumes that the fishing craft will be pragmatic enough to get out of the path of the larger vessel.

(b) At night many small fishing craft only show oil lamps, if at all, not being fitted with electrical systems. The small craft are also very difficult to detect with radar, which is used for anti-collision purposes on merchant navy vessels. Under these circumstances, a similar risk of collision exists. If the watch

on the fishing vessel is not alert, then the results can be fatal.

It must also be mentioned that there is a considerable 'blind area' ahead of a large vessel where small vessels cannot be seen, due to the flare of the bows. Conversely, at night one cannot see the navigation lights of the large vessel. If the small vessel is in this 'blind area', and if the skipper of a small craft is called out under these cicumstances, he sometimes wastes valuable time trying to assess the situation, wasting seconds that could prove to be fatal, while a large vessel is bearing down on him. This type of near-miss was reported by an FAO masterfisherman in Pakistan.

Many authorities have advocated increased training in the Rule of the Road to avoid this type of accident. It is hard to see how this is going to solve this problem. The Rules of the Road were written mainly to avoid collisions between vessels of a similar size, and, rules notwithstanding, any skipper of a 30 ft vessel who is going to insist that he is the stand on vessels when on a collision course with a 200,000 tonne supertanker should stay on dry land

Delete.

It should be mentioned that if such a situation resulted in a collision, the skipper of the smaller vessel would still be held to be partially responsible under the section of Rule 17(b): "When from any cause, the vessel required to keep her course and speed finds herself so close that collision cannot be avoided by the action of the give-way vessel alone, she shall take such action as will best aid to

avoid collision". Failure to take such action is therefore deemed to be a contributory factor to the collision.

(e) Stranding

"An inshore fisherman starts to get nervous when he loses sight of land and a deep-sea captain gets nervous when he comes in sight of land". This statement summarizes the perspectives of the people in large and small vessels. The inshore fishermen generally work fairly close inshore, sometimes only metres from the rocks laying nets or traps. They usually know the area very well and are able to navigate with local knowledge gained from word of mouth or long experience without any navigational aids. In many cases, canoes or boats are deliberately beached through the surf to get to a landing site. In this type of case, it is important that we exclude deliberate stranding or occasional stranding due to the fishing method (where the danger is substantially reduced) from the type of stranding occurring in larger vessels. Larger vessels have a greater range of operation and are therefore more dependent on charts and navigation with radio aids and dead reckoning rather than on local knowledge. The stranding of these larger vessels and boats usually occurs because of navigational mistakes in areas not well known to the navigator, or in areas where local conditions are dangerous (through narrow passages in a reef). These factors make the stranding of vessels more an industrial fishery problem ~~and therefore more prevalent in developed countries~~.

having a low power demand

It is hoped that the continuous fall in the price of electronic satellite navigators will bring this invaluable equipment down to the price that can be afforded by the medium-sized vessel in the developing countries. Of course one pre-requisite is that the craft should have an electrical supply on board, which might even cost more than the satellite navigator.

even where the vessel does not have an electrical system.

(f) Machinery breakdown or disablement

In Sri Lanka 35 vessels were listed as missing of which 11 were subsequently found after S.A.R. From the total at risk, i.e 3,500 this would give a mortality rate for this type of accident alone of 0.6%.

This particular problem has raised concern in various countries including Sri Lanka and the Pacific Islands. The origin of the problem appears to lie in the gradual movement of small vessels to offshore areas to fish the oceanic pelagic species. The distance offshore means that trips of 3-4 days are more economic and most of this time is spent out of sight of land and other fishing vessels. Out of sight of land there is no reference point against which to measure current or drift, and in abnormal currents, the fishermens' dead reckoning might be seriously in error. Under these conditions, there is the possibility that there is not enough fuel to return to port. To this category of disablement we must add machinery breakdown and a fouled propeller, which, if corrective measures are not successful, has similar results. These accidents are usually a developing country problem, as the level of competence of crew in mechanics in the developed countries, the the use of radio, automatic alarms, etc. raises the alarm very quickly.

Two recent incidents in Sri Lanka of engine failure are very

enlightening as to the plight of fishermen under this predicament. The two craft were part of a fleet of 3.5 tonners fishing off the coast of Sri Lanka in November/December 1987. Apparently, a strong offshore current made return difficult, even for boats under power, and the two boats which did experience mechanical problems, the SRL-34 (fitted with sails) and the SAMANTHA JUDE (without sails), were adrift on the open ocean. The SRL-34 sailed with the prevailing wind to Indonesia, taking 38 days. The SAMANTHA JUDE, without sails, took 82 days drifting - a clear indication of the benefits of carrying a sail. However, the SRL-34 was battered by a storm and the crew were unaware that under these conditions they should have reefed the sail.

The crew of the SAMANTHA JUDE were demoralized by the callousness or indifference of passing ships: "We kicked up a racket, yelling, waving and gesturing, but the ships did not respond and went on their way". The SRL-34 encountered 17 ships, two of them passing very close, yet none offered aid.

The "callousness" of passing ships is perhaps due to two factors:

(a) A large vessel is far easier seen from a small boat against the horizon, whereas a small boat seen from a large vessel is usually seen against a sea background and is of course a smaller target, so there is a high possibility the the distressed vessels were not seen by the passing cargo ships.

(b) ~~Around that~~ In some areas there are still problems with pirates, insurgents ~~(Tamils)~~, and refugees, and the fishermen might not

have been recognized for what they were - distressed fishermen.

However, what is more important is that according to the report there is no mention of using more appropriate distress signals. In fact, it has been known for fishermen to fly a red flag as a distress signal. This flag, by the International Code of Signals, means "Keep clear of me. I am carrying explosives!". A simple distress signal that is recommended in situations like those described is "flames on the vessel". A mixture of lube oil and deisel with a small amount of petrol set alight will produce a dense black smoke that can be seen over a large distance and is instantaneously recognisable as a distress signal. At night the flames can also be seen from a long distance away. In this instance, it is better not to use lube oil as the smoke might blanket the flames. Another simple method that can be used to attract attention during a sunny day is a heliograph or a simple mirror.

An ~~Another~~ universal recommendation is for the fisherman to inform someone before he sails about where he is going to fish, who he is taking with him, when he expects to return and, most importantly, when and whom to inform if he becomes overdue. top 17.

Generally, ~~it~~ is easier to clear ing the propeller on a small craft than on a larger vessel and, given reasonable conditions, a diver with a hacksaw should be able to clear it. Safety precautions include a safety line for the diver and some consideration to some type of support while working. An additional consideration is for the diver to

wear clothes or a wet suit to prevent excessive heat loss and possible hypothermia. A lookout should also be kept for sharks. out.

Running out of fuel is ~~usually just plain carelessness~~ can be avoided by regular checks and normal precautions, but sometimes lack of fuel has been caused by leaking tanks or fuel lines and on more than one occasion a fuel tank that had not been used for some time was found to contain abnormal amounts of water. The main precaution in this matter is to carefully check the amount of fuel needed for the trip and allow a bit extra, to check the tanks and lines regularly, to investigate any abnormal amounts of fuel in the bilges, and to check the sumps of the fuel tanks at regular intervals.

← from p16

Once a vessel is listed as missing, the main problem a Search and Rescue (SAR) mission has is usually the long time span between the vessel getting into trouble and the overdue report being submitted to the authorities. This ~~means that~~ increases the search area ~~is~~ dramatically ~~increased~~ and the fact that the target is relatively small and does not possess any radio aids, flares, rockets to assist the SAR exacerbates the problem. The use of "flames on the vessel" would also prove invaluable in this situation. One aid that has not been used for some time is a dye to colour the water surrounding the boat to increase the size of the visible target. This has the advantage of being relatively cheap and can be contained in a small can.

Other aids which are used on larger boats such as radios, EPIRBs, radflares, and parachute flares, are difficult to justify on the grounds of economics ~~at this level of operation~~ in developing countries. and are sometimes

illegal because of security restrictions in some countries. However, now that EPIRBs are being used in satellite relays they should be relatively cheaper and lighter because of the lower battery power required. Even though such equipment might not prove economically feasible in terms of fisheries finances, it could prove to effect substantial savings in terms of SAR costs in terms of fuel for Navy ships and Air Force planes.

(g) Capsizing

In small positively buoyant canoes a capsize is not a serious occurence and in many cases the object which caused the instability is removed and the canoe becomes positively stable again and returns to the upright position. Baling out the canoe is a simple exercise. Another type of capsize is caused by squalls of wind on sailing canoes or small sailing boats. In many cases, increased training on how to reef a sail and how to recover from a capsize should improve the safety of the operators. In larger vessels a capsize is usually irrecoverable as the watertight integrity of the vessel is usually broached and the boat fills with water and with the weight of the engine and other machinery the boat sinks. Overloading is a common cause of capsizing and can occur quite suddenly and unexpectedly to the unexperienced. Whereas foundering due to insufficient freeboard can be seen and readily appreciated by the fisherman, the concept of stability is difficult to convey to fishermen in developing countries, as indeed it is to the fishermen in developed countries. Without legislation or guidance in the construction of small vessels, there is

always the possibilty of inherent instability problems, and even in craft which have been constructed with all due consideration for stability, there is always the possibility of the owner introducing changes, loads or conditions which reduce the stability to a dangerously low level.

(h) Occupational illness

[Still to be completed but might be left out due to lack of material]

~~General Comment~~ Legislation and/or Training ... are not easily arrived at. For example.

The question of safety practices in fisheries in developing countries is difficult. In the U.K. the implementation of various safety standards, legislation and construction has not led to a decrease in the accident rate. One has to ask why this is so. Is it because the accident rate is a function of the combined risks that individual skippers are willing to take and is independent of such safety standards ? Such a situation is not unusual - we all take a risk when we cross the road or get in a car. The accident rate is determined by the risks that are taken by the individuals. Increasing safety is used by some as an excuse to take more risks. If this is the case, then it is attitudes that need to be changed and this can only be done by education and not by legislation.

also.

Safety costs money and in the developed countries there has been

an accepted policy of providing safety legislation in the public interest. This is all very well, as the developed countries can afford such a ~~luxury~~, but what about the developing countries? In view of a biologically limited resource and hence a limited revenue from the fisheries, any additional cost that does not result in an increase in the revenue will reduce the profitability or even the feasibility of the fisheries operation. Can the developing countries afford safety legislation for fishermen? There is no easy answer! Each country has to look to its own resources and decide for themselves whether to introduce legislation, education, extension or any combination of these. The fact that they have different sets of values from those of developed countries should be recognized, as should their right to determine how to achieve their objectives within the limits determined by the International Conventions on Human Rights.

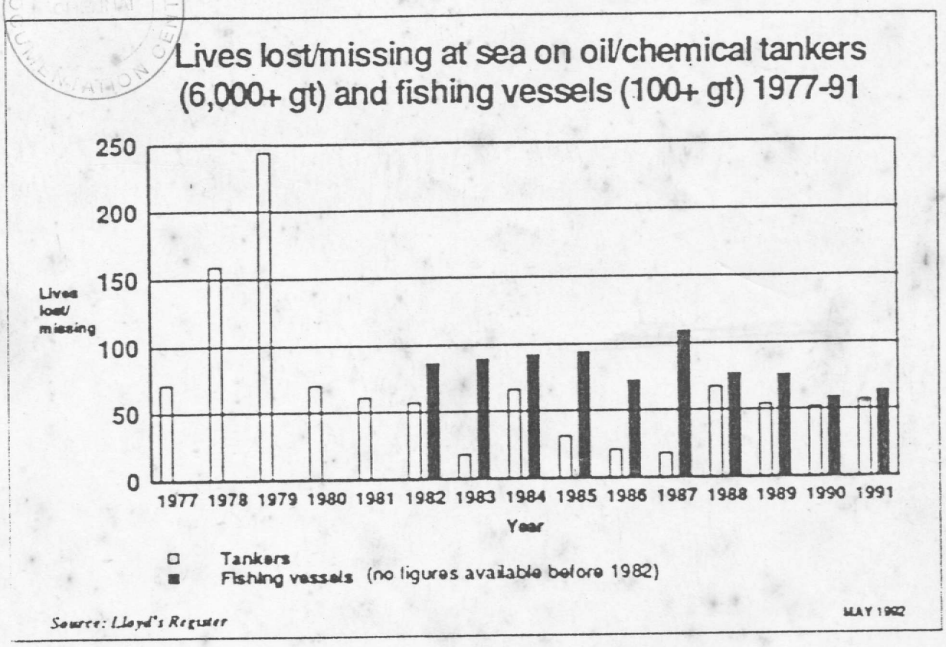
IMO includes fishing vessels in casualty analysis

The International Maritime Organization (IMO) has included fishing vessels in its analysis of serious casualty statistics for the first time. The statistics are derived from the casualty database marketed by Lloyd's Maritime, and include tanker and gas carrier casualties for vessels of 100 gt and above.

The figures show that for seagoing oil/chemical tankers over 6,000 gt, fires and explosions account for 25 per cent of the casualties recorded between 1977-1991. The worst casualty rate is in the 30,000-79,999 gt size category. The casualty rate for oil/chemical tankers under 6,000 gt is roughly half of that for tankers over 6,000 gt.

Casualty rates for oil/chemical tankers increase with age up to 24 years, and this trend is particularly evident for serious casualties involving the incident categories 'machinery fire and explosions' and 'machinery damage'. The casualty rate for collisions, however, is relatively constant for all age groups.

The fishing vessel statistics cover a 10-year period from 1982 to 1991 inclusive, and also pertain to serious casualties to ships over 100 gt. The figures show that 1,186 lives were lost/missing, and 75o fishing vessels reported as totally lost over this period.



In order to compile the figures a special marker is included in the database, to take account of the particular criteria used by IMO to define a serious casualty to tanker types. The inclusion of fishing vessels in the data reflects IMO's desire to broaden its statistical analyses by including more vessel types.

CONSULTANCY BRIEF

The Lloyd's Maritime Liner Forecast Service is forecasting an overall decrease in total TEU capacity on the westbound leg of the transatlantic trade up to the end of 1995, and a small increase eastbound. Major structural changes should stimulate demand during 1993, although the improved outlook may have come too late for some operators.

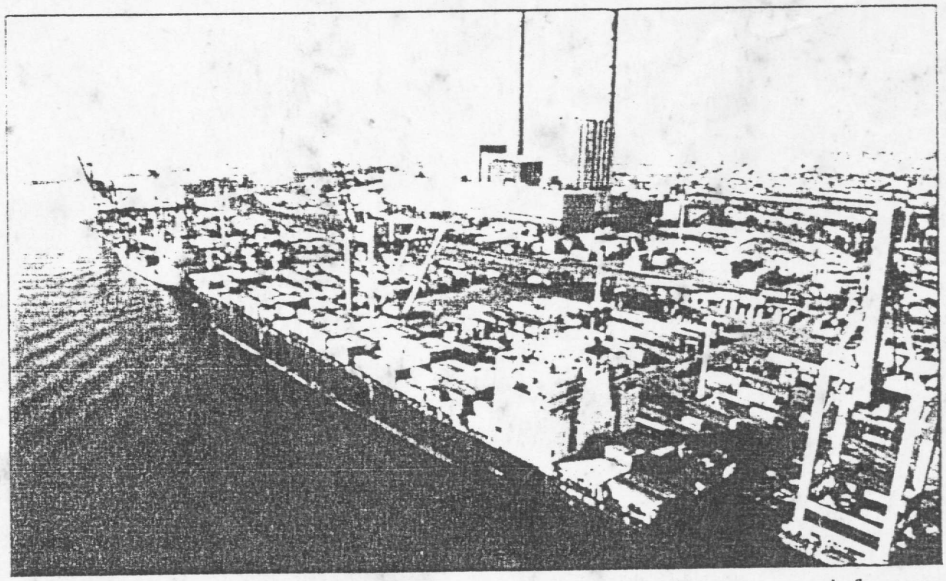
Last year the transatlantic trade was dominated by two joint services: ACL/Hapag Lloyd and the Vessel Share Agreement of Nedlloyd, P&OCL, Sealand and CGM. These services accounted for 22 per cent and 19 per cent of the North Europe to US East Coast capacity respectively. This situation has now changed with the withdrawal of CGM, and Hapag-Lloyd's new alliance with NYK and NOL in a tri-continental pendulum service.

The entry of NYK and NOL will boost supply on the transatlantic trade, as will the arrival of several new deliveries. This latter tonnage will be placed into the round-the-world services of Cho Yang (1 vessel), DSR/Senator (7 vessels), and Evergreen (10 vessels).

A reduction in capacity is expected with the removal of OOCL's vessels, when the company's new charter agreement with VSA and Maersk becomes operational later this year. A further loss will result from the voluntary capacity reductions agreed by the 12 members of the Transatlantic Agreement. Westbound, these 12 operators accounted for 81 per cent of the total third-quarter capacity last year. Even with the addition of NYK and NOL, who are expected to join the TA Agreement when they arrive in the trade, the percentage share of adjusted supply of TAA members is set to fall to 78 per cent in the fourth quarter of 1995.

Over the past two years the westbound transatlantic trade has been hit hard by the US recession. However, it is anticipated that a projected 11.5 per cent increase in the level of exports for Northern Europe during 1993 will reverse this trend. A steady growth in exports should sustain this turnaround.

While this reversal is good news for transatlantic operators, it may not have arrived soon enough for some lines. Majors such as P&OCL have stated that they have lost £10 million on the trade. Sea-Land recorded a 25 per cent decrease in loads for the first half of 1992, compared to the same period for the previous year. According to a recent report, the average return on assets of the major carriers was only 0.4 per cent, and for transport-based groups was only a shade better at 1.4 per cent.

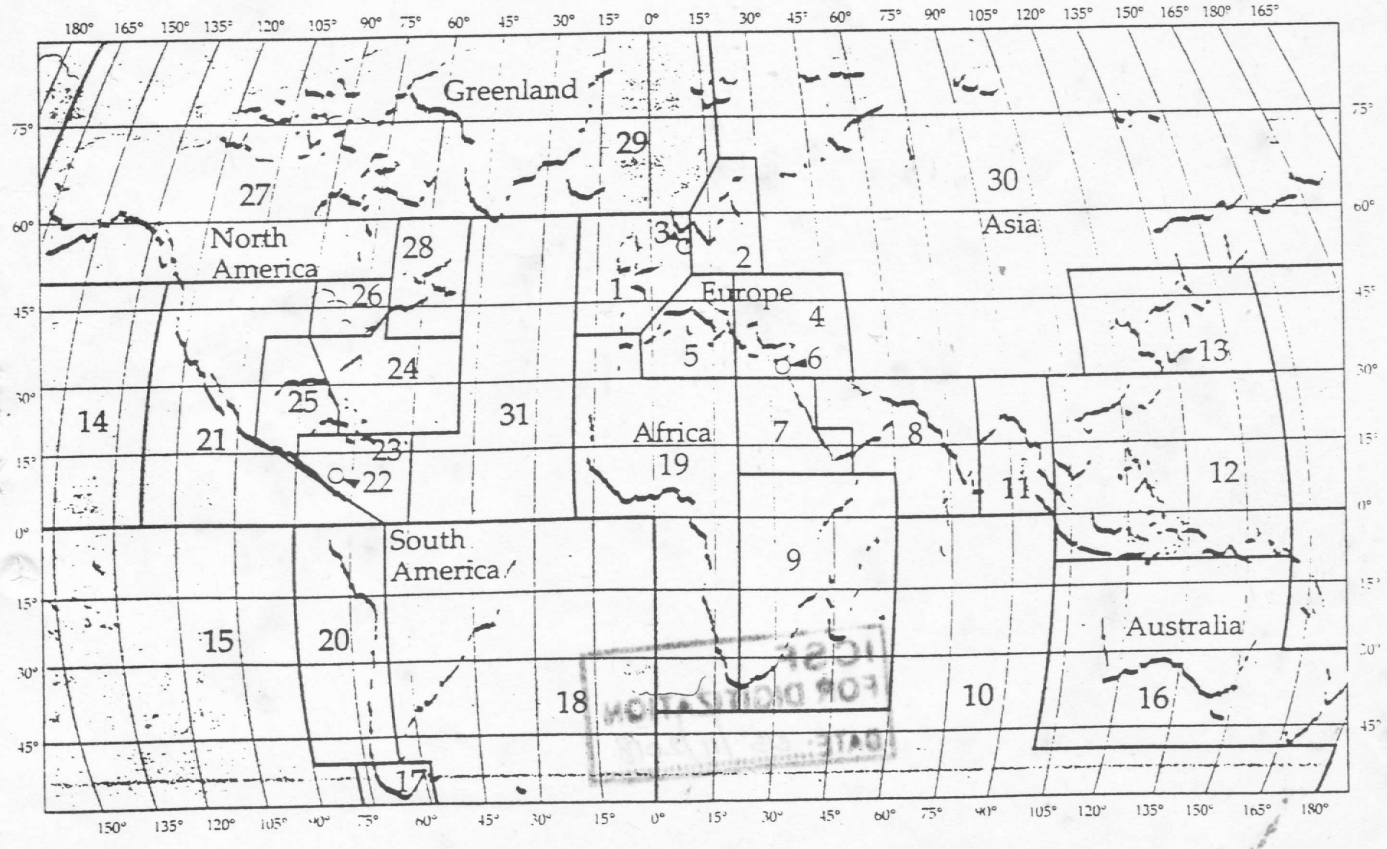


The improved outlook for the transatlantic trades has not come soon enough for some operators. Sea-Land's recorded load levels for the first half of 1992 decreased by 25 per cent.

3 GEOGRAPHICAL DISTRIBUTION OF FISHING VESSEL CASUALTIES 1982 - 1991
(Numbers of Ships)

ZONES	FD	MG	FX	CN	CT	WS	LT	HM	XX	TOTAL
00	0	0	1	0	0	1	0	0	3	5
01	65	1	45	35	17	39	1	92	4	299
02	6	0	4	2	2	4	0	2	1	21
04	2	0	2	1	0	1	0	2	0	8
05	4	0	2	2	0	1	0	3	0	12
07	0	0	0	0	0	0	0	1	0	1
08	5	0	2	3	0	3	1	1	1	16
09	4	0	9	1	0	5	0	10	0	29
10	4	1	6	0	0	0	1	5	0	17
11	0	0	5	2	0	0	0	2	0	9
12	15	2	5	6	0	20	0	10	0	58
13	34	1	33	53	32	34	0	64	2	253
14	14	0	12	4	1	4	0	11	0	46
15	5	0	3	0	1	21	0	4	0	34
16	12	0	4	6	1	11	0	4	0	38
17	1	0	0	0	0	4	0	0	0	5
18	15	0	10	8	4	10	1	14	0	62
19	58	1	46	20	9	33	7	31	4	209
20	30	0	13	3	2	19	0	13	0	80
21	34	2	14	7	3	4	1	8	1	74
22	1	0	1	0	0	0	0	0	0	2
23	0	0	5	0	2	7	1	9	1	25
24	11	0	2	0	0	0	0	4	0	17
25	10	0	2	3	2	1	0	3	0	21
26	2	0	2	0	0	1	0	0	0	5
27	31	2	16	5	3	21	0	4	0	82
28	14	0	10	4	4	11	0	16	0	59
29	12	0	10	0	9	23	0	9	0	63
30	7	0	3	2	2	5	0	1	0	20
31	2	0	6	6	1	2	0	8	0	25
TOTS	398	10	273	173	95	285	13	331	17	1595

ANALYSIS PERFORMED ON 05.06.92



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