

Fishing Vessel Safety Review

(less than 65 feet)



Maritime Search and Rescue Newfoundland Region

November 2000

FISHING VESSEL SAFETY REVIEW
(less than 65 feet)

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Preface

Search and Rescue (SAR) conducted the fishing vessel safety review for Newfoundland and Labrador on the basis of patterns and trends evident in its annual statistics. In 1999, the number of fishing vessels 45 to 65 feet that required assistance from the Maritime Rescue Sub-Centre (MRSC) St. John's represented 38 percent of the total registered vessels of that size for the year. In the same year, the number of vessels 35 to 45 feet that called for assistance represented almost one quarter (23 %) of these vessels. 75% of all fishing vessels applying to become members of the Coast Guard Auxiliary (CGA) fail their initial safety equipment inspection. Commanding Officers of Coast Guard Vessels have expressed serious concerns on the seaworthiness of the vessels they are tasked to assist. Clearly, there are serious problems with safety in the small vessel fishing fleet operating off the coast of Newfoundland and Labrador.

A comprehensive collection of data, including that of SAR and Fisheries and Oceans (DFO) fisheries data, was collected and formatted in different ways to highlight relevant patterns. It was then analyzed from a SAR perspective, with input from other segments of the DFO organization. It was also the subject of an analysis by Dalhousie University. A literature review of national and international reports, studies and interviews with experts from a number of government, private and academic agencies was also undertaken to give as wide a perspective as possible to the subject of safety in the small vessel fishing fleet.

The review process established a DFO intra-departmental working group to discuss safety issues surrounding the small vessel fishing fleet. The working group represented all disciplines impacting on fishing vessel safety such as Fish Management, Science, Policy and Coordination, Canadian Coast Guard (SAR, Office of Boating Safety and Marine Communications and Traffic Services). This forum provided a solid basis for consultation. It also facilitated clarity for the issues and gave a greater degree of direction to ways and means of addressing concerns within the context of the report.

The review revealed that the fishing industry in Newfoundland is undergoing fundamental changes that are raising safety issues in all classes of vessels less than 65 feet. Previous studies have shown that fishermen tend to take risks for economic gains and in doing so, push the limits of seamanship in areas of loading, weather limits and carriage equipment. The same studies have shown that lackluster regulatory schemes play a large role in fishing vessel safety. It also seems clear that safety and fisheries

conservation policies do not always coincide. It is evident from the review that smaller, heavily modified vessels, fishing further offshore do not have an adequate safety net. Furthermore, most of the 46 fatalities in the less than 65-foot fishing fleet since 1993 occurred in vessels less than 25 feet, indicating serious problems in even smaller vessels fishing closer to shore. There are concerns that many other types of incidents in these smaller classes of vessels go unreported and therefore the existing information may not fully indicate the full scope of the problem.

Finally, the matter of external influences suggest that fishermen worldwide are often subjected to forces beyond their control in their quest for operational safety. The review therefore, focused on some of the departments that have direct and indirect bearing on safety in the fishing industry. DFO Fisheries Management policies in areas such as vessel replacement and quota management systems were examined. The role of Transport Canada – Marine Safety (TC-Marine Safety) on issues of compliance and enforcement in the administration of regulations under the Canada Shipping Act was studied. The question of SAR prevention programs and response capabilities was shown to be extremely important as safety issues continue to develop and unfold. More significantly, the importance of structure and planning conducted in a coordinated fashion among all stakeholders including government and industry representatives, appear to hold the key to producing and delivering an effective safety regime to the fishing industry.

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SECTION I

INTRODUCTION

1. Purpose

Serious safety issues are emerging within the less than 65-foot fishing fleet in the waters adjacent to Newfoundland and Labrador. Maritime Search and Rescue data has shown an increasing number of incidents for this sector throughout the 1990's. The most recent statistics indicate that the number of incidents involving these vessels has grown from 193 in 1993 to 382 in 1999. Forty-six fatalities in the same period, mostly related to incidents involving fishing vessels less than 25 feet, indicate significant safety issues exist in even smaller vessels fishing closer to shore. Faced with the responsibility of responding to the needs of people engaged in the fishing industry, it was necessary to examine the situation through study and analysis. **The primary objective is to produce meaningful results that can assist in finding a suitable solution through the SAR mandates of alerting, responding, aiding or prevention.**

1.1 Authority

The Canada Shipping Act provides broad authority to those responsible for carrying out duties associated with Search and Rescue. The National SAR Manual (NSM) derives its authority from the Oceans Act. Chapter 1 Section 3-5 of the manual outlines the primary SAR objective and the means of achieving it. SAR operations aimed at detection; response and rescue form a significant part of the overall program. SAR prevention aimed at reducing the number and severity of incidents through education and SAR follow-up has a similar priority. **In achieving the full scope of this mandate in relation to dealing with issues affecting fishing vessel safety, the Superintendent, Maritime Search and Rescue (RSMS) acted within the authority of section 3.12.2 of the NSM. This outlines responsibilities associated with establishing and maintaining liaison with relevant departments of federal and provincial governments and other groups, public or private, involved in maritime SAR and safety.**

It is envisioned that establishing and maintaining proper liaisons will accomplish two important goals. One, it will lead to the identification of key factors affecting fishing vessel safety. Secondly, it will establish a lasting partnership whereby a long-term viable solution can be achieved for fishing vessel safety.

1.2 Mandate

Legislative authority for involvement in vessel safety of any kind falls within three departments: Department of Fisheries and Oceans (DFO), Transport Canada–Marine (TC-Marine Safety) and Transportation Safety Board (TSB-Marine). Annex B provides an expanded explanation of departmental roles and its impact on fishing vessel safety. Meanwhile a condensed explanation of mandates is necessary for the provision of perspective on issues throughout the review.

Aside from its role in Fisheries Management, DFO has a responsibility in vessel safety and conducts it through its Canadian Coast Guard (CCG) sector. CCG activities related to vessel safety are administered by their marine programs directorate through sections such as SAR, Office of Boating Safety (OBS) and Marine Communications and Traffic Systems (MCTS). Under the Oceans Act, the Minister of Fisheries and Oceans is responsible for the maritime element of the national SAR Program. DFO discharges this responsibility through CCG (SAR) whose mandate is related primarily to detection, alerting, aiding and prevention. MCTS, among other things, is a principle vehicle for detection and alerting. OBS also has a specific mandate for vessel safety relating to recreational boating, which brings with it additional empowerment for enforcement for that sector.

TC-Marine Safety is responsible for safety non-regulatory programs and all regulations under the Canada Shipping Act including the Small Fishing Vessel Inspections Regulations. Responsibility for the administration of regulations pertaining to recreational boating has been transferred to DFO and as indicated, its associated functions are carried out by OBS. Meanwhile, TC-Marine Safety has retained responsibility for all other commercial shipping, including fishing vessels less than 65 feet. Some of the items pertaining to fishing vessels that are subject to regulations include navigating appliances, operator proficiency standards, safe manning, vessel construction standards and carriage equipment (life rafts, fire extinguishers, communications and survival equipment, etc.,). TC-Marine Safety in their application of the Small Fishing Vessel Inspection Regulations has elected to apply a Fifteen Gross Registered Ton (GRT) rule. This means that vessels exceeding fifteen GRT will be subject to a rigid mandatory enforcement regime such as routine inspection schedules. On the other hand, fishing vessels not exceeding fifteen GRT operate on a voluntary compliance basis.

TSB-Marine is an independent body that is mandated to conduct investigations and public inquires into marine accidents, including fishing vessels. Safety deficiencies are identified and recommendations for remedial actions are directed to mandated agencies such as TC-Marine. The current practice is to investigate accidents only on a selective basis and usually involve only those where common safety issues are at play. If TSB-Marine believes that there are lessons to be learned from an accident, an investigation will normally be undertaken.

1.3 Method

Having observed the symptoms and patterns that raise safety issues within the less than 65-foot fishing fleet, the review set out to more clearly define the problem in order to seek a meaningful solution. This was accomplished in a number of ways including the following:

- Collecting relevant data from all available sources and subjecting it to SAR and academic analysis;
- Reviewing national and international literature, including reports and studies;
- Examining through personal interviews and other public venues, the impact of departmental roles and responsibilities on fishing vessel safety; and
- Providing recommendations based on relevant matters observed through the review process.

1.4 Background

For a long time now, fishing vessel safety has been at the forefront of fishing industry issues in most jurisdictions engaged in coastal fisheries. While commercial fishers have always faced a challenge in harvesting from the waters off Newfoundland and Labrador, new circumstances have raised the stakes considerably. The move to fishing in more offshore areas by vessels less than 65 feet have added a dimension to safety that did not exist to the same extent further inshore. While market forces were having an effect on the movement offshore leading up to the 1990's, the Cod moratorium in 1992 accelerated the transformation in a profound way. The need to access species such as shrimp, crab, scallops, turbot, and seals became an essential element of economic survival. Because fishing a long distance from home port and/or far offshore was a necessary feature of these new dynamics, safety quickly became a function of harvesting - particularly as it relates to vessel size. More than ever, effective harvesting in a safe manner has come to be seen as a suitable balance of such items as; vessel design, equipment, fishing location, carrying capacity, and an overall safety culture among fishers, all supported by proper prevention programs.

1.5 Constraints

Operating under any circumstances in the marine environment of Newfoundland and Labrador brings with it a higher than normal range of risks. Exposure to meteorological elements is perhaps most critical. For many of the small vessels involved, weather and sea conditions often exceed their capacity to safely navigate. Distance complicates this because weather systems often overtake them before time allows passage to a safe haven. Vessel stability is impacted as the need to maximize catches enters the time element of proceeding so far from home port. Also, trying to harvest species that the vessel was never designed to prosecute often compromises the integrity of vessels. Stress and strain on vessel hull and machinery takes a toll due to long trips without opportunity for sufficient maintenance. Personal fatigue becomes a

factor due to relatively few crewmembers working in small quarters under pressure to avail of quota allocations.

1.6 Future Trends

As the increasing trend of incidents in the less than 65-foot fishing fleet continues to unfold, the full impact and results may yet to be fully realized. Indicators point to an overall trend that may very well continue for some time into the future. New and larger quota allocations are being given to the small vessel fishing fleet, even further offshore. A substantial experimental Crab fishery opened in the Fall of 1999, outside the 200 mile limit. Shrimp quotas have increased and the fishery now includes the participation of a larger number of smaller fishing vessels fishing further offshore. Scallop resources located at the edge of the Grand Banks continues to be harvested by the less than 65-foot fishing fleet. Fishing for deep-water species like Turbot is taking small vessels to more northerly waters, far from home port and well out towards the 200 mile Economic Zone Limit. Tuna allocations take vessels long distances, sometime well out into the warm waters of the Gulf Stream. The sealing industry has exhibited trends of accelerated activity by small fishing vessels over the last few years. This industry has demonstrated unique problems that have significant safety implications. Different market conditions and increasing seal herds threatening to impact on fish stocks has the potential to result in increased harvesting effort by small fishing vessels in the immediate future.

1.7 Safety Implications

Future trends like others in the past are subject to many factors that impact on fishing vessel safety. Standards such as education, training, safety equipment, seaworthiness, seamanship and competency are among some of the most critical. TC-Marine Safety policy on the application of regulations for vessels not exceeding fifteen GRT will have to be addressed. DFO policy on items such as vessel replacement and harvesting practices needs to be evaluated against safe fishing practices. Likewise, fishers and industry representatives in general, need to acknowledge their role and help seek a balance in developing a more suitable safety regime. A proper safety culture that can blend the right level of regulations with education, training and good seamanship practices will require an effective, structural arrangement not currently available in the present fishery.

1.8 Action plan

The need to harvest in as safe an environment as possible is paramount. Aside from fishers themselves, many others share the responsibility for the delivery of safety to the fishing industry. Coordination and harmonization of safety and fishery conservation policies between DFO and TC-Marine

Safety is an important step in improving safety in the fishing industry. A uniform enforcement of existing safety regulations applied to fishing vessels regardless of whether they are above or below fifteen GRT, would be a key step in helping reduce the number of SAR incidents.

Restructuring of federal government departments throughout the 1990's have seen a re-alignment that may provide an improved safety net for the small vessel fishing fleet. DFO has become an important player not only in terms of fish management, but also a key player in the delivery of safety programs through OBS, MCTS and SAR. Therefore, the potential for a better mesh of different programs under various departments is greatly enhanced.

Safety regimes whether mandatory or voluntary can only go so far without meaningful involvement by fishers themselves. Recognition that fishers are ultimately responsible for their own safety is perhaps the most important first step. Information and education programs designed to promote safety is an enhancement that must be activated along with other measures designed by all stakeholders.

Strengthening the safety net is fundamentally a preventative measure. This has significant implications for Maritime Search and Rescue who have to consider that offshore activity entails larger patrol areas, better resource capabilities in terms of numbers, size and endurance, expanded searches with higher costs and more elaborate monitoring and alerting infrastructure. Consequently, it begs the question of what solution is best suited to address current and future concerns surrounding small fishing vessel safety. The SAR "**Fishing Vessel Safety Review (less than 65 feet)**" through its work on data analysis, literature reviews, and profiling departmental functions, intends to provide a focus for all stakeholders whereby structure can be better applied to improve the safety regime for the fishing industry.

SECTION II

INVESTIGATION AND FINDINGS

2. *Process*

In producing its findings, the review process focused on identifying a clear definition of the problem through trends and patterns evident in various databases. An investigation of contributing factors led the review team to examine the role and activities of agencies, government and private, in the delivery of programs that affect fishing vessel safety. Finally, a literature review was conducted as a means of measuring the full scope of the safety problems and it also provided a historical perspective and a means of investigating various solutions recommended in the past.

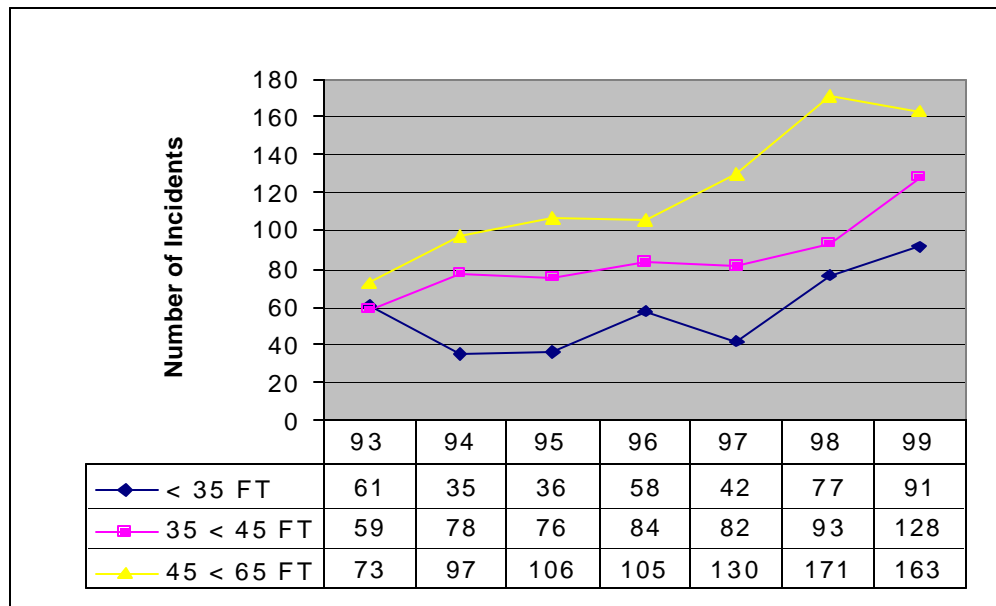
2.1 *Statistical Findings*

A comprehensive collection of data, including SAR and DFO fisheries data, was collected and formatted in different ways to highlight relevant patterns. It was analyzed from a SAR perspective with input from other segments of the DFO organization. It was also the subject of an academic analysis by the University of Dalhousie. Overall findings as shown in Annex A, demonstrated a confirmation of evolving safety trends surrounding the small vessel fishing fleet.

2.1.1 *SAR Statistics*

SAR Statistics from post Cod Moratorium dates in 1993 to 1999 indicated a clear pattern of increase in recorded SAR incidents for vessels less than 65 feet. Year 1999 showed a total of 382 incidents compared with 193 in 1993. Furthermore, the increase in SAR incidents occurred even though the total number of registered fishing vessels for the same period decreased from 13,915 in 1993 to 9,573 in 1999. At the same time, DFO indicates that there was an overall reduction in fishing effort, resulting in less time for vessels at sea. Further analysis revealed that the most common cause of incidents was disablement as result of mechanical failure and steering problems. Other causes included sinking, taking on water, fire, and medical emergencies.

The total number of fatalities for the same period was 46, spread out over all classes of fishing vessels less than 65 feet. While there was no clear trend of acceleration from 1993 to 2000, a predominate feature showing a higher rate of fatalities in fishing vessels less than 25 feet was clearly evident. However, a clear pattern which would indicate a root cause has not emerged.



< 65 Foot Fishing Vessel SAR Incidents by

Figure 1 shows an increase in SAR incidents for all classes of vessels with the 45 to 65 foot class having the most. It is noteworthy that the number of incidents in this class was highest even though it had the lowest registered vessels. Given that this vessel class normally operates further offshore, this indicates that the incident ratios are higher in offshore areas. There are concerns that many incidents in the less than 35-foot class are not reported and therefore the existing data may not indicate the full scope of the problem.

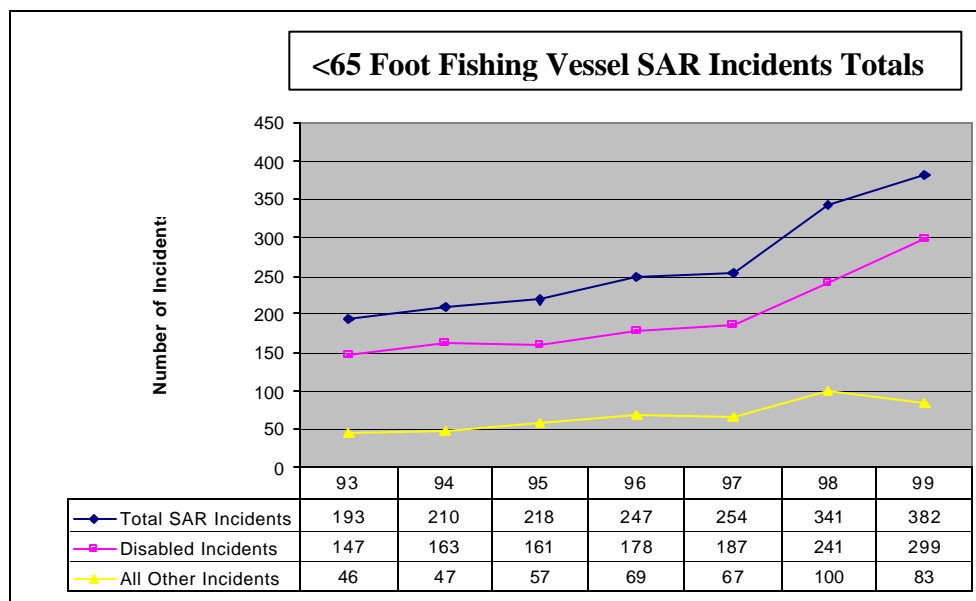


Figure 2

Figure 2 shows SAR incident totals with an increasing trend that appears to be accelerating since 1997. The

“disabled incidents” are primarily comprised of mechanical failures and steering problems. The "disabled incidents" line illustrates that the increase in total incidents is driven by vessels that have become disabled. The "other incidents" category indicates that the SAR incident total would have been fairly stable had the mechanical failures and steering problems not increased.

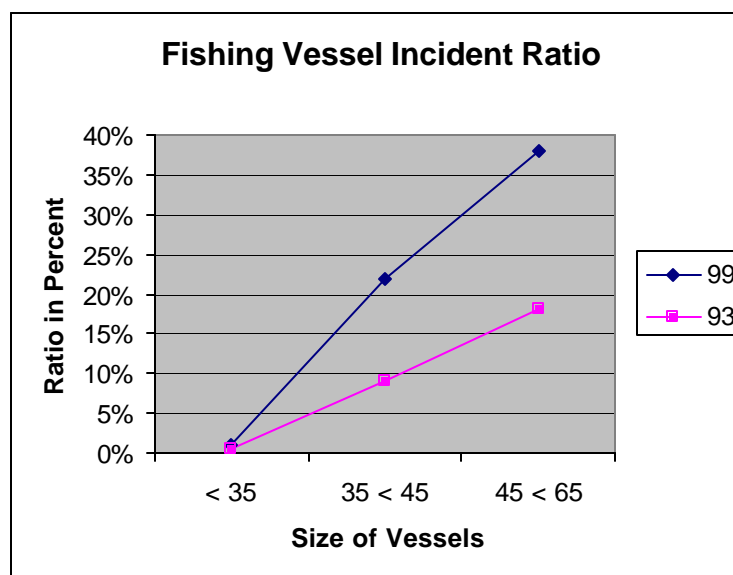


Figure 3

Figure 3 clearly shows that the incident ratio is increasing at an alarming rate and must be of concern to all departments and agencies involved in the industry. The ratio of incidents per registered vessels has increased by more than 100 % for all classes of vessels but is much more noticeable in the 35 to 45 foot and the 45 to 65 foot classes of vessels. The incident rate in 1999 for the 35 to 45 foot class was 23 % and the 45 to 65 foot class was 38 %. These figures are based on the number of registered vessels. Given that the actual number of vessels fishing would likely be less, the actual incident ratios would be higher.

Fatalities <65 Foot Fishing Fleet						
Year	<25	25 - 35	35 - 45	45 - 65	Fatalities by Fishery	Total Fatalities
93	9	0	1	0	4 seal, 3 lobster, 1 shrimp, 1 crab, 1 groundfish	10
94	2	0	6	1	1 lobster, 7 groundfish, 1 crab	9
95	0	3	0	0	3 scallop	3
96	3	0	0	0	1 seal, 2 groundfish	3
97	5	1	0	1	1 seal, 2 lobster, 4 groundfish	7
98	4	0	0	0	4 groundfish	4
99	0	0	0	0	0	0
00	6	2	0	2	2 shrimp, 3 lobster, 5 groundfish	10
Total	29	6	7	3		46
6 Seal, 9 Lobster, 3 Shrimp, 2 Crab, 23 Groundfish, 3 Scallop						

Note: only includes fatalities while vessels were active in the fishery.

Figure 4

Figure 4 illustrates that most of the fatalities occurred in the less than 25-foot class vessels. This is consistent with other studies which indicated that the smaller the vessel, the more likely an incident would result in a fatality. Although there is no clear pattern, this indicates serious problems in this class of vessel.

2.1.2 WHSCC Statistics

At the same time SAR incidents were increasing, Workplace Health, Safety and Compensation Commission (WHSCC) statistics also showed a comparable increase in total injuries, incidents and fatalities (Figure 5 below refers). The WHSCC figures indicate a total of 286 cases in 1999 compared with 162 for 1993. Throughout this period medical aid injuries were the most common with a total of 160 in 1999 compared with 93 in 1993. Unfortunately, TSB-Marine statistics could not corroborate these findings because their approach to accidents within the fishing industry is not all-inclusive. Instead, accidents are investigated on a selective basis and only those that constitute significant events with common safety issues are fully analyzed for cause and preventive solutions.

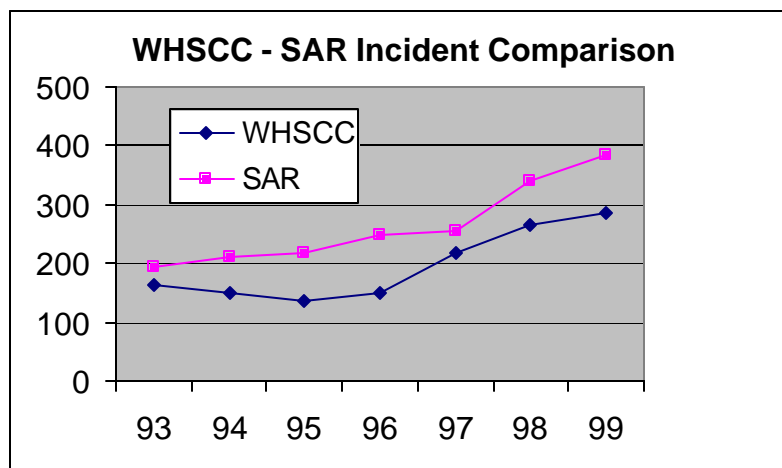
**Figure 5**

Figure 5 - shows the comparable increase in SAR Incidents and WHSCC increase in total injuries, incidents and fatalities.

2.1.3 Database

This fishing vessel safety review found it somewhat difficult to work with available databases. In many cases they lacked standardization, were protected through privacy protocols, were difficult to correlate or simply had insufficient detail. Given the mandates of organizations such as SAR, TC-Marine

Safety, TSB-Marine, Office of Boating Safety, Occupational Health and Safety, DFO Fisheries Management and other fisheries branches, it would be most beneficial if the composite collection of data were to be meshed in a complimentary fashion. Great benefits from existing databases could be achieved through inter-departmental co-ordination.

2.2. *Contributing Factors*

The cause and effect relationship involving fishing vessel incidents are difficult to determine through available database. While WHSCC indicate types of accidents in their statistics, very little is available to indicate why the accidents occurred. For various reasons, responsibility and process for SAR case follow-up may not go far enough to address all of the issues relevant to incidents. Likewise, without proper investigations by TSB-Marine of all types of accidents, major or minor, the important matter of cause remains largely unanswered. Nevertheless, through the process of examining the role of responsible agencies (Annex B) and conducting a literature review (Annex C), many of the factors that contribute to safety issues in the small vessel fishing fleet were identified. They include:

- A willingness by fishermen to take risk in a very harsh environment and in an industry that by it's very nature is high risk;
- An overall lack of a safety culture among fishermen that is manifested in poor seamanship practices, low priority in the carriage of safety and survival equipment, and subordination of safety for economic gains;
- Inadequate training and education;
- An inadequate structural arrangement whereby safety providers establish and implement elements such as inspections, compliance and prevention programs;
- A link between fleet viability and the economic means to properly equip for safety;
- A reluctance by safety providers to impose mandatory safety regimes;
- A reluctance by fishermen to accept mandatory safety regimes, and
- External influences such as environmental factors and fish management regimes that do not give adequate consideration to safety issues and may lead to fishers taking extra risk.

2.2.1 *Poor Safety Culture and Risk Taking*

While insurance databases are well guarded under confidentiality protocols, it is evident that there are many fishermen who fail to carry insurance, particularly in vessels not exceeding fifteen GRT. In an environment where history has recorded a high level of losses, the necessity of requiring an insurance safety net is indeed great. Nevertheless, fishermen by showing their willingness to operate without insurance,

demonstrate their propensity to take enormous risk. The literature review described under Annex C and agencies identified in Annex B such as TC-Marine Safety and private insurance surveyors, underline this characteristic as a common thread running throughout the industry. Operating in adverse weather conditions, improper loading and proceeding far offshore in small, under powered boats without adequate communications, safety or survival equipment is often the norm. Insurance surveyor's testimony in many of their underwriting investigations indicate that as a general rule, vessels less than 35 feet are rarely properly maintained. Some of the most common deficiencies identified in observations by insurance surveyors and underwriters as well as by TC-Marine Surveyors, CCG commanding officers, CGA¹ officers and OBS courtesy inspections, are as follows:

- Poorly installed electrical panels;
- Substandard wiring;
- Batteries improperly installed in confined spaces with no covering;
- Propane tanks improperly located;
- Inoperative fog horn;
- Outdated or no flares;
- No standard approved PFD;
- No life raft;
- No communications equipment;
- Poor steering installations; and
- Fuel tanks with no shutoff valve accessible outside the main engine room.

¹Note - Canadian Coast Guard Auxiliary (CCGA) Officers indicate that more than 75 % of vessels, (fishing) inspected for acceptance in the CCGA, fail to meet the standards required for vessels not exceeding fifteen GRT.

2.2.2 *Education and Training*

Many risks and safety infractions prevalent in the small vessel fishing fleet often occur through lack of knowledge. Agencies such as SAR, OBS, WHSCC, TC-Marine Safety, TSB-Marine and Professional Fish Harvesters Certification Board (Annex B refers), recognize the importance of education and training in delivering safety information. Private insurance surveyors indicated that most safety deficiencies in vessels less than 35 feet can be corrected through education and training. The WHSCC has expressed the need for proper safety awareness and is exploring ways to deliver a suitable program. The Professional Fish Harvesters Certification Board, which was enacted by

legislation in June of 1996, has as one of its founding principles the provision of education and training for the fishing industry. Despite the recognition of the problem and good intentions by various agencies there is no adequate program in place. Consequently, education and training has to be identified as major contributors to safety problems in the fishing industry. This training issue will become more important as new technologies such as Global Maritime Distress and Safety Systems (GMDSS), satellite navigation systems and computerized stability systems are being applied to the small vessel fishing fleet.

2.2.3 Inspection, Compliance and Prevention Programs

Annex B provides a description of the roles and responsibilities of key government agencies responsible for the delivery of safety provisions under specific mandates. The most relevant of these are TSB-Marine, TC-Marine Safety, and DFO (CCG - SAR, OBS and MCTS). When measured against safety issues at play in the small vessel fishing fleet, there is evidence to suggest that process and structure needed for co-ordination on major safety items such as inspections, compliance and prevention programs are seriously lacking. Consequently, this is affecting delivery of necessary safety features and in the final analysis allowing many safety deficiencies to go unchecked.

Perhaps one of the most serious flaws lie in the fact that there is no inspection or enforcement regime, mandatory or voluntary, for fishing vessels not exceeding fifteen GRT. While TC has statutory authority for provisions under the Canada Shipping Act, they currently have no system in place to administer regulations under the Act, as it pertains to these small fishing vessels. Furthermore, they are presently exploring ways of doing fewer inspections under an auditing system for fishing vessels exceeding fifteen GRT.

Before 1996, OBS had a role that included a small fishing vessel safety component for vessels not exceeding fifteen GRT. Meanwhile, a MOU signed in 1996 between TC and DFO, empowered DFO to administer safety programs for recreational boating only. On the basis of this, DFO through OBS is restricting its primary activities to focus on education, enforcement and prevention for recreation vessels. Some of the OBS prevention efforts have a spill over effect due to the fact that a large number of fishermen are also recreational boaters.

With the proper mandate and sufficient supplementary infrastructure from TC-Marine, OBS may be able to effectively provide assistance in delivering provisions under the CSA for fishing vessels not exceeding fifteen GRT. With sufficient resources they could also assist in SAR case follow-up under the direction of SAR and assist TSB-Marine in investigating accidents. In addition, other measures of empowerment could provide a means for Fisheries Enforcement Officers and CCG Ships Officers to implement a system of checks and balances on safety matters relating to the small vessel fishing fleet. At the same time, the safety regimes of mandated departments must be considered as a possible factor in the increase in SAR incidents. A well-structured program reinforced with good co-ordination is a necessary element of leadership on important safety matters. This may take on new meaning as DFO continues to position itself under its newly acquired mandate, which includes a significant safety component.

2.3 Fisheries Management

Historically, DFO has held an important card in the dynamics of fishing vessel activity. It is mandated through legislation to manage fisheries resources. Statutory empowerment enables DFO to design policy and conduct practices consistent with management objectives, which have been primarily focused on practices of conservation. In the process there have been direct impacts on vessel size, harvesting techniques, areas fished, fishing dates, and other incidental measures that have implications for vessel safety.

While objectives and principles established to achieve DFO fisheries management goals have always been clearly defined, this does not hold true for fishing vessel safety. The absence of fishing vessel safety objectives in the past, either primary or secondary, may very well be why fisheries management practices have not always meshed with measures necessary to ensure fishermen operate in a safe manner. The 1987 CCG report on Fishing Vessel Safety, discussed in the Annex C Literature Review, focused some of its main recommendations around this issue. Linking licensing to items such as safety certification, seaworthiness and developing operational guidelines for quota management practices was at the centre of these recommendations. As a result, a MOU was drawn up after the 1987 report, between DFO and TC to provide for safety in fisheries management practices. The substance of the MOU manifested itself in a very limited way for a short period of time. However by 1990 when the CCG review on Fishing Vessel Search and Rescue Incidents was conducted (Annex C refers) very little progress was noted. Similar recommendations followed the 1990 review but there has been little progress made on these recommendations.

Realignments resulting from government restructuring in the 1990's offer significant means for better departmental communications on these kinds of issues. Placing CCG sections like SAR, OBS and MCTS directly under DFO provides a workable structure and impetus to act in a more proactive fashion. Furthermore, the ongoing major review of Atlantic Fisheries Policy offers the opportunity to entrench safety as a principal element in future fisheries management practices.

2.3.1 Fishing Vessel Replacement Policy

The literature review in Annex C and a number of the agencies identified in Annex B, have drawn particular attention to the role of fisheries management in establishing fishing vessel size restrictions. The Fishing Vessel Replacement Policy has many in the industry holding the view that fishing vessels are fundamentally too small to travel long distances offshore and still maintain operational safety. Some of the problems highlighted are:

- Inadequate accommodation space for crew comfort and safety;
- Insufficient deck space for crew safety;
- Incapable of safely loading and transporting product from areas fished;
- Inadequate size to weather adverse sea conditions;
- Incapable of carrying bulky harvesting gear;
- Incapable of accommodating bulky stability technology; and
- Insufficient fuel capacities for long distance harvesting.

On the other hand, there is a recognized need to balance fleet capacity to the available resource. Larger vessels can and must fish more and would undoubtedly exert pressure for increased access to fish resources. Also, those who trade up to more mobile vessels would pressure for access to areas not previously fished by them and to the possible detriment to the viability of enterprises currently fishing those areas. As stated by the National Research Council Marine Board, "over-capitalization would lead to more marginal operators who find it economically difficult to adequately maintain and equip their vessels to improved safety in a hostile environment."¹ Indeed, the SAR database identifies mechanical failure as the most common reason for increases in SAR incidents. Clearly, vessel size is not the sole determinant of fishing vessel safety. While elimination of vessel replacement guidelines and size restrictions would likely compromise vessel safety, flexibility in these guidelines may seek to address both the safety and overcapacity issues. Reviewing and assessing the vessel replacement guidelines will pose a great challenge for all stakeholders.

2.4 Study and Research

An in-depth understanding of all the issues and of the root causes of safety factors in the fishing industry is clearly the key to effective solutions. Fisher organizations and WHSCC are among some of the agencies anxious to proceed with programs targeted at safety in the small vessel fishing industry. Unfortunately, they are somewhat frustrated in adopting the most appropriate course of action due to relatively inadequate knowledge of operative safety factors in the industry. Memorial University is one of the first to admit and recognize the need for additional research in the area of Maritime Workplace Health and Safety in Atlantic Canada. Recent initiatives by Memorial hope to correct this deficiency and prevent injuries and accidents in the future.

Annex B describes the work of the Memorial University organization known as the Community Alliance for Health Research (CAHR). The structure is an alliance between the University and a broad base of community partners who represent many disciplines such as fishermen's organizations, plant

¹ National Research Council (U.S.) Marine Board. "Fishing Vessel Safety: Blueprint for a National Program". Washington: Committee on Fishing Vessel Safety. (1991)

workers, industry employers and various government agencies. According to one of its working documents, the Alliance "will provide multiple opportunities for researchers to work in an interdisciplinary environment in full collaboration with community partners in identifying and researching issues and **developing strategies for prevention.**" In the long term it is envisioned that initial work should provide a launching pad for a self-sustaining research centre on WHS, based at Memorial and serving both the needs of the province and of the broader Atlantic region. More specifically, the Alliance has identified immediate priority research and, if funded, will be the focus of a 5-year program of activity. As many as five components of the proposed project apply directly or indirectly to fishers and/or fishing vessel safety.

The importance of this type of work speaks for itself. It would seem that DFO with its broad mandate, which now includes safety along with fish management, needs to be involved for three primary reasons: (1) to add an important perspective to the central issues under study; (2) to be able to effectively utilize findings to maximize benefits in overall planning of prevention and other safety programs; and (3) to seek sources of financial or in-kind assistance to ensure the overall launching and long term success of the research program.

2.5 Literature Review

Annex C contains a literature review of regional, national and international studies and reports conducted on the subject of fishing vessel safety. Internationally, it focused on two United States reports and one Irish report, completed in the last decade. Nationally, the review highlighted perhaps two of the most significant reports to impact on recent fishing vessel safety issues in the 1990's. In addition, two reports and one university thesis dealing with regional safety issues were reviewed. The value of the literature review is seen by the insight it brought to realizing the scope of fishing vessel safety problems. It also noted an historical perspective and a means of investigating various solutions recommended in the past. Moreover, it gives a measure of progress and helps identify areas where improvements can be made.

It is evident from the literature review of national studies that many of today's safety issues existed as far back as the early 1980's. Unfortunately, today's situation shows that very little has been accomplished in correcting long standing problems. It is clear from the review of international studies that the problem of fishing vessel safety is universal. Many of the features contained in each report have far reaching implications. Perhaps one of the most ominous features in this respect, was contained in the Irish study on fishing vessel safety where it was found that the smaller the vessel involved in accidents, the more likely the accident resulted in fatalities.

As most of the studies indicate, a wide range of measures has been recommended in the past to deal with fishing vessel safety. A number of initiatives have been attempted but most have met with limited success. Canada and some other EU countries have been somewhat more proactive in mandatory

approaches, whereas the United States has relied more on voluntary measures. Statistics contained in the literature review of the 1987 CCG report indicated that by comparison, the percentage of accidents in the U.S. was significantly greater than other countries where mandatory safety regimes were more prevalent. In addition, all reports show that as fishing vessels get smaller, the less likely it is that they will be subjected to safety regimes, voluntary or mandatory. The current situation in Newfoundland and throughout Canada where fishing vessels not exceeding fifteen GRT are left without a suitable safety regime best exemplifies this fact.

All studies in the literature review indicate that while most fisheries carried out in different jurisdictions have unique characteristics, they are all bounded by commonality. They carry a similar level of inherent risk, but more significantly, they all seem to compound risk through normal human behavior. In examining the literature on fishing vessel safety, common elements that prevail in affecting safety include such items as a tendency by fishermen to accept and take risks for economic gains, poor seamanship practices, improper loading, and lack of standards in safety equipment, education, training and overall operator competency. Finally, studies in all jurisdictions paid special attention to the matter of external influences and the one most striking was that of fisheries management. The common theme in this respect was that fisheries management was carried out with conflicting objectives, where safety was subordinated to very marginal or secondary objectives at best and, at worse, no consideration for safety at all.

Overall, common elements have manifested themselves into a lackluster safety culture that has invariably carried a heavy price. Numerous studies point to fatalities and significant loss of property as a result of poor seamanship, lack of safety or survival equipment, fatigue, inadequate vessel design, improper loading, questionable management practices, poor communications, inadequate prevention programs, poor training and a multitude of incidental factors. It also appears that every study or report has properly identified similar factors contributing to fishing vessel safety. Each has reached similar conclusions and recommended practical solutions. However, it appears that most previous attempts to address issues affecting fishing vessel safety have not been sustained by the appropriate authorities. Consequently, the issues keep revolving and the problems refuse to disappear, threatening in many cases, to get even worse.

SECTION III

CONCLUSION AND RECOMMENDATIONS

3. *Conclusion*

The fishing vessel safety review examines the issue of safety concerns in the fishing industry. The SAR incident rate and the number of fatalities, by all accounts, indicates that there is a real cause for these concerns. Whether it is mechanical failure or more serious distress situations, it is all heading in the same direction. As studies in other jurisdictions have shown, the root cause is not simple, but rather involves a combination of many elements fundamental to safety. Some are human errors brought on by subjective factors while others are caused by influences beyond the control of fishermen themselves.

The most common thread running throughout the review is the need for a suitable safety regime. While this requires the collective effort of all stakeholders, very fundamental steps have to be taken to provide a strong working structure. Consequently, the issue of mandate and empowerment has to be addressed in order to provide sufficient leverage for implementation of prevention programs through education and enforcement. TC-Marine Safety therefore must find a way to augment exercising their mandate for the Small Fishing Vessels Inspection Regulations to include fishing vessels not exceeding fifteen GRT. The current void has left fishing vessels not exceeding fifteen GRT in a regulatory “no mans land” and has placed in question a necessary tool for effective administration of safety programs.

Through the process of preparing the fishing vessel safety review, concerns regarding DFO vessel size restrictions, especially in offshore areas, were voiced by important players. TC-Marine Safety surveyors, private insurance surveyors, fishermen’s union representatives and at least one academic, expressed the view that safety is being compromised under the current fishing vessel replacement policy. Available databases do not point to vessel size as being a significant factor in the increase in SAR incidents. Nevertheless it is becoming increasingly clear that to ensure safety in the future, the issue of smaller vessels fishing further from shore must be examined. In this process it must be recognized that increasing vessel capacity may work against safety through its detrimental effect on enterprise viability. The many legitimate safety concerns of knowledgeable industry participants give added impetus for examining such items as education, training, safety standards, safety certification, enforcement, fisheries management policy, compliance and other targeted prevention programs.

In the meantime, the matter of trends and patterns established through a statistical database must be properly balanced. Insufficient data and/or lack of access to specific data such as that collected by insurance brokers creates a missing link in establishing accurate cause and effects. Occupational Health and Safety (OHS) data is practically non existent and TSB-Marine has narrowed their data collection to only selective incidents that has significant interest or only where “ lessons can be learned.” DFO has identified

the fact that the number of registered fishing vessels does not correlate with active vessels. Even SAR database has its limitation when attempting various correlations. TC-Marine Safety pointed out that the full extent of safety issues might not be completely manifested due to a relative short time frame involving new dynamics in the fishing industry. Most importantly, this review is missing the very key ingredient of a recognized forum for direct input from fishermen themselves.

The operative question at this stage lies in how the issue, as it appears, is dealt with. Without absolving fishermen of their responsibility to adopt proper measures for the safe operation of their vessels, other players must recognize their responsibility and act decisively. As this report is being written, opportunities are available for positive action.

TSB-Marine has included small fishing vessel safety as a priority on its Significant Marine Safety Issues list. The Canadian Marine Advisory Council (CMAC), under the chairmanship of TC-Marine Safety, is in the process of conducting a fishing vessel safety review for the purpose of seeking remedial action. CSA reform is nearing its final stages of enactment and provides a venue for better regulatory application relating to small fishing vessel safety. At the same time, a major initiative involving a review of Atlantic Fisheries Policy is nearing completion. This policy review represents an opportunity for DFO Fish Management to entrench the fundamental principle of safety as a primary objective. Given the present departmental structure where CCG marine programs are included under DFO, the stage appears to be set to better mesh fisheries management policy with safe practices and safety regulations under the CSA. Meanwhile, Memorial University, through its Community Alliance initiative, promises a tremendous opportunity to provide badly needed insight into the cause and effect of fishing vessel safety through research and study. On the SAR level, the final stage of GMDSS implementation gives the SAR organization additional leverage to add safety features to its operation in better managing fishing vessel incidents in the offshore. Equally important is the maintenance of owner/operator standards in availing of GMDSS equipment compatible with domestic carriage requirements.

3.1 Recommendations

The following recommendations are based on needs identified throughout the review. Often, the recommendations are similar to those noted in previous reports. Even with time and significant change many have remained valid and relevant. As was noted in the 1987 CCG report into Fishing Vessel Safety, "the success of recommendations will only be proportional to the amount of priority and effort put into their implementation". Meanwhile, having identified the key issues affecting small fishing vessel safety, the challenge remains for all those affected to develop a sound coordinated plan of action that can withstand the test of safety under any circumstances.

RECOMMENDATIONS

ISSUE: *Identification and planning of the fishing vessel safety issues*

Recommendation # 1

- A. Reactivate the Regional Fishing Vessel SAR Advisory Council, established after the 1987 CCG report. On an ongoing basis this will ensure that issues are clarified and solutions sought to safety concerns in the small vessel fishing fleet.

- B. The SAR Advisory Council should be chaired by the Canadian Coast Guard. The Council would consist of representatives from appropriate federal and provincial safety providers such as TC-Marine Safety, TSB-Marine, DFO (Fish Management, Regional Operations Centre, CCGS Fleet Officers, OBS, MCTS), CCGA, WHSCC, Memorial University's CAHR, Marine Institute, Provincial Department of Fisheries and Aquaculture and industry representatives such as Fishermen's Union, Professional Fish Harvesters Certification Board, Insurance Surveyors and/or Underwriters the Canadian Sealers Association and others as deemed appropriate by the Council.

- C. The SAR Advisory Council would immediately initiate a process to consolidate fishermen's views and concerns on safety issues. This would ensure inclusion of industry perspectives on fishing vessel safety that may not have been adequately addressed in this report.

- D. The SAR Advisory Council would establish a Terms of Reference (TOR) for the essential elements of a suitable safety regime and would establish an action plan for development and implementation.

ISSUE: *Safety mandate and administration of Small Fishing Vessel Inspection Regulations*

Recommendation # 2

- A. TC-Marine Safety should clarify its intent with regard to the application of regulations under the Small Fishing Vessel Safety Regulations, particularly as it relates to fishing vessels not exceeding fifteen GRT.

- B. In keeping with the spirit and intent of the MOU between TC and DFO respecting Marine Transportation Safety, a process of consultation should be undertaken to address mandates and roles of each department in enhancing safety for the small vessel fishing fleet.

ISSUE: Role of departments in delivering prevention programs**Recommendation # 3**

- A. TC-Marine Safety and DFO should consult on ways and means of conducting effective prevention programs through existing infrastructure. This should include elements such as education, safety inspections, seaworthiness certification and other measures designed to enforce provisions of regulations under the Canada Shipping Act. If properly resourced this could include an enhanced role for OBS.
- B. Consideration should be given to the utilization of CCG Fleet Officers and Fisheries Enforcement Officers in support of an enhanced fishing vessel safety program.
- C. Consideration should be given to the utilization of OBS in performing other peripheral duties in support of small fishing vessel safety, including SAR case follow-up in collaboration with MRSC.

ISSUE: Lack of fishing vessel casualty investigations**Recommendation # 4**

- A. TSB-Marine should review their investigation regime to address the issue of fishing vessel casualties in Newfoundland and Labrador. Their system should be in keeping with their mandate to investigate quickly and seek remedial action through recommendations that seek to prevent future occurrences.
- B. TSB-Marine, TC-Marine Safety and DFO should engage in discussions to determine ways and means of better facilitating TSB's mandate of investigating accidents involving small fishing vessels.

ISSUE: The role of Fish Management**Recommendation # 5**

- A. The current Atlantic Fisheries Policy Review should give priority to the establishment of safety as an important element in fisheries management policy.

- B. The Integrated Fisheries Management Plan process should give thorough consideration to the possible effects that changes in management plans may have on safety. This would include discussion and consideration of the safety implications of management plan elements during the Industry Advisory Process and in the development of Conservation Harvesting Plans and would be extended to any reviews of licensing, allocation or access issues. To facilitate this objective there should be a safety representative (TC and/or CCG) participating in the Industry Advisory Process.
- C. DFO should ensure that flexibility in the vessel replacement guidelines is discussed by all stakeholders with a view to balancing safety and overcapacity concerns.

ISSUE: *Intra-departmental co-ordination*

Recommendation # 6

- A. DFO shall continue with the newly established DFO intra-departmental fishing vessel safety working group. This provides a process whereby the different aspects of fishing vessel safety can be discussed and co-ordinated amongst different DFO sectors.

ISSUE: *Possible enhanced role for Coast Guard Auxiliary in prevention programs*

Recommendation # 7

- A. CCG and CGA should further examine the possibility of expanding CGA's role in fishing vessel safety to incorporate prevention elements such as education, safety promotion and courtesy inspections.

ISSUE: *Training and education standards*

Recommendation # 8

- A. DFO (CCG) should engage in a consultation process with the Professional Fish Harvesters Certification Board and the Marine Institute and other interested parties to explore training and

education standards that are consistent with professionalization and fishing vessel safety.

ISSUE: *Study and research into fishing vessel safety (identification of cause and effect relationship) necessary to design prevention programs*

Recommendation # 9

- A. DFO should continue as an active participant in the Memorial University proposed Community Alliance for Health Research (CAHR) program. This will ensure that CCG's views are considered and outcomes would be more applicable to the design of fishing vessel safety programs.

- B. CCG should designate a representative to the CAHR as a means of maintaining a two-way transfer of information. A CCG representation on CAHR could facilitate possible funding from the National SAR Secretariat under the "New SAR Initiatives Fund" (NIF).

ISSUE: *Response regime to SAR incidents*

Recommendation # 10

- A. The National SAR Program should continue to examine SAR reponse capability to ensure that SAR resources are properly allocated and utilized. Consideration must be given to potential new areas of activities, including distant offshore areas, by local/regional fishing vessels and the increases in the number of SAR incidents.

ANNEX “A”

STATISTICAL ANALYSIS

1. Introduction

The statistics reviewed in this section are extracted from National Search and Rescue Database (SISAR), Fish Management - fishing vessel registration and licensing and Policy and Economics Statistical Branch of DFO. For the purpose of the statistical analysis fishing vessels have been divided into three (3) main classes: less than 35 feet, 35 to 45 feet, and 45 to 65 feet.

The initial analysis used the period 1987 to 1999, however due to inconsistencies between the various databases in use prior to 1992 it was decided that the detailed analysis would cover the period 1993 to 1999, except for the fishing vessel registration which shows statistics from 1988. This period also reflects the changes in fishing trends with vessels fishing different species such as crab, scallop and shrimp further offshore.

Figures and Tables that follow show the actual changes that have taken place in the small vessel fishing industry in the Newfoundland region. The statistics focuses on the following types of data:

- changes in the number of registered fishing vessels from 1988 to 1999,
- changes that have occurred in each of the vessel classes,
- NAFO areas and the numbers of vessels licensed to fish,
- number of Search and Rescue incidents by year and class-size of vessel,
- distance from shore for fishing vessel incidents,
- types of fishing vessel incidents, and
- SAR incidents per SAR area.

It must be noted throughout this report that the number of registered fishing vessels has been constantly dropping and due to the changes in the fishery, the effort in terms of the number of fishing days is less than in the late eighties and early nineties. **All vessels registered in the Newfoundland Region may not be active in the fishery. Most fishing Enterprises have more than one registered vessel, however only one is normally used at a time depending on the type of fishery that is being pursued.**

2. Fishing Vessel Registration

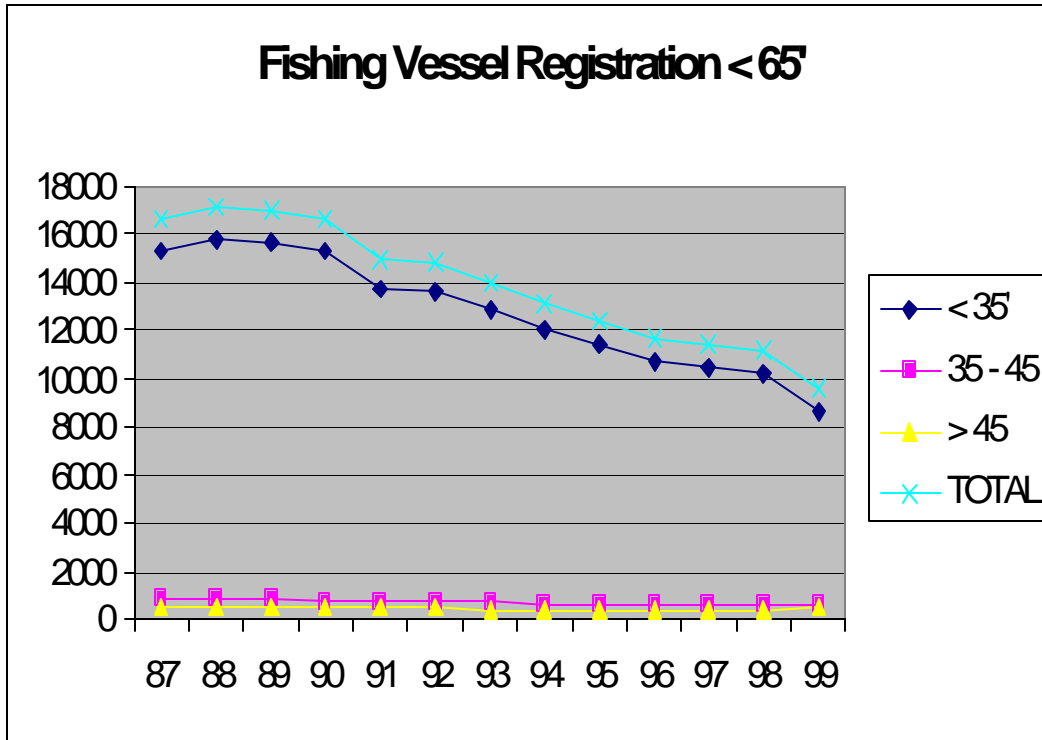


Figure 6

Figure 6 - shows the steady decline of registered vessels from 17,053 in 1988 to 9,573 in 1999

YEAR	< 20'	20'-24'11"	25'-29'11"	30'-34'11"	35'-39'11"	40' 44'11"	45'-49'11"	50'-54'11"	55'-59'11"	60' 64'11"	Total <65
1988	8,452	4,117	1,879	1,395	561	157	167	183	65	77	17,053
1989	8,158	4,275	1,878	1,427	550	163	150	183	65	85	16,934
1990	7,811	4,306	1,811	1,432	533	166	157	181	67	92	16,556
1991	6,505	4,038	1,740	1,403	487	169	146	182	66	98	14,834
1992	6,298	4,159	1,728	1,394	478	170	135	183	60	101	14,706
1993	5,851	4,053	1,611	1,326	445	164	132	174	58	101	13,915
1994	5,389	3,899	1,524	1,262	407	171	121	164	59	102	13,098
1995	5,006	3,703	1,457	1,233	370	177	115	157	59	102	12,379
1996	4,559	3,564	1,353	1,185	331	188	115	159	55	101	11,610
1997	4,364	3,557	1,351	1,198	297	208	106	150	62	103	11,396
1998	4,123	3,544	1,335	1,249	267	261	88	141	79	126	11,213
1999	3,182	2,955	1,194	1,265	209	325	79	133	86	145	9,573

Table 1

Table 1 – shows the number of vessels registered in each size category and totals each year 1988-99

FISHING VESSEL REGISTRATION COMPARISON			
Vessel Size	1999	1988	% Change
<35'	8589	15843	-46%
35' - 39'11"	209	561	-63%
40' - 44'11"	325	157	107%
45' - 54'11"	212	350	-39%
55' - 64'11"	231	142	63%
TOTAL	9566	17053	-44%

Table 2

Table 2 – shows the number of vessels registered in 1988 compared with 1999 including the percentage of change.

The total number of registered fishing vessels in 1999 has decreased by 44% since 1988. Within the sub-classes the decrease in the 30 to 35 foot has been less than that in the less than 20 foot; 20 to 25 foot and the 25 to 30 foot. This may indicate that fish harvesters in the less than 35 foot class prefer the maximum size vessel permitted under the vessel replacement policy.

Likewise, in the 35 to 45 foot vessel class, fish harvesters have also moved up or remained with the maximum 40 to 45 foot sub-class. The number of vessels in this sub-class has increased by more than 100 % while there has been a corresponding decrease in the 35 to 40 foot sub-class.

In the larger 45 to 65 foot class of vessels the numbers of vessels has increased in the 55 to 60 foot sub-class and have almost doubled in the 60 to 65 foot sub-class. This has occurred while the 45 to 50 foot and the 50 to 55 foot sub-classes have decreased significantly (39 %).

This shift to the maximum length within the sub-class of fishing vessels as permitted by the vessel replacement policy may be an indication that fishers prefer the larger class vessels. This is most likely linked to the changes in the fishery such as harvesting different species and fishing further offshore. Aside from carrying capacity this move may be linked to the issue of safety offered by fishing in larger vessels.

2.1 Fishing Enterprises < 65' Activity 1999

Tables 3(a), 3(b), 3(c) and Figure 7 show various profiles of the Total Enterprises by NAFO Divisions for 1999.

Core Enterprises, <65 feet by NAFO Division, 1999

NAFO	<25	25-34	35-44	45-54	55-64	No Vessel	Total
2H	2	3	0	0	0	2	7
2J	72	91	8	18	9	3	201
3K	404	406	111	79	73	0	1,073
3L	265	608	193	69	91	9	1,235
3Pn	43	42	7	5	2	2	101
3Ps	338	472	125	6	6	0	947
4R	420	346	60	29	46	7	908
Total	1,544	1,968	504	206	227	23	4,472

****excludes enterprises with vessel and/or seal only**

Table 3(a)

Noncore** Enterprises, <65 feet by NAFO Division, 1999

NAFO	<25	25-34	35-44	45-54	55-64	No Vessel	Total
2J	31	14	0	0	0	4	49
3K	512	44	4	0	0	31	591
3L	339	65	11	4	1	30	450
3Pn	44	2	0	1	0	1	48
3Ps	163	19	1	1	0	7	191
4R	241	72	6	0	1	17	337
Total	1,330	216	22	6	2	90	1,666

****excludes enterprises with vessel and/or seal only**

Table 3(b)

Total Enterprises, <65 feet
by NAFO division, 1999**

NAFO	<25	25-34	35-44	45-54	55-64	No Vessel	Total
2H	2	3				2	7
2J	103	105	8	18	9	7	250
3K	916	450	115	79	73	31	1,664
3L	604	673	204	73	92	39	1,685
3Pn	87	44	7	6	2	3	149
3Ps	501	491	126	7	6	7	1,138
4R	661	418	66	29	47	24	1,245
Total	2,874	2,184	526	212	229	113	6,138

**excludes enterprises with vessel and/or seal only

Table 3(c)

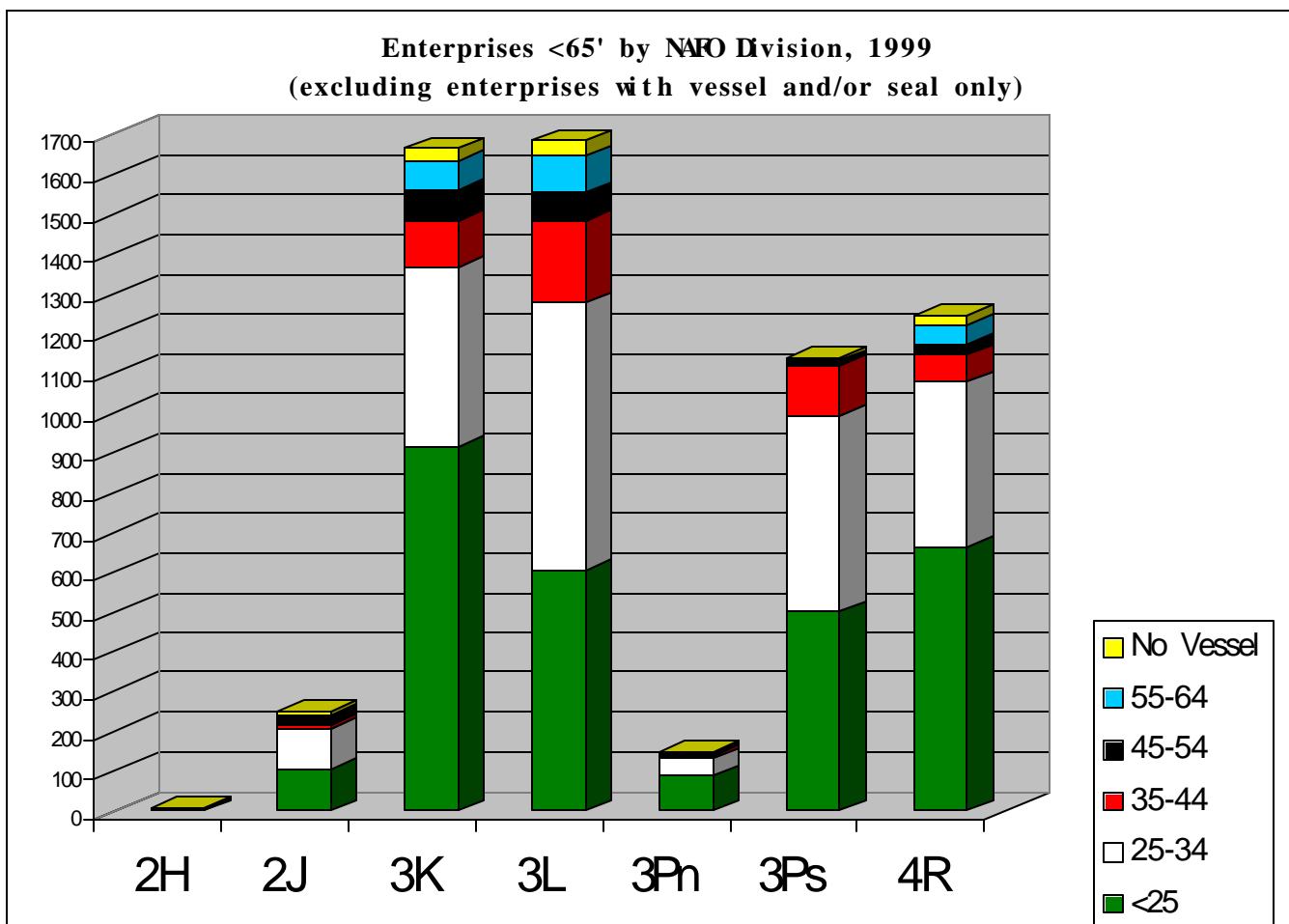


Figure 7

NAFO FISHING ZONES

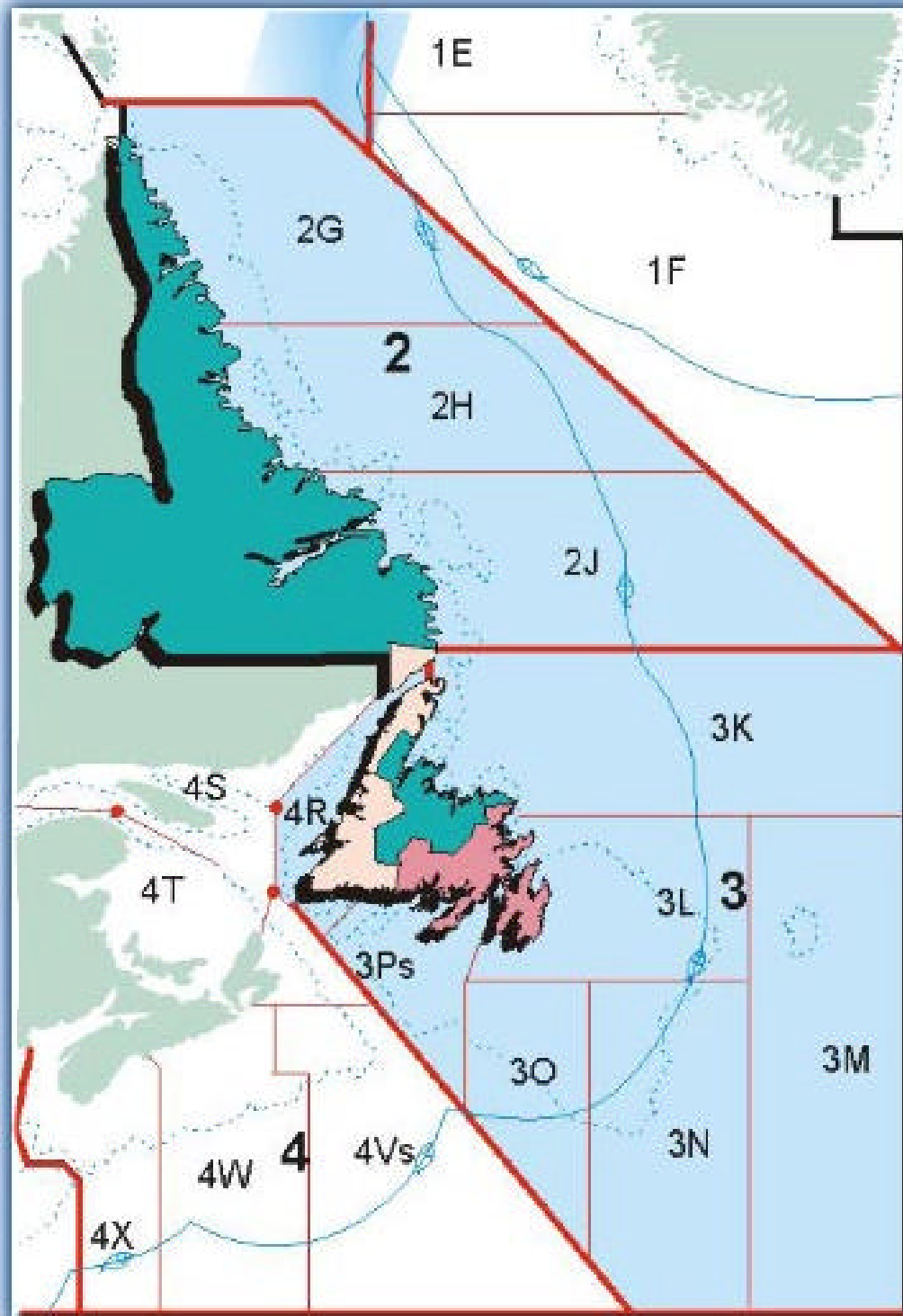


Figure 8

3. Search and Rescue Statistics

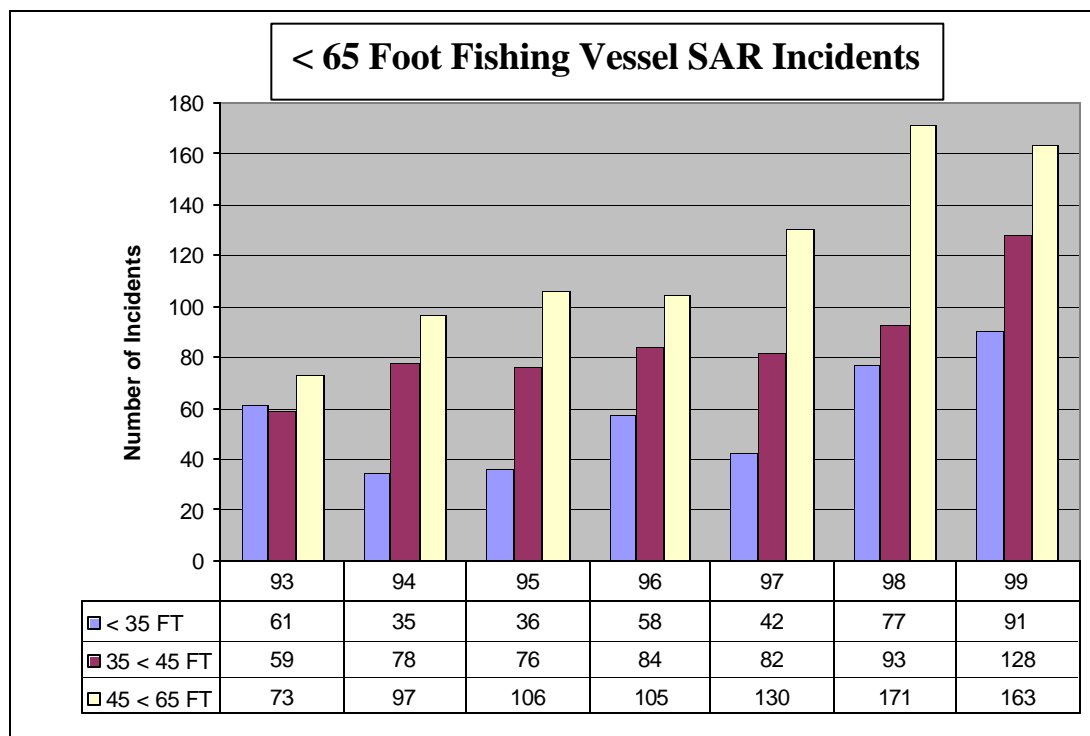


Figure 9

Figure 9 - indicates that there has been an increase in the number of SAR incidents in all fishing vessel class sizes. The SAR incident ratio per registered vessel has more than doubled for all classes of vessels. The actual numbers of incidents in the 35-65 foot classes have increased by 100 % since 1993.

Statistics for 1993 show the number of incidents were almost evenly distributed throughout the three vessel classes. Since 1992 the level of fishing activity for the less than 35 foot class of vessels has decreased with the cod-moratorium, however there are some vessels in this class who participate in the crab fishery. The number of SAR incidents in 1993 for the less than 35 foot vessels were less than half of what they were for 1992. As the cod fishery returns it is anticipated that the number of SAR incidents will also increase. This is already evident in the 1998 and 1999 seasons which had a limited cod fishery in NAFO Zone 3Ps on the South Coast. **It is also known, but not well documented, that a large portion of this class of vessels (open boats) do not carry radio communications equipment. Because they fish closer to shore and in closer proximity to other fishing vessels, many incidents are not reported and are therefore not reflected in the SAR statistics.**

SAR incidents have increased significantly in the over 35 foot classes of vessels. In 1999 the number of fishing vessels 35 to 45 feet that were involved in SAR incidents represents 23%

of the total registered vessels in that class. In the same year the number of vessels 45 to 65 feet that were involved in SAR incidents represents 38% of the total registered vessels in that class. These vessels are now pursuing fisheries such as shrimp, crab, scallop, turbot and seals further offshore. Distance from shore has a major implication for vessel safety. Weather and sea conditions, vessel stability, stress and strain on the hull and machinery and personnel fatigue are all compounded and may contribute to the increase in the number of SAR incidents.

3.1 SAR Incident Types

Fishing Vessel Incidents by Type								
	1993	1994	1995	1996	1997	1998	1999	Total
CAPSIZED	4	1	1	2	2	2		12
CRASH						1		1
DISABLED	147	163	161	178	187	241	299	1376
DISORIENTED	2	1	2	3	3	3		14
FALSE ALARM	3	2	8	7	4	17	26	67
FOUNDERED	2	5						7
GROUNDED	4	2	5	1	3	2	3	20
MAN OVERBOARD	1	1						2
MEDICAL	5	14	13	19	18	11	16	96
MISSING PERSON(S)							1	1
ON FIRE	5	2	6	9	5	6	7	40
OTHER	10	6	11	10	11	30	10	88
STRANDED							3	3
TAKING ON WATER	10	13	11	18	21	28	17	118
Total	193	210	218	247	254	341	382	1845

Table 4

Table 4 - indicates that most fishing vessel incidents are caused by vessel disablement.

Data verifying the causes of these incidents are not available from the TSB-Marine or TC-Marine Safety, the federal government agencies responsible for investigating those occurrences. However, information from industry and through the SAR system confirms that it mainly includes engine failure, transmission failure, fouled propellers and steering problems.

Any of the causes for being disabled in and of themselves may not be a major problem. However when this type of incident occurs 200 miles offshore with no other vessel in the area and when there is a gale or storm warning, the situation quickly becomes a serious concern.

Other types of SAR incidents such as fire, capsizing, man overboard and taking on water, given the above scenario of distance, weather and the availability of rescue vessels also add a new dimension to the seriousness of the situation.

3.2 SAR Incidents - Distance Offshore

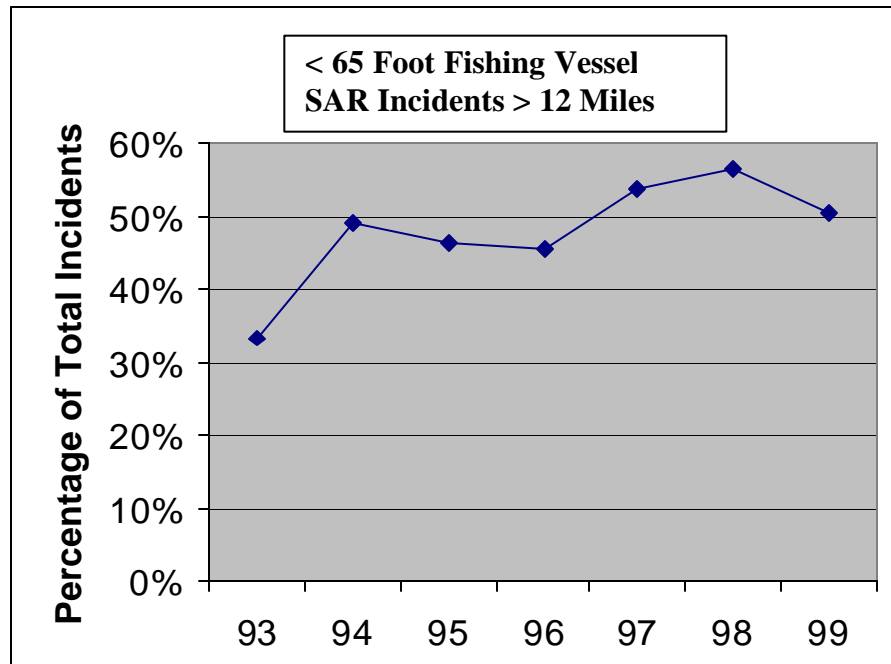


Figure 10

Figure 10 - shows that the trend in SAR incidents are occurring further from shore.

In 1993 less than 33 % of the incidents occurred outside the 12 mile territorial sea limits while by 1998 the percentage had increased to 56 %. While the 12-mile limit is used as a reference many of these incidents are now taking place much further offshore. Many calls for assistance are from fishing vessels 150 to 200 miles from shore.

This distance from shore is placing greater demands on primary SAR resources and other government vessels that may be operating in or near the area of a marine incident. If a primary SAR vessel is not available to render assistance then another government vessel (secondary resource) is usually tasked. This means that research work or other primary duties of that vessel have to be suspended. If there is a requirement to tow the disabled vessel to port, several days of regular program activity may be lost. This element of lost time is also applicable to other CCGA vessels that may have to discontinue fishing activity to render assistance, which often requires towing another fishing vessel to port. Other complications related to operating at a long distance

from shore such as the extra fuel demands in towing sometimes causes the assisting vessel to also become a statistic.

3.3 SAR Incidents per SAR Areas

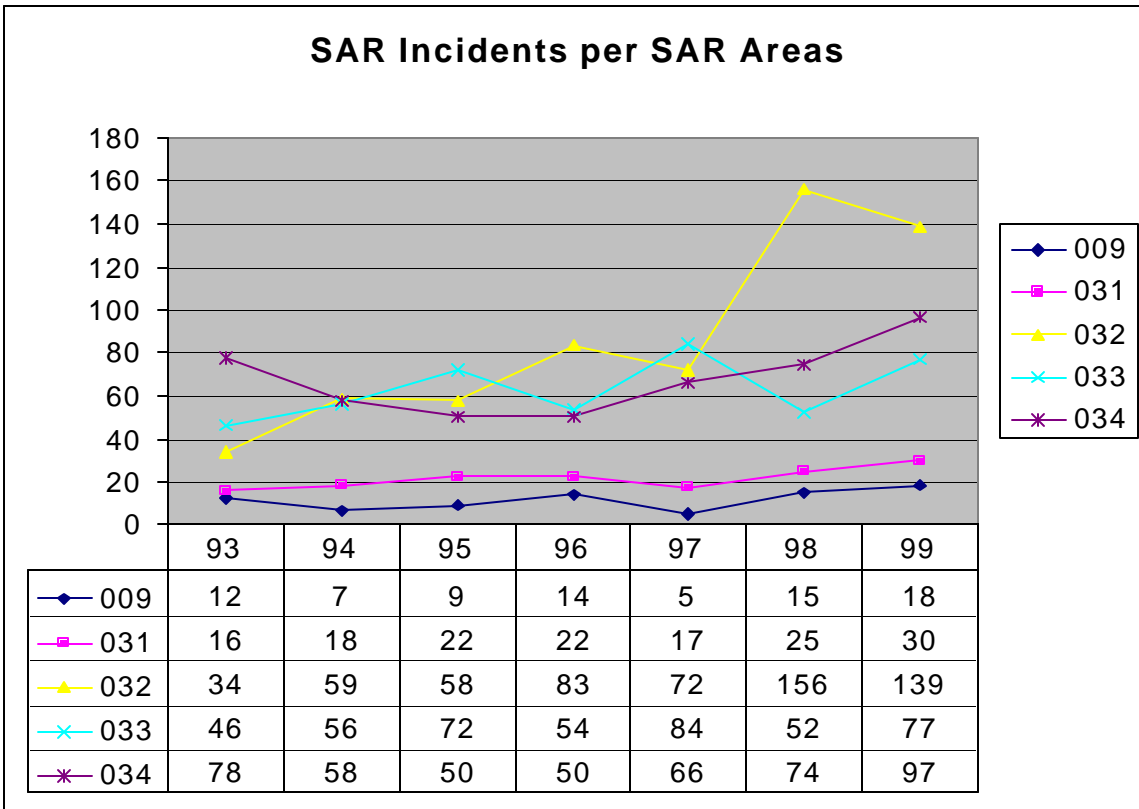


Figure 11

Figure 11 - clearly indicates that incidents have increased in all of the SAR Areas since the low of 1993. This year also coincided with the first full year of the cod-moratorium.

SAR Area 009 (Labrador Coast) and 031 (West Coast of Newfoundland) have had gradual increases in the number of SAR incidents. Area 32 (Northeast Coast) has seen the most dramatic increase in the number of SAR incidents. The numbers of incidents have increased from 34 in 1993 to 139 in 1999 and a high of 156 in 1998. This increase correlates with increased activity in the seal hunt and harvesting of other species such as shrimp, scallop, crab and turbot.

SAR Area 033 (East Coast of Newfoundland) incident rate, although higher in 1999 than in all of the previous years except 1997, has seen some fluctuations. Many of the incidents in this area are occurring further offshore. This same trend occurred in the early 90's with the Virgin Rock fishery.

SAR Area 034 (South Coast of Newfoundland) saw a decrease in the incidents after the cod-moratorium closed in 3PS in 1993. This number has increased significantly again since the opening of that area in 1997 with much smaller cod quotas.

ANNEX "B"

DEPARTMENTAL ROLES IN FISHING VESSEL SAFETY

1. Introduction

It has been well established that fishing vessel safety is a function of many variables impacting, directly or indirectly, on the vessel. Often, fishing vessel safety incidents are seen in somewhat narrow terms and when an accident occurs it can be traced to such items as overloading, weather damage, obstructions, navigational error and other factors. Looking beyond the obvious however, the root cause may have been planted well in advance of the accident happening. A National Research Council (NRC) study in the United States in 1991 "Fishing Vessel Safety – Blue Print for a National Program", indicated that external influences beyond the control of fishermen quite often set the stage for accidents to happen. Stability problems caused by overloading for example may indirectly be a result of insufficient training standards. On the other hand, competition for quota shares may have driven the action to take more fish than the vessel was designed to carry.

1.1 Previous Recommendations

The CCG study of 1987 into fishing vessel safety focused largely on institutional shortfalls in the delivery of safety regimes for the fishing industry. Accordingly, their recommendations reflected measures designed for agencies to impact significantly on safety matters. CCG was encouraged to take a more proactive role in safety issues through committee structures, research and development, prevention programs and other types of safety standards. DFO was believed to be a key player in that fish management could be strategically delivered with more safety oriented objectives in mind. A higher standard of inspection and enforcement was recommended through the office of Ship Safety, which at that time was a line department of the CCG.

1.2 Departmental Roles and Responsibilities

More and more the line between accidents and prevention is being defined in terms of roles and responsibilities of impacting agencies. The call for better safety regimes puts the spotlight directly on stakeholders like DFO, CCG, TC-Marine Safety, training institutions and even private sector interests such as insurance brokers. The United States Task Force Report of 1999 was clear in its view that progress in fishing vessel safety was impaired by lack of action on earlier recommendations that would entail a more mandatory approach involving the Coast Guard as a lead player. The Irish study of 1996 was moved to recommend measures that involved regulations, enforcement, certification, standards and even called on

government to provide grants and manpower.

2. *Impacting Agencies*

Providing solutions to safety related issues invariably defaults to agencies mandated to serve the fishing community. Whether national or regional in scope, Newfoundland has a long list that either has the capacity to impact significantly or is pro-actively engaged in the business of fishing vessel safety. Generally, these include the following:

- DFO and line departments such as Fisheries Management, Canadian Coast Guard (CCG), Office of the Boating Safety (OBS), Marine Communications and Traffic Systems (MCTS), Search and Rescue (SAR) and other marine programs;
- Transport Canada (TC) - Marine Safety;
- Transportation Safety Board (TSB) - Marine;
- Canadian Coast Guard Auxiliary (CCGA);
- Memorial University - Marine Training Institute;
- Provincial Environment and Labor;
- Provincial Department of Fisheries and Aquaculture;
- Professional Fish Harvesters Certification Board;
- Insurance Underwriters, and
- Fishermen's organizations (Unions).

2.1. *Department of Fisheries and Oceans (DFO)*

Many in the fishing industry have traditionally come to see DFO only as a vehicle for fisheries management. This held true until restructuring during the 1990's realigned several federal government departments. As a result of this DFO was given the added responsibility of administering programs of the CCG. With this came a significant mandate for the administration of safety programs for the maritime industry.

2.1.1 *Safety Mandate*

Placing CCG under the management of DFO meant more direct responsibility for DFO on issues of safety. Consequently, DFO has been charged with the added responsibility of delivering through CCG, safety oriented programs, with maritime SAR being at the highest of its priority. The Oceans Act provides

enabling legislation for DFO to provide for an effective maritime SAR system. Also a Memorandum of Understanding between Transport Canada and Fisheries & Oceans Respecting Marine Transportation and Safety & Environmental Protection (MOU) signed in 1996 between TC and DFO formally establishes a new working relationship between the two departments. It also serves as a means of empowerment for DFO to establish practices consistent with maintaining a high level of marine safety in specific areas of responsibility. Meanwhile, the MOU is clear in that TC-Marine Safety retains full responsibility for regulations under the Canada Shipping Act (CSA) as it relates to commercial shipping, including fishing vessels of all sizes. Consequently, DFO's prevention activities with regard to vessel safety are restricted by the MOU to recreational boating only.

2.1.2 MOU on Transportation & Environmental Protection

At the working level, the MOU “provides an administrative framework which ensures a coherent and consistent approach to all aspects of marine transportation safety and environmental protection”. It is also important to note section 1 (2) which states “ TC and DFO recognize that each department has distinct but interrelated responsibilities for the management of marine transportation safety and environmental protection”. This is further entrenched in a section under Principles and Commitments where section 2 (2) states “ the first obligation of both departments is to maintain the high level of marine safety and environmental protection the public has come to expect of the Federal Government”. These items are significant in that clear mandates for action and cooperation provide ample latitude for the implementation of measures to sufficiently ensure safety in the fishing industry without reducing or encumbering authority of either department.

2.2 Fisheries Management

Historically, DFO fisheries management has held important control of fishing vessel activity. They have been mandated through legislation to manage fisheries resources. Statutory empowerment enables DFO fisheries management to design policy and conduct practices consistent with fisheries management objectives. In the process there has been direct impact on vessels size, harvesting techniques, areas fished, fishing dates, and other measures that have implications for vessel safety. The objectives and principles established to achieve fisheries management goals have always been clearly defined. Just as distinctly has been the absence of objectives relating to fishing vessel safety, either primary or secondary.

2.2.1 Safety Objectives and Practices

Lack of fishing vessel safety objectives and practices has not gone unnoticed in the past. The 1987

CCG report on fishing vessel safety focused some of its main recommendations around this issue. Linking licenses to safety certification, safety promotion and developing operational guidelines for quota management was at the center of these recommendations. Shortly after the 1987 report a Memorandum of Understanding was drawn up between DFO and Transport Canada to provide for safety in fisheries management practices. The substance of the MOU manifested itself in a very limited way for a short period of time. However by 1990 when the CG review of fishing vessel incidents was undertaken the report expressed concerns over the lack of progress on its intent and additional recommendations followed.

A decade later, in year 2000, key issues regarding matters of fishing vessel safety and fisheries management practices have not changed substantially, but have perhaps taken on new meaning in the Newfoundland fishery. New types of fisheries requiring vessels to proceed further offshore and also fish longer periods of the year, are forcing a reassessment of issues. Meanwhile, incorporating safety into DFO fisheries management has also not yet progressed to the operational level. However fundamental changes have occurred and are continuing to unfold to a point where this process may be better facilitated.

2.2.2 Fishing Vessel Replacement Policy

The issue of size restrictions as defined in the Fishing Vessel Replacement Policy poses both a challenge and a dilemma for DFO fisheries management. Many in the fishing industry hold the popular view that vessels are fundamentally too small to travel long distances offshore, provide comfort and safety for the crew, safely load and transport various type of fish, adapt to stability technology and adequately carry bulky harvesting gear without compromising safety. Indeed, issues like small fishing vessels only having enough fuel capacity to transit to and from fishing grounds without sufficient fuel to fish, raise a serious concern about the practical application of vessel replacement rules.

On the other hand, DFO is compelled to balance all of its policies with many issues including capacity in the fishing industry. It seems that capacity has become a huge lever for increased pressure on fish stocks. With millions of dollars recently directed at reducing capacity in line with diminished stocks, the idea of approving larger vessels creates an issue of inconsistency with primary objectives. At the same time, DFO does not have sufficient evidence to suggest that size alone will solve the problem of fishing vessel safety. Current SAR database, for example, points to mechanical failure as one of the highest SAR incident rates. Also, given that this was more prevalent among vessels 35 to 65 feet in length, it may be argued that allowing smaller vessel to move up would in fact shift or increase the problem.

Meanwhile there is a compelling argument for the role of size restrictions or capacity limits in the fishing vessel safety equation. Since fleet viability is a direct function of capacity it can be argued that overcapacity will reduce viability to the point where fishing vessel safety is seriously affected. This point was illustrated in the United States NRC study into fishing vessel safety “Blue Print for a National Program”. In the study (p130) three external influences on safety were examined: fisheries management practices,

insurance, and environmental conditions. It was indicated that although neither fisheries management practices nor insurance directly causes vessel or personnel casualties, each contributes to an economic environment that has a potential impact on fishing vessel safety. It goes on to explain (p132) the management system's inability to match harvesting capacity to biological productivity of fishery stocks has resulted in a highly competitive operating environment in which fishermen may take unnecessary risks to maintain their livelihood. This practice has resulted in overcapitalization in some fisheries and more marginal operators who find it economically difficult to adequately maintain and equip their vessels to improve safety in a hostile environment. Finally (p133) it says "measures that do not restrict vessel conversions could create or aggravate redundant harvesting capacity in other overcapitalized fisheries, potentially shifting safety problems from one fishery to another".

2.2.3 Enhanced Safety Functions

If properly facilitated, many aspects of safety can be enhanced through the fisheries management definition without compromising other management objectives. Connecting licenses with competency, safety certificates and vessel seaworthiness may provide a good system of checks and balances for a long-standing problem. Incorporating safety oriented measures into other management procedures such as permitting variations on partnering and quota allocations, could introduce valuable safety practices that makes fishing in small vessels more practical. Before proceeding with these kind of measures however, there would have to be a serious buy in by other players, including fishing industry representatives.

2.3 Canadian Coast Guard

The CCG has always played an important safety role in the activities of fishing vessels. Whether it is through passive means such as navigational aids or more active processes like Marine Communications and Traffic Services (MCTS), the CCG presence is always an important factor in marine incident prevention. CCG Maritime SAR often becomes the final line of defense in mitigating the effects of marine accidents. In Newfoundland and Labrador the fishing industry is by far one of the largest clients. In a region where fishing is the predominate factor in the lives of its population, it is not unrealistic to have high expectations for the CCG in the delivery of safety services for fishermen.

2.3.1 Roles and Responsibilities

The CCG like many other federal agencies has felt the effects of internal restructuring during the 1990's. The reorganization of Ship Safety into a separate entity under Transport Canada changed one of the CCG's basic roles. A more corporate approach in the delivery of services also signaled a fundamental administrative change. Nevertheless, the scope of service and dependence on CCG has not significantly

changed. In light of its prominence in Newfoundland and Labrador, fishing vessel safety has always represented a priority and provided a huge challenge for the CCG. Reorganization and restructuring notwithstanding, the CCG remains equipped to deal with issues of fishing vessel safety where appropriate. Perhaps the greatest challenge for CCG, then, is finding the most effective and efficient means of using its current structure to maximize the benefits for fishing vessel safety. The new relationship within DFO, supporting OBS prevention programs, partnerships with Coast Guard Auxiliary and other organizations all represent opportunities to impact positively and maintain a leadership role for the CCG in ensuring a high level of fishing vessel safety.

2.3.2 Maritime Search and Rescue

By its very nature, Maritime Search and Rescue garners the highest priority within CCG's marine programs. While its defining role is reactive in nature, its importance to fishing vessel safety requires that special attention be paid to prevention. In fact the National SAR Manual is very explicit that marine safety and prevention measures focused on owners and operators most commonly involved in SAR incidents, receive a priority along with detection, response and rescue. Consequently, current patterns and trends in SAR activity particularly as they relate to fishing vessels less than 65 feet in length, compels the SAR organization to exercise its full mandate including prevention measures. For the time being this means investigating to clearly define the full scope of any problems that may exist. Statistical data have demonstrated recent increases in fishing vessel incidents in the Newfoundland and Labrador region. This has implications for the entire SAR system. Aside from ensuring suitable detection and response capabilities, the circumstances driving the increases in SAR incidents must be understood in order to trigger appropriate prevention measures.

2.3.3 Response Requirements and Capabilities

Historically, fishing vessel safety has always challenged SAR capabilities. However, the new dimensions of diversity and distance involving the less than 65 foot fishing fleet raise additional issues that are stretching the SAR System to its limit. Following recent trends of downsizing in the CCG fleet, simple calculation indicates that broader geographical areas has implications for response capabilities. In fact, current analysis at the Maritime Rescue Sub Centre (MRSC), have measured a marked increase in response time since the early 1990's. While recent increases in SAR incidents are largely attributed to mechanical failure, it by no means reduces the resulting consequence. The element of risk has to be assessed and appropriate action taken. Any small fishing vessel disabled offshore immediately represents concern for the safety of its crew. Given the hostile environment in which fishing vessels operate, leaving a vessel adrift without appropriate assistance, could very quickly result in a much more serious situation. While it is not the intent of the SAR towing policy to substitute for private arrangements, lack of commercial options for disabled vessels often leave no choice but to act in the interest of safety.

2.3.4 Area of Responsibility and Resources Deployment

As the less than 65 foot fishing fleet's movement to areas further offshore continues it brings with it unique challenges for SAR. The MRSC area of responsibility delineates areas with significant offshore characteristics, especially on the East Coast of Newfoundland and Labrador. In fact, with local fishing activity currently targeting more offshore areas, there is sound rationale to expand the regional boundary shared with the Rescue Coordination Centre (RCC) of the Halifax Search and Rescue Region (SRR). Increased resources to patrol and respond in such a diverse area would be required. Utilization of the CGA has its limitations and experience has shown commercial arrangements for specialized tugs are not easy to achieve. The use of secondary or the multi-tasking of other CCG non-dedicated resources is not always practical or easy to arrange.

Towing vessels to a safe haven also brings with it a series of problems. Long distances offshore often means a valuable resource can be engaged on a single incident for longer than a day. The 1998 SAR Operations Report on the Seal Fishery, shows that not only are resources engaged for long periods, but due to ice considerations CCG Ice Breakers offer the only option for assistance. This raises an issue of vulnerability for other parts of the SAR system that depend on the availability of resources. Finding an alternate resource in non distress situations has other implications. Calling on a secondary government resource means other important programs are seriously interrupted for long periods of time. Also, it is not always easy to acquire a Coast Guard Auxiliary resource for long distance tasking; nor is it always a safe practice or a practical solution due to size capabilities. Moreover, other small fishing vessels that largely form the Coast Guard Auxiliary fleet find it difficult, if not impossible, to endure the cost of lost fishing time.

2.3.5 SAR Technology (GMDSS)

New SAR technology has and will continue to have an impact on future trends in the fishing industry. Global Maritime Distress and Safety Systems (GMDSS) offers a net benefit to SAR and fishermen alike. Accurate and timely alerting will enhance response, reduce critical search time and ultimately save lives. GMDSS application in the waters off Newfoundland and Labrador will be even more appreciated as fishermen carry out their activity in such a broad area. Once again the issues of standards, training and compliance become a function of this safety feature. Domestic carriage requirements for GMDSS equipment are established for small fishing vessels. Different size vessels and area of operation will dictate the level of equipment carried on various fishing vessels.

Should proper training not occur, the benefits of this equipment will be greatly impaired. In addition, noted trends demonstrate that lack of training will encumber the SAR system due to the increased incidence of false alarms associated with inadequate operating knowledge. Furthermore, if compliance is not enforced there are no assurances that suitable equipment will be carried. Deficiencies in inspection regimes for

vessels not exceeding fifteen GRT already give rise to concerns that GMDSS could fall short of the standard needed to maximize overall safety and distress alerting capabilities.

2.3.6 Prevention and Communications

Clearly, the preferred solution to fishing vessel safety from a SAR perspective lies in prevention. However the complexity of issues relating to small fishing vessels sometime make it difficult to design proper prevention programs. While statistical database is a very useful tool, the needs of fishermen cannot always be measured by this method. Forums such the Canadian Marine Advisory Council (CMAC) are often a useful communication process to gather and disseminate relevant safety items. Meanwhile, in order to meet the entire agenda for SAR and fishermen alike, consideration must be given to revitalizing a key recommendation of the 1987 report relating to the establishment of Regional Marine Search and Rescue Advisory Councils.

2.4 Office of Boating Safety

Prior to 1992 Boating Safety Officers with the Canadian Coast Guard were mostly involved in direct delivery of the boating safety program to schools. They have since become involved in entirely new programs. Boating Safety Officers were trained by Ship Safety under the old CCG arrangement. They were then appointed Steamship Inspectors which empowered them to board and inspect vessels including fishing vessels not exceeding fifteen GRT.

The department's mandate for Boating Safety Officers required that they provide safety information and programs to recreational clients and the commercial small fishing vessel industry. To perform this role effectively Boating Safety Officers had to develop partnerships with many other organizations such as police forces, the Red Cross, fishermen's unions and volunteer search and rescue units.

2.4.1 Partnerships

During the 1992-93 Cod-moratorium Boating Safety Officers partnered with the FFAW in developing their training program "Lifeline". This provided fishers with a variety of skills including navigation, first aid, radio communications and other basic knowledge required for commercial fishing. Approximately 8000 fishers were given the safety training, by Boating Safety Officers, which included an overview of Search and Rescue, marine distress flares, EPIRBS, liferafts and survival suits.

Other partnerships with the FFAW and the Small Fishing Vessel Safety Committee saw the development and production of a video entitled "Small Fishing Vessel Safety". A Self-Inspection checklist

book was developed and produced with support from the Workers Compensation section and the Provincial Department of Labour. A Fishing Vessel Safety Newsletter was produced by Boating Safety Officers and distributed throughout the region by the FFAW mail-out. The concept of SAR Case follow-up was developed and implemented and is still in effect. Boating Safety became an integral part of many fishing committees and vital safety information was delivered directly to the fishing community.

2.4.2 Current Focus

In 1995 the Office of Boating Safety (OBS) was officially created and the focus shifted to recreational boating. OBS was now responsible for the regulatory, enforcement, and technical services that apply to recreational vessels. This new mandate restricted OBS's ability to continue and maintain the partnerships that had been developed with organizations and agencies affiliated with the small fishing vessel industry. OBS currently promotes boating safety through its prevention program and is also responsible for setting national standards for operator competence, education and training for recreational boaters.

2.4.3 Findings

Consultations with OBS Officers indicate that where education, training, inspections, including SAR Case follow-up and enforcement patrols were being carried out, there was a significant increase in compliance with safety requirements. A one-weekend patrol for example, on the Northeast Coast of Newfoundland during the recreational food fishery resulted in visits from as many as 80 boaters to the Canada Customs office in Gander to apply for vessel licenses.

2.4.4 Conclusion

The Memorandum of Understanding between TC and DFO Respecting Marine Transportation Safety and Environmental Protection states under the section Principles and Commitments; "The first obligation of both departments is to maintain the high level of marine safety and environmental protection the public has come to expect of the Federal Government". While section 5 under Responsibilities, states that TC is responsible for all fishing vessel regulations, inspection and enforcement, section 6 states that DFO may become more involved in safety examinations for fishing vessels not exceeding fifteen GRTs. It is therefore important for TC-Marine Safety and DFO to engage in meaningful consultation to explore ways and means of conducting the kind of program that OBS now extends to recreational boaters.

2.5 Canadian Coast Guard Auxiliary

The Canadian Coast Guard Auxiliary (Newfoundland) Incorporated (CCGA (N) Inc.) is a non-profit, volunteer organization used to augment maritime search and rescue resources in the Newfoundland Region. Through SAR response, prevention and safety related-activities, the CCGA and the Coast Guard work together to achieve their common objective of preventing loss of life and injuries at sea. The Mission Statement of the CCGA is “To Provide a National Volunteer Marine Rescue Service”.

The CCGA in Newfoundland was incorporated in 1979 and in its initial year of operation, 164 members and 65 vessels volunteered their services and responded to 20 Maritime Search and Rescue incidents. The CCGA now represent a significant resource for SAR response and prevention with 836 members and 405 vessels volunteering their services. Approximately 94% of the membership are involved in the commercial fishing industry and in 1999, they responded to 230 Maritime SAR incidents, representing 36% of the total number of cases responded to by the Newfoundland Region.

CGA Incidents Response

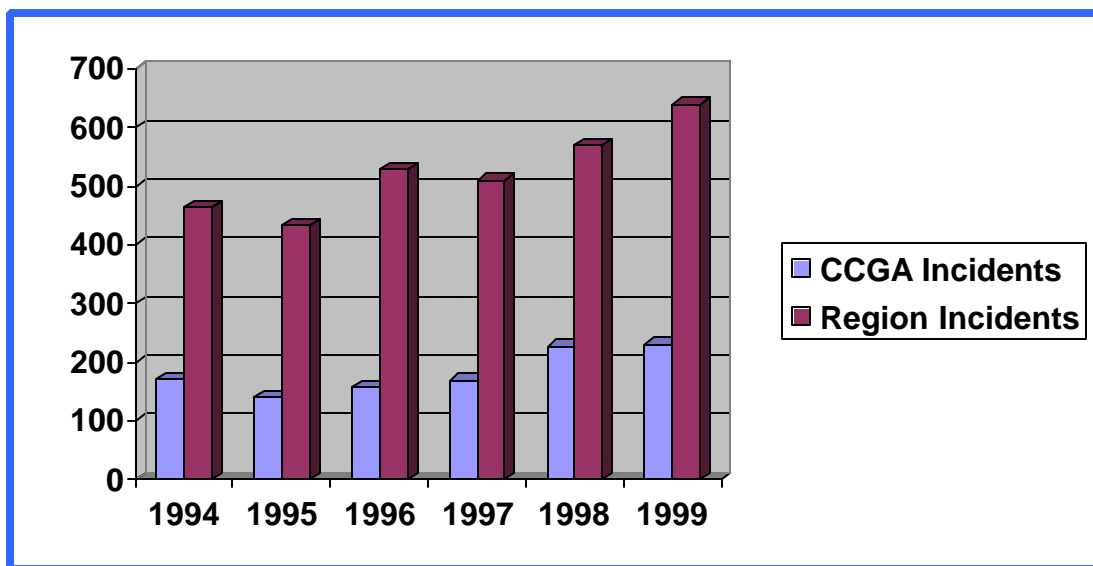


Figure 12

Figure 12 - shows the increase in the number of incidents responded to by CGA compared with the total number of incidents.

CCGA Resource and Response Statistics

	1994	1995	1996	1997	1998	1999
MEMBERS	538	571	605	643	714	836
VESSELS OVER 15 GRT	206	220	237	251	257	294
VESSELS UNDER 15 GRT	152	148	141	136	127	111
TOTAL VESSEL VALUE (millions)	82.3	88.8	99.6	109.2	130.8	155.6
REGION SAR INCIDENTS	463	433	529	510	569	640
CCGA SAR INCIDENTS	170	140	157	168	226	230
CCGA SAR RESPONSE (%)	36.7	31.6	29.7	32.9	39.7	35.9

Table 5

Table 5 - displays CGA Resource and Response Statistics for the period 1994 to 1999.

2.5.1 Findings

CCGA Training Officers conduct courtesy inspections for all pleasure craft and small fishing vessels that wish to become members of the CCGA. Vessels must meet all applicable regulatory requirements, have approved marine radios, be maintained in a seaworthy condition and meet other CCGA requirements. Discussions with CCGA Officers indicate that more than 75% of vessels (fishing vessels) inspected for acceptance in the CCGA fail to meet the standards. The main causes of failure to meet the requirements include:

- Lack of equipment required by regulations (life rings, navigation lights, etc.);
- Out-dated equipment (flares, extinguishers, etc.), and
- Lack of redundant safety features. For example, many vessels reported not having remote fuel shut-off valves outside of the engine area. Other vessels were reported not to be in a seaworthy condition due to poor and/or deteriorated construction.

2.6 Transport Canada - Marine Safety

Formally known as Ship Safety under the Canadian Coast Guard structure, Marine Safety became directly responsible to Transport Canada in the mid 1990's at the same time as the CCG was realigned under DFO. While administrative restructuring saw many changes internally, the mandate of TC- Marine Safety remained the same. Thus its role in discharging the authority for regulations under the Canada Shipping Act (CSA), remains one of the most important of any organization in ensuring fishing vessel safety.

Having statutory responsibility for the CSA, entails a broad mandate for TC-Marine Safety. Consequently, the administration of regulations pertaining to small fishing vessels represents only a fraction of the requirements designed to enhance safety in domestic and international vessels or platforms operating on the high seas. DFO database indicates at least 8,000 fishing vessels alone not exceeding fifteen GRT, operating from the Newfoundland and Labrador region. Seen in this context, the logistics of enforcing any type of safety regime, mandatory or voluntary, represents a huge task.

2.6.1 Safety Concerns

The issue of fishing vessel safety has not gone unnoticed by TC-Marine Safety. Indeed, the Transport Safety Board (TSB) - Marine who defers to TC-Marine Safety for remedial action on their numerous investigations and reports, constantly echo their concern on this matter. In a recent letter to the Regional Superintendent Maritime Search and Rescue in Newfoundland, the acting Director Marine Investigations Operations stated "statistics on the number of incidents involving small fishing vessels in Canada is a genuine cause for concern". It was also stated that "since the inception of the Marine Investigations Branch under the TSB, it was consistently found that, every year, more than 50-60 percent of all marine occurrences in Canada involve fishing vessels".

TC-Marine Safety Surveyors openly express concern about safety in the small vessel fishing fleet. Reference to marine accidents in recent year's serve as testimony to some of the issues at play in the safety scenario. The F/V Sea Schutle, F/V Ocean Bellows, F/V Patrick & Elizabeth, F/V Miss Cat Harbour, F/V Atlantic Prize and F/V Morning Dove, all lost during fishing trips off Newfoundland, represent only a sample where total vessel losses were incurred. Significant loss of life also occurred on a number of these fishing vessels. Some Marine Safety Officers indicate that even with recent losses, it may take a much longer

duration for real patterns and trends to emerge before the full impact of safety concerns in the modern fishery is realized.

2.6.2 Potential Problems and Intervention

TC-Marine Safety Surveyors described the current situation as “accidents waiting to happen”. At the same time, it was explained that interception by Safety Surveyors may have already averted a number of accidents similar to those involving total losses. Vessel modifications and its impact on stability has been a major area of concern. Installations of heavy fishing gear on vessels whose design is fundamentally too small, have created too many “top heavy” situations where stability problems could lead to potential accidents.

A number of initiatives are underway by TC-Marine Safety to deal with the issue of safety in the fishing industry. A Steering Committee of relevant stakeholders has been established through the CMAC process and chaired by the Director Marine Safety. Its principal terms of reference are to study the issue of small fishing vessel safety with a view for improvements in safety regimes. The process of doing this exercise involves a comprehensive review of the 1993 draft of Small Fishing Vessel Safety Regulations (SFVSR) with intent to update to reflect current changes. It also involves a review of accident statistics to provide an overview of risk elements. Finally, a review of recently introduced personal certification requirements will be conducted to assess adequacy and fairness.

2.6.3 CSA Reform

In concert with the present CMAC review, CSA reform is underway with the inclusion of Small Fishing Vessel Regulations that reflect appropriate changes. A Marine Safety sub-group of the CMAC Steering Committee, known as the Small Fishing Vessel Safety Regulations Atlantic Cluster Group Review has developed the regulations to its present level. In fact their present work on regulations was essentially the completion of an earlier exercise recommended for action in the 1987 report by the Canadian Coast Guard. The 1987 report recommended a re-write of the SFVSR to incorporate new technology, improved lifesaving equipment and minimum standards for radio communications on small fishing vessels. The recommendation was carried out through a former CMAC process and the re-write was completed in 1993. However before the regulations could be screened through the legal process other events within the federal system precluded final drafting and promulgation. While revisions are not fully implemented at this time, there appears to be emphasis on mandatory safety features like immersion suits and other lifesaving items. Vessel specifications/modifications, safe manning, seasonal dates and operating distance offshore are other key components of the SFVSR under CSA reform.

2.6.4 Process Adjustment

One Marine Safety Surveyor explained that TC-Marine Safety is presently undergoing a process

of change and adjustment. Its relationship and role in small fishing vessel safety is being assessed for overall effectiveness. New compliance and enforcement strategies are being considered. Additional empowerment for surveyors and/or other related departments such as CCG Ship Officers, DFO Fisheries Officers and Officers from the Office of Boating Safety is a possible option. Meanwhile, the important issue of vessel inspections, especially for those fishing vessels not exceeding fifteen GRT remains outstanding. While all options are being considered, it was explained that some form of self- inspection was preferred. The self-inspection model used by small passenger vessels may offer some merit for the vessels not exceeding fifteen GRT.

Essentially, the self- inspection method would involve some form of a safety checklist. The checklist would have to be developed or approved by TC- Marine Safety. It would incorporate appropriate standards pursuant to relevant regulations under the CSA. It is envisioned that the first inspection would have to be very rigid and well disciplined. Subsequent inspections would be the responsibility of the owner/operator with accountability to Marine Safety and ultimately the authority of the CSA.

2.6.5 Conclusion

Finally, it is evident that TC-Marine Safety has clearly recognized the issues of safety surrounding the small vessel fishing fleet. It is equally clear that there are concerns about effective resolution and serious outcome of potential problems. This has reached a critical crossroad in the area of fishing vessels not exceeding fifteen GRT. The logistics of an effective inspection and compliance program is far reaching given the complexity of various regulations, broad area of operation, number of vessels, and human resources available within the Marine Safety department. It would seem therefore, that a course of action is needed to enlist the services of associated agencies by broadening the base of empowerment.

2.7 Transportation Safety Board (TSB)-Marine

The Canadian Transportation Investigation and Safety Board Act provides the legal framework governing the TSB's activities. Basically, the TSB has a mandate to advance safety in the marine, pipeline, rail, and aviation modes of transportation by the following means:

- Conducting independent investigations, including, when necessary, public inquiries into selected transportation occurrences in order to make findings as to their causes and contributing factors;
- Identifying safety deficiencies as evidenced by transportation occurrences;
- Making recommendations designed to eliminate or reduce any such safety deficiencies; and
- Reporting publicly on its investigations and on the findings in relation thereto.

2.7.1 Independence

To enable the public to have confidence in the transportation accident investigation process, it is essential that the investigating agency be, and perceived to be, independent and free from any conflicts of interest when it investigates accidents. The same principle applies when TSB identifies safety deficiencies or makes safety recommendations. To meet this basic criteria independence and the principal of “Arms Length” must be a key feature of the TSB. The board reports to Parliament through the President of the Queen's Privy Council for Canada and is separate from the other government agencies and departments. Its independence enables it to be fully objective in arriving at its conclusions and recommendations.

2.7.2 Current Status

TSB acknowledges that there is genuine cause for concern with reference to the safety record of fishing vessels. A recent TSB Statistical Summary Report indicates that since 1989, more than 50-60 % of all marine occurrences were related to fishing vessels. This Report also states that over the past 10 years, small fishing vessels (not exceeding fifteen GRT) account for the largest proportion of vessels lost in Canada.

TSB-Marine does not have an investigator in the Newfoundland region. Many SAR incidents, even those that are very serious, are not followed up with an appropriate investigation. This has been a major area of concern for the SAR system, especially in light of the increase in fishing vessel incidents. The incident regarding the swamping of a 24-foot open boat in July 1999 best exemplifies the problem regarding TSB-Marine investigations. The subject vessel was not equipped with any lifesaving equipment and neither of the two crewmen were wearing lifejackets. After an extensive search, both people were rescued and airlifted to hospital suffering from serious exposure and hypothermia. In this incidence, TSB conducted telephone interviews and mailed a self-evaluation questionnaire to the persons involved.

2.7.3 Investigations

TSB-Marine admits that they only conduct investigations of incidents where “ a safety lesson can be learned”. They also indicated that their experience shows that many more accidents occur on small fishing vessels than are recorded or reported. The Board identified safety deficiencies and made over 30 safety recommendations to Ship Safety and CCG before restructuring transferred Ship Safety to TC-Marine Safety. To date, some of these deficiencies have been rectified while many have yet to receive action by appropriate agencies. At the May 1999 CMAC meeting in Ottawa, TC-Marine Safety formed a Fishing Vessel Safety Committee to work with the industry to address the very issue of fishing vessel

safety. It is TSB's understanding that the committee will be reviewing, among others, outstanding TSB - Marine recommendations.

2.7.4 Significant Marine Safety Issues List

Every year, TSB-Marine establishes a "Significant Marine Safety Issues" list'. This list identifies several specific issues that are influenced by inadequately addressed human element issues. The "Loss Rate in Small Fishing Vessels" or "Controlling Risk on Small Fishing Vessels" has been placed at the top of the list each year for the past several years. TSB-Marine has been planning to conduct a Class 4 safety investigation (multiple occurrences, which the Board deems to be indicative of significant unsafe situations or conditions) on safety of fishing vessels. However, due to the recent initiative by TC-Marine Safety in organizing the Fishing Vessel Safety Committee and the workload of current investigations, the Class 4 investigation plan has not commenced. TSB-Marine contends they have done everything within their capacity, under their mandate, to identify safety deficiencies so that remedial action can proceed under the authority of appropriate agencies.

2.8 Professional Fish Harvesters Certification Board

The Professional Fish Harvesters Certification Board became operational in January 1997 after many years of meetings and discussions with fish harvesters and support from FFAW, HRDC, DFA, DFO and the Fishery Co-Operatives. An Act to establish the Professional Fish Harvesters Certification Board was passed in June 1996. This concept is in various stages of development in many other regions in the country. The national organization is called the Canadian Council of Professional Fish Harvesters. The Canadian Council promoted and was successful in establishing a World Forum of Professional Fish Harvesters with headquarters in India, where over one million small fishing vessel persons are involved in the industry.

2.8.1 Objectives

The Board consists of 15 members appointed by the Provincial Minister of Fisheries and Aquaculture. Their goal is to promote fish harvesters as professionals; i.e. recognizing the special skills and experience required to become a Professional Fish Harvester. Other objectives of the Board include:

- To develop, evaluate and recommend courses under the professionalization program;
- To issue certificates of accreditation to qualifying fish harvesters;

- To develop, maintain and monitor compliance of a Code of Ethics; and
- To provide an advisory role to the federal and provincial governments in the formation of fisheries policies consistent with the common good of fish harvesters.

2.8.2 Professionalization and Certification

The Board has established three categories or levels under the certification system, Apprentice Fish Harvester, Professional Fish Harvester – Level I and Level II. Fish harvesters are able to advance from level to level based on completion of years of fishing and land-based credits (training). Educational requirements and grand-fathered criteria apply to the process.

Apprentices (new entrants) are required to complete a five-day Basic Safety Course approved by the Board. To obtain the Professional Fish Harvester Level I, the Apprentice must accumulate 100 days sea time, two years full-time fishing activity and earn 55 land-based credits in addition to the Basic Safety Course. These courses include: Introduction to Navigation and Safety, Fish Handling, Fishing Methods and General Maintenance.

To obtain Professional Fish Harvester Level II the Professional Fish Harvester Level I must accumulate 200 sea days, an additional three full years fishing activity and accumulate an additional 60 land-based credits. These courses include; Stability, Managing Your Enterprise, Gear or Vessel Maintenance and Fishing Technology.

Table of Registered Fish Harvesters

Level/Year	1997	1998	1999
Level I	10,200	9727	9177
Level II	1324	1122	1311
Apprentices	5056	4946	5240
Not Approved	300	4	485
Total	16,882	15,799	16,213

2.8.3 Training and Education

Most of the training is done through the Marine Institute. The Board in consultation with the Marine Institute and TC–Marine Safety determine course requirements and accreditation. The training is done either at the cost to the fish harvester or is paid in whole or in part by HRDC.

2.8.4 Consultations

Consultations with the Board's Executive raised a number of concerns. The apparent faster tracks of storms is a feature that is beginning to worry fishers. Many indicated that they do not have time to go long distance offshore, harvest fish and return to port ahead of storms not forecasted prior to departure.

Fishing vessel replacement rules was another common area of concern. Fishermen have communicated to the Executive that these restrictions should be adjusted to allow for larger vessels to be able to pursue the fishery further from shore on a safer more comfortable platform.

2.8.5 Conclusions

The professionalization of fish harvesters should provide an opportunity for the industry to avail of necessary training to improve safety at sea. Although a number of fish harvesters may be grand-fathered, new and many existing fish harvesters will have to be involved in this education/training process. There are opportunities therefore, for the Board and DFO-CCG to work together (through the DFO representatives on the Board) to ensure that training meets today's standards. It should also provide safeguards to ensure all fishermen are fully trained and understand the carriage requirements related to safety in the fishing industry.

2.9 Insurance Underwriters

The role of insurance underwriters in fishing vessel safety can be significant. Even without enabling legislation, the inherent power of insurance policies can lever safety standards as a condition of coverage. Failure to meet criteria such as proper safety equipment, levels of seaworthiness, competency certification, good seamanship practices and even limitations on fishing areas and seasonal activities are often written into conditions of insurance. Thus compliance with safety oriented measures effectively becomes a function of eligibility. Non-compliance could mean financial ruin in the event of an accident.

2.9.1 Historical Impact of Insurance on Vessel Safety

The impact of insurance on fishing vessel safety was examined in depth during the NRC Fishing Vessel Safety Study conducted in the United States in 1991. In fact, the study group even considered a recommendation to make insurance compulsory for those engaged in the fishing industry. The idea was that compulsory insurance would provide a means of directing attention to the material condition of vessels equipment. The logic was that to obtain insurance, owners would have to upgrade the condition of their vessel to acceptable standards. Prohibitive factors however, precluded the practicality of mandatory insurance. Above all, there was a major implementation issue with costly implications for the client.

Moreover, with all the safety issues inherent in the fishing industry, the insurance industry did not regard itself as having, or being in a position to assume a central role in improving safety in the fishing industry.

The study examined a number of forces at play in the industry during the early 1980's. In the process it found that insurance underwriting was very unstable and consequently created serious uncertainty. Many smaller companies were forced out due to relatively large liability losses. The result was a smaller, more select, higher-priced insurance market, often beyond the affordability of most fishermen.

Perhaps the most notable point regarding the U.S. study was the results obtained when mutual associations were formed by fishermen to promote self insurance. The study found that the peer pressure among safety minded members created strong incentives for common operating, maintenance and inspection standards. Overall safety performance results for hull and machinery were good. In most cases it was found that the self-imposed strict technical and outfitting standards exceeded Coast Guard requirements. In the end however, the system could not viably sustain itself due to liability exposure, as well as the potential size and unpredictability of jury awards.

2.9.2 Constraints

The fishing vessel insurance system face similar impediments in Newfoundland and Labrador today. In some instances, risk factors quite often preclude any coverage at all. There are restrictions on operating areas and fishing times. Vessels engaged in the sealing industry are finding that standard policies require as much as \$100,000 deductible. In terms of its overall impact in preventing marine accidents, insufficient and unavailable data prevent a proper assessment. While it is not possible under the current system to ascertain the number of small fishing vessels carrying insurance, some ad hoc indicators suggest coverage is very low. Therefore any safety leverage provided by the insurance systems is minimized due to lack of participation by fishermen.

2.9.3 Database Access

Regarding the issue of data, it appears access to insurance data is highly restricted through company/client protection. Unfortunately, this leaves out the application of an important statistical tool in assessing safety variables. If properly conducted, insurance statistics could be streamlined and released to appropriate interests without compromising company/client relationships. This initiative, if undertaken in conjunction with ongoing prevention programs, could serve as an important measure to gauge and action target areas.

2.9.4 Safety Factors

Information collected from a company contracted by insurance underwriters to conduct surveys for insurance purposes, list serious concerns about safety within the small vessel fishing fleet. It was indicated that as a general rule, vessels less than 35 feet are rarely properly maintained. During surveys throughout the province it is common to document such items as - poorly installed electrical panels, substandard wiring, batteries improperly stored in confined spaces with no covering, propane tanks improperly located, no operating fog horn, no life raft, poor steering installations, fuel tanks with no shutoff valves accessible outside the main engine room, and many other minor items too numerous to list.

The company has noticed an increasing number of vessels with potential stability problems. They have witnessed a wide range of modifications, all related to fish management regulations. These modifications are being driven primarily to accommodate more fuel for operating further offshore, more suitable accommodations for longer voyages, larger engines, and to accommodate newer and larger types of fishing gear. The company assesses the vessel replacement policy as inappropriate and the root cause of many safety concerns. They point to a large portion of the existing fleet that was designed and built in the 1980's to operate within 50 nautical miles. Many of these vessels are now operating up to 200 nautical miles and beyond.

2.9.5 Safety Solutions

The surveying company is firm in its view that vessel replacement can accommodate longer and larger fishing vessels without compromising the principle of increased capacity. They indicate that while many fishermen want to increase length, they are quite content to maintain and even reduce hold capacity. Examples exist where current 65-foot Canadian fishing vessels actually have more hold capacity than American sword fishing vessels that are in excess of 80 feet. Finally, survey observations seems to suggest that overall safety issues can be effectively mitigated in vessels exceeding fifteen GRT by inspection and certification regimes. On the other hand it is believed that education and general safety promotion programs would be more suited to vessels not exceeding fifteen GRT.

2.9.6 Conclusion

Any suggestion that compulsory insurance may offer a workable solution to fishing vessel safety in Newfoundland and Labrador would not be appropriate at this time. This type of approach would have far reaching implications, many of them national in scope. Implementation would be a major cost factor and safety standards is a force that needs much further development, particularly in fishing vessels not exceeding fifteen GRT. Nevertheless, there is merit in enhancing their role in conjunction with other agencies. For example, incentive programs, such as reduced insurance premiums on the issuance of approved safety certificates, could be arranged with agencies responsible for training or inspections. Self-inspection regimes could be interfaced with such schemes. With the right blend of input,

the fishing industry could very well benefit with practical affordable insurance. At the same time, great improvement in safety objectives, sought after by insurance and government alike, could be realized at very minimal cost.

2.10 Workplace Health, Safety and Compensation Commission (WHSCC)

Although WHSCC does not have any regulatory jurisdiction regarding the activity onboard small fishing vessels in the Newfoundland region, this organization has a very important role to play to ensure the health and safety of the crew. Commercial fishers are automatically covered by WHSCC benefits and the fish buyers based on the value of fish purchased pay the assessments. Benefits and assistance is available to injured workers in the form of wage loss benefits, medical aid, permanent functional impairment award, and dependency benefits in the event of a work related death.

The fishing industry is an area where little has been done by WHSCC to promote a health and safety culture that is necessary to prevent injuries and fatalities. However WHSCC is currently working with the Small Fishing Vessel Safety Committee (FFAW) to review health and safety issues and to recommend a prevention strategy and a promotional message (safety publication).

It is interesting to note that as the number of small fishing vessel Search and Rescue incidents increased over the past years, so too has the number of injuries, incidents and fatalities recorded by the WHSCC.

Occupational Injuries – Newfoundland WHSCC 1993 - 1999 (Preliminary)							
Numbers	1993	1994	1995	1996	1997	1998	1999
Temp Earnings Loss Injuries	93	72	73	92	112	141	160
Medical Aid Injuries	45	48	46	38	76	78	94
Reported Incidents	21	18	14	14	26	43	31
Fatalities (exclude drowning)	0	2	1	1	0	0	0
Drownings	3	8	3	4	2	5	1
Total Injuries, Incidents & Fatalities	162	148	137	149	216	267	286
Total Claims to Mar 21/00 \$(000)	\$1,835	\$2,591	\$1,978	\$1,900	\$2,169	\$3,064	\$1,281

Table 6

Table 6 - shows WHSCC occupational injuries and claims for the period 1993 to 1999.

SAR Incidents and WHSCC Statistics

	1993	1994	1995	1996	1997	1998	1999
WHSCC Total Injuries, Incidents and Fatalities	162	148	137	149	216	267	286
SAR Total SAR Incidents	193	210	218	247	254	341	382

Table 7

Table 7 - shows that as the number of SAR incidents increased so did the number of WHSCC injuries incidents and fatalities.

2.11 Academic Study and Research

A common element present in many studies on fishing vessel safety is that of critical data from which suitable patterns can be established and accurate conclusions can be drawn. Furthermore, objectivity in assessing study variables is not always easy to apply. In many instances, studies are conducted through human resources closest to the subject area, thereby inadvertently engaging subjectivity through association and special interest. Separating personal agendas from real or perceived issues sometime challenge the integrity of desired objectives. Therefore, the role of universities with their inherent code of ethics, sharp literary and analytical talents, coupled with peer review and other checks and balances, is often the best recipe for pure and meaningful study results.

2.11.1 New Focus

Unfortunately, universities such as Memorial University of Newfoundland have not always structured their programs in a way that would easily facilitate studies like fishing vessel safety. New approaches however, may provide opportunity for appropriate players to avail of this important area of study. In particular, the subject area of Maritime Workplace Health and Safety in Atlantic Canada is being targeted through a recently formed vehicle known as the Community Alliance for Health Research (CAHR). With a focus on research, its immediate and intermediate goal is to launch a 5 year program to conduct research related to workplace health and safety (WHS) in Atlantic Canada's coastal and maritime economy, with emphasis on fisheries and the oil and gas industry. The structure is an alliance between the University and a broad base of community partners, representing many disciplines such as fishermen's organizations, plant workers, industry employers and various government agencies with vested interests.

According to one of its working documents, “ the Alliance will provide multiple opportunities for researchers to work in an interdisciplinary environment in full collaboration with community partners in identifying and researching issues and developing strategies for prevention”. In the long term, it is envisioned that the 5 years of work should provide a launching pad for a self-sustaining research centre on WHS, based at Memorial and serving both the needs of the province and of the broader Atlantic region. Given the approach and issues at play in the subject area, it is apparent that SAR is a serious stakeholder. With the right effort and input many important items can be brought to this type of forum. Likewise, many benefits can be taken from the forum in the interest of serving the needs of small fishing vessel safety and others with similar issues.

2.11.2 Targeted Research

More specifically, immediate priority research has been identified by the Alliance and, if funded, will be the focus of a 5-year program of activity. As many as 5 components of the proposed project apply directly or indirectly to fishers and/or fishing vessel safety. It has been noted that union-supported research in the 1980's on the offshore fishery, and in the 1990's on the inshore ground-fish fishery found elements consistent with the findings of reports identified in this review. High accident rates, under-reporting, inadequate regulations, and poor prevention top the most disturbing part of the list.

More recently, serious concerns in the industry about WHS on fishing vessels have been triggered by changes in fishing locations and target species. Researchers in Atlantic Canada have addressed some of the problems associated with these changes. Nevertheless, much more work needs to be done to identify more clearly the existing and emerging risks in this sector in order to reduce possible injuries or fatalities. It is intended that a multi disciplinary team will bring together researchers at Memorial and Dalhousie with expertise in fishing safety alongside representatives of the fishermen's union and Marine Institute's Offshore Shore Safety Program. The following items will represent the core terms of reference for research:

- An examination of WHSCC data on fishing accidents and fatalities from 1985-2001;
- Interviews with captains and crewmembers to identify the risk they associate with fishing and the key contributing factors, including vessel pitch and roll which cause accidents through Motion Induced Interrupts (MII);
- Use the resources of Institute for Marine Dynamics (IMD) and Memorial to identify the ways to reduce the incidence of MII and other risk factors;
- Identify, collate and evaluate all legislation applicable to WHS training of fish harvesters; and
- Test ways of incorporating research findings into fish harvesters training programs.

2.11.3 Structure

The 5 years of work will be performed under the direction of Co-chairs Dr. Barbara Neis and Dr. Stephen Bornstein. They will be assisted by 7 Masters students, 5 Doctoral students and 4 Postdoctoral Fellows. Each of the research projects will generate peer-review publications and papers to be delivered at scholarly conferences, both in Canada and abroad. There will be other workshops organized for groups and organizations to discuss project results. The findings of research projects, and the researchers themselves, will be available to all partners for use in health and safety programs.

2.11.4 Conclusion

The importance of this type of work speaks for itself. It would seem that DFO's broad mandate of safety and fish management dictates their involvement for three primary reasons. One, to add an important perspective to the central issues under study. Secondly, to be able to effectively utilize findings to maximize its benefits in overall planning of safety prevention programs. Thirdly, to seek sources of financial or in-kind assistance to add insurance to the overall launching and long term success of the research program.

ANNEX “C”

LITERATURE REVIEW

1. Background

Numerous studies and reports over the years have produced recommendations ripe with good intentions for the safety of those engaged in the fishing industry. Indeed, many of the milestones achieved in fishing vessel safety in the twentieth century have come as a result of the major casualties that have driven these reports. The Canada Shipping Act itself is perhaps the single most important achievement in this regard. Recognition of the need to legislate safety in response to accidents at sea has established a benchmark that has since seen many improvements. Royal Commissions and other judicial inquiries that follow many shipping casualties, invariably leave its mark in recommendations for safety improvements. Unfortunately, the reactive approach that precipitates the studies rarely sustains itself long enough to fully realize its recommendations. Nevertheless, it becomes our primary terms of reference for an age-old problem and a necessary tool in mitigating variables responsible for marine accidents of all types.

The number of studies and safety related reports are endless, both nationally and internationally. Issues of safety contained in each one are easily identifiable and contain many common elements. While all of the reports and studies identified in the bibliographies referenced for this review are relevant, current national and international issues are encapsulated quite well in the following:

- A Canadian Coast Guard Study into Fishing Vessel Safety, CCG. 1987;
- Review of Fishing Vessel Search and Rescue Incidents, CCG SAR, 1990;
- Small Fishing Vessel Regulations Atlantic Cluster Group Review (SFVSR), TC-Marine Safety, October 15, 1999;
- SAR Operations Report on the 1998 East Coast Sealing Fishery, MRSC, St. John's, 1999;
- Fishing Vessel Replacement Regulations in the Newfoundland Fishery: Implications for the Future, Carl Parsons Thesis, Memorial University of Newfoundland, 1999;
- Fishing Vessel Safety - National Research Council, U.S.A., 1991;
- Report of the Fishing Vessel Casualty Task Force, Capt. James D. Spitzer, USCG, 1999; and
- Report of the Fishing Vessel Safety Review Group, Irish Ministry for Marine, 1996.

2. Canadian Coast Guard Study into Fishing Vessel Safety (1987)

The 1987 study was chaired by the Director General, Ship Safety, Canadian Coast Guard (CCG), under the direction of the Commissioner, CCG. It was driven by the high rate of incidents associated with vessels in the fishing industry. Its primary goal was to produce recommendations that would result in greater safety for people engaged in the industry. The core terms of reference for the study included the following:

- An investigation and analysis of trends evident in 1982-86 database;
- A review of relevant reports and studies;
- Consultation forums with users, industry and government; and
- Comparative analysis with other jurisdictions.

In reviewing databases from 1982-1986, the study confirmed what had already appeared evident regarding a high percentage of accidents in the fishing industry. The primary causes were man overboard, capsizing, foundering, (sinking), grounding, fire, and explosions. It indicated that 140 fatalities resulted from 824 losses for an average annual fatality average of 28. Perhaps more revealing was that 90 percent of the vessel losses occurred in vessels under 60 GRT. Furthermore, 60 percent of these losses were in vessels not exceeding fifteen GRT. The impact of this finding was far reaching in light of a major shift underway from larger to smaller fishing vessels.

The overall finding was found to be consistent with international trends. While there was little comfort in being part of a universal anomaly, it appeared there was at least a marginal improvement in the Canadian industry. The Canadian average of 28 annual fatalities per 41,000 registered fishing vessels compared with Norway's 35 per 26,000 registered fishing vessels for the same period. The report noted that the U.S. had an annual fatality rate of 84 per 33,000 registered vessels and relied more on voluntary safety checks and non-mandatory inspections than did Norway or Canada.

The study identified a broad range of variables causing the high rate of casualties. While it noted that human error was a principle cause of most accidents, it was clear in its view that circumstances, often beyond the control of fishermen, set the stage for accidents to happen. It pointed to a high-risk activity where external influences, such as environmental conditions and fishery management practices were major factors leading to accidents. It argued that "Arbitrary rulings in the pursuit of Department of Fisheries & Oceans (DFO) goals often had an adverse effect on safety". The application of vessel size restrictions and time line quota allocations were cited as major issues of DFO policy affecting safety. Overall, there was a serious expression of concern about a disconnect between DFO management policy and issues of safety.

In terms of fishermen themselves, the study pointed to the absence of a suitable safety regime. The lack of safety standards, coupled with the lack of education and training not only

lead to accidents, but failed to provide adequate safety nets when accidents occurred. Lack of training in ships stability and deployment of safety equipment was identified as most critical. It was believed that a more rigid compliance of this regime was not only necessary but that certification reflecting this, should be a mandatory.

Occupational Safety and Health (OSH) issues were identified as having significant impact on fishing vessel safety. It was noted that these issues often receive a lower profile than operational accidents, consequently leading to a serious neglect of the issues involved. In this respect it was emphasized that 31 percent of all fatalities in the fishing industry were OSH related. Additionally, it was pointed out that approximately 75 per cent more OSH injuries were incurred in the subject period. This represented three times as many as there were operational safety injuries. The report group expressed concerns that while types of OSH accidents were noted, causes were absent. Therefore, information needed in establishing a true prevention program was seriously limited.

The application and enforcement of safety regulations was also cited as a crucial element. The regulations themselves were seen as poorly structured and cumbersome to administer. Aside from addressing key elements of safety, the enforcement of items deemed essential to safety was not uniform throughout the fishing fleet. Vessels not exceeding fifteen GRT, for example, were void of mandatory inspection and lacking in many other regulatory safety standards.

The study group found that a proper coordination and communication program, designed to disseminate essential safety information, was seriously lacking. It was noted that suitable communication was not only lacking in conveying information to users, but there was also no vehicle to receive information for remedial purposes. Overall, a poorly structured network, encompassing reception and delivery of safety measures, whether it related to specific regulatory issues, or a more general knowledge base, did little to solve serious issues of safety leading to marine accidents.

Recommendations resulting from the report were perhaps the most comprehensive ever produced on the issue of safety in Canada. The report focused on factors identified as lacking in both government and industry. It suggested practical pro-active measures where the Canadian Coast Guard could discharge its responsibility for prevention programs. The delineation of national and regional safety coordination committees were seen as essential for improving communications among industry and departmental agencies impacting on safety. The report recommended the development of a communications plan to promote and educate fishermen about the potential dangers entailed in their fishing activities.

To address the issues of safety consciousness and the practice of suitable safety protocols among fishermen, the report recommended ways and means of ensuring accountability onboard fishing vessels. The development and acquisition of proper training programs were suggested for fishing crews. The report felt that priority education should be placed on the small fishing vessel operators where fatalities were occurring. A system of safety checklists was emphasized, especially for vessels not exceeding fifteen GRT. Certification tied to vessel licensing was

suggested as a means of ensuring compliance with appropriate safety measures recommended in the report.

A number of regulatory and policy adjustments were recommended in areas directly affecting fishing vessel activity. Special detail was given for the requirement of DFO to link licensing with safety considerations in areas such as vessel design, professional qualifications, certification, areas of operation and quota allocation. A better OSH accident reporting system was suggested as a means of more accurately analyzing causes of accidents. In order to streamline regulations relating to small fishing vessels and reflect technological changes, a complete re-write of the Small Fishing Vessel Safety Regulations (SFVSR) was recommended. Insurance companies were encouraged to link coverage with valid safety certificates. Manufacturing agencies and government alike were encouraged to accelerate research and development on essential safety systems onboard fishing vessels.

At the end of the exercise, the report was very specific about an immediate implementation strategy. A structured approach was suggested through the arrangement of committees. Time lines were recommended for departmental regulatory and policy changes. Incentive measures, such as grants or tax rebates, were suggested to defray financial implication involved in the acquisition of safety equipment. In the final analysis, it was believed that the success or failure of their initiatives would be directly proportional to the priority placed on its implementation. Given the history of reports and recommendations this proved to have been a very real concern.

3. CCG Review of Fishing Vessel Search & Rescue Incidents (1990)

The review was conducted in 1990 under the authority of Director, Search and Rescue, Ottawa. Again it was driven by the ongoing issue of fishing vessel safety. More specifically, it was related to a high number of incidents which involved significant fatalities between October 15th and December 31st, 1990. Secondly, an assessment was needed to determine whether or not the 1987 study had any effect in reducing these kinds of incidents. Its terms of reference focused on the following:

- Review 1990 incidents, profiling 10 between October 15th to December 31st;
- 1990 SAR prevention activities relating to fishing vessels;
- SAR system capability relative to incidents analysis;
- Relative impact of 1987 study on incidents under review; and
- Status of the 1987 study recommendations.

While it was found that recommendations from the 1987 report had generated significant action, the overall situation regarding fishing vessel safety had not changed dramatically. In fact,

one disturbing trend was starting to evolve. The 28 annual fatality average had risen in 1988 to 30, then rose further in 1989 to 37 until the year of the subject review, when it stood at 44 for 1990. It was also determined that 726 lives were at risk in 1990, compared with 585 for 1989 and 545 for 1988. This occurred even though there was no significant increase in the number of registered fishing vessels. Consistent with the 1987 study, it was found that the number of incidents were higher in fishing vessels less than 60 GRT. Adverse weather was identified as the most significant factor in all 10 incidents under review.

No direct correlation was seen between recommendations in the 1987 report and the fatalities involved in the 10 incidents under review. It was noted however, that in cases where there were survivors, all had properly donned survival suits and other types of safety equipment, such as liferafts were used to increase survival. In instances where bodies were recovered, it noted failure to wear survival suits and in other instances, crewmembers had improperly suited for the emergency. An analysis of the SAR system did not reveal any serious inadequacies in all areas of its mandate.

The review group was encouraged by the evolving relationship between lives saved and safety-survival equipment in use. There was a marked increase noted in the level of safety awareness among commercial fishermen as a result of aggressive prevention programs. SAR prevention campaigns aimed at small fishing vessels were being accelerated. Research and Development work on safety equipment was underway and placements onboard vessels appeared to be in progress. While regulations and policies affecting safety had not been re-written, it was at least in progress. Ship Safety had undertaken a significant task in this regard. The review noted the formation of committees recommended in the 1987 report, such as the CCG Committee on Fishing Vessel Safety, Interdepartmental Committee on Fishing Vessel Safety, Regional Fishing Vessel Safety Committees and Regional Fishing Vessel SAR Planning Committees. Nevertheless, concern was expressed about their diminishing role. In many cases a movement was underway to dissolve committees and the priority of fishing vessel safety began to diminish with time.

The review noted some progress on DFO issues affecting safety, but overall it was generally accepted that progress was slow and results questionable. In fact, one issue regarding vessel replacement and size restrictions appeared to have regressed. In 1988 DFO changed to cubic capacity of the entire fishing vessels, instead of just the fish hold capacity. In the Study's assessment "this had the effect of forcing fishermen to use smaller vessels and operate older vessels longer". A Ministerial MOU had been prepared between DFO and TC on the subject of the requirement to ensure fishing vessel safety was an explicit consideration in the development of appropriate legislation and/or regulations. DFO had also been developing an administrative procedure, which linked the issuing of a fishing license to the possession of an inspection certificate for vessels exceeding fifteen GRT.

The review of 1990 did not produce any major new recommendations. Rather, it focused primarily on those already put forward in the 1987 report. To this extent, progress on these recommendations were measured and points of clarification were issued and suggestions were

made to improve its overall success. Continued emphasis was placed on prevention and training programs. Placements of safety equipment onboard fishing vessels, including EPIRB's, were encouraged. Concern was expressed about the discontinuance of implementing DFO safety oriented initiatives. Finally, the report indicated that continued national and regional involvement through committee structures were essential if progress on all issues were to be sustained.

4. TC-Marine Safety (CMAC Sub-Committee) - Fishing Vessel Safety Regulations Atlantic Cluster Group Review (October 15th, 1999)

The Cluster Group is made up of TC- Marine Safety Surveyor. The exercise is part of an ongoing fishing vessel safety review process set up under the Canadian Marine Advisory Council (CMAC). The group was appointed by the Chair Mr. Bill Scott, Director TC-Marine Safety Atlantic Region as part of a steering committee arrangement, put in place to review Small Fishing Vessel Safety Regulations (SFVSR), and oversee its reform under the Canada Shipping Act (CSA).

The review process was also significant in that it had its roots traced to the 1987 CCG report on fishing vessel safety. One of the 41 recommendations suggested that the SFVSR be rewritten to reflect new technology, improved lifesaving equipment and minimum standards for radio communication on fishing vessels. Working groups established through CMAC acted on the recommendation and by 1993, a completely new draft was prepared for implementation. Other internal events within the federal system precluded its progress until it was revisited by the CMAC committee towards the end of the 1990's. In the process of updating changes, the committee also decided it was appropriate to review accident statistics to provide an overview of current risk elements in the fishing vessel sector. In addition, the review examined a recently introduced Personnel Certification Program to assess adequacy and fairness. Subsequently, the review and development of SFVSR was directed to the Cluster Group to effect changes in the Draft Regulations since 1993.

In its review, the group noted significant changes and major new influences impacting on fishing vessel activity. Declining resources lead fishermen to pursue marginal and/or non-traditional species, quite often far from shore. Larger vessels were replaced by smaller ones more suited to near shore activities. The group also noted the impact of fishery conservation regulations, which placed limits on vessel type and size. This had further implications as other needs surfaced in keeping with the new fishery. There were requirements to modify to accommodate new gear, more sophisticated technology, longer voyages, larger crews and other incidental items peculiar to a more diversified fishery.

Within these new dynamics, the review group specifically cited elements impacting on overall safety of small fishing vessels. The conversion of older vessels to include designs of length, width and depth, without expert supervision or inspection, had consequence for vessel seaworthiness. The effect of heavy shrimp gear on vessel stability was a major consideration.

The introduction of technologies, such as chilled water storage, free surface roll reduction tanks and other types of stabilizers were also important issues. Longer voyages, longer seasons, larger crews and more northerly ranges added to overall stress factors of both crew and vessels.

In terms of safety equipment, the review was short on description, but did note improvements in navigation and lifesaving equipment. They were specific in the mention of immersion suits, noting its carriage was still voluntary, but gaining wide acceptance due to the demonstrated ability to save lives. In its conclusion, the review reflected on minor modifications underway in the process of amendments to the SFVSR. Essentially, their work was near completion in readiness for CSA reform. From a regulatory perspective, this new revision is driven in the interest of creating a positive effect on fishing vessel safety. Meanwhile, the Cluster Group review is only one aspect of a larger issue of fishing vessel safety to be supplemented by reviews from other components of the CMAC committee.

5. SAR Operations Report on the 1998 East Coast Seal Hunt

The Marine Rescue Sub-Centre (MRSC) St. John's, Newfoundland completed the SAR Operations Report in 1999. It focused on a high-risk activity that invariably saw a large number of SAR incidents annually. Indeed, the entire regional SAR system is normally taxed to the limit during each annual hunt. Its stated objective was to reduce the number of SAR incidents and reduce risk to the people who respond to the incidents and ultimately create a safer environment for those who harvest seals for a living.

The report detailed the number and types of incidents during the 1998 season. While no fatalities occurred, the degree of severity in most cases was relatively high. The fishing vessels involved were divided into three classes (small open boats, less than 34'11" and greater than 34'11" to 65'), in keeping with the method of DFO management for the seal fishery. Variables such as environmental factors were shown to contribute seriously to incidents and further compound them after they occur. The presence of ice was also a common element of operation and one that increased the risk factor considerably. To further complicate matters, SAR response was seriously impaired by limitations imposed by operation in ice. As in other types of fisheries, operators were driven by seasonal characteristics and fisheries management regimes, such as "a free for all" quota.

The SAR Operations report highlighted issues common to the seal hunt, thereby providing a planning tool for SAR action. It saw enhanced measures in possible regulations and guidelines specific to the Seal harvest. It also felt that there was room for a higher level of awareness of the dangers entailed in the industry and the need an overall improved safety regime. Its key recommendations focused on SAR planning, improved communications, vessel inspection, communication carriage requirements and a less competitive system of quota allocations. Finally, the content of the report and the thrust of its recommendations are consistent with other reports dealing with issues of safety in the fishing industry.

6. *Fishing Vessel Replacement Regulations in the Newfoundland Fishery: Implications for the Future*

A Memorial University of Newfoundland thesis, written by Carl Parsons, dealt with changes in the fishery, mostly driven by the Cod moratorium, which began in 1990. This paper is important in that it links DFO harvesting restrictions to fishing vessel safety. This issue of fisheries management is a common element found explicitly in almost every study or report on the subject of fishing vessel safety. While the main subject area in the paper dealt primarily with harvesting as a function of economics, safety was raised as a by-product of harvesting policies.

The prosecution of alternate fisheries, such as shrimp, crab, scallops and turbot have, in the author's view, changed the dynamics of harvesting. Distance has become the main feature and hence, the impact of vessel size not only raises the issue of harvesting economics, but also one of safety. Given the need to extend further offshore, Parsons believes new rationale must prevail in establishing size restrictions. Safety, therefore, becomes operative in the application of new policies.

Specifically, the paper deals with the 45 to 65 foot class vessel in the context of a diversified fishery. However, the author believes his conclusion is applicable to most, if not all, vessel classes in the Newfoundland fishery. The paper is structured in such a way that considerable study is conducted through literature reviews. A historical perspective of the past fishery and hence the evolution of today's situation is outlined. Comparisons are drawn between the Newfoundland fishery and those of other Atlantic Provinces. One section of the paper deals specifically with safety at sea and methods used to increase vessel stability. Finally, the paper is summarized along with conclusions and recommendations. Perhaps the most noteworthy recommendation from a safety perspective is the need for additional research on the relationship between accidents, vessel size and distance from homeport.

On the issue of safety, the paper argues that the vessel classification system, which was essentially arbitrary in its design, may hamper the required transformation of the fishery in several respects. It is noted that preliminary results of the study suggests it may slow technological change, reduce economic efficiency and "compromise safety at sea". Interestingly, the paper reveals that "data presented in the study indicate the highest accident rates involving 45 to 65 foot vessels since the 1970's occurred from 1990 to 1997, coinciding with the movement of more vessels to new fishing locations much further offshore". Another factor cited which may have bearing on the accident rate indicates that Newfoundland has a higher proportion of vessels less than 35 feet and a lower proportion of vessels larger than 65 feet than any other province involved in the Atlantic fishery. Yet by contrast, Newfoundland has the highest proportion of coastline and direct adjacency to the fishery resource in question. Therefore the correlation of distance and size seems to further suggest a direct bearing with greater safety concerns.

Parson's thesis has confirmed, in some respects, observations already noted by the SAR system. His paper therefore, represents an additional verification of the pattern of activity that

has evolved and is likely to continue into the future. Since, according to Parsons, the vessel replacement regulations in the Newfoundland fishery, will remain status quo for some time into the future, it means the problem may even worsen. Not only will new replacement vessels be fundamentally too small, but those in existence will continue to enter a further state of decline with age.

7. U.S. NRC Report on Fishing Vessel Safety - Blueprint for a National Program

The 1991 report was conducted by the United States National Research Council, which is a component of the National Academies of Science and Engineering. It was conducted under the authority of the Secretary of Transportation for the United States Congress. The report was mandated by the 1988 Commercial Fishing Industry Vessel Safety Act, which Congress passed, to provide for new fishing vessel safety requirements. The act also required an assessment of the safety problems and a specific recommendation on whether a vessel inspection program should be implemented. The Act and review by the NRC was driven by the widespread safety problems in the commercial fishing industry.

The report was very comprehensive and focused on the following items:

- Existing statistical database;
- Profile of vessels involved in accidents and those still active in the industry;
- Qualifications and training;
- Safety programs and regulations; and
- Recommendations.

In completing the various tasks associated with the report, consultations were conducted with regulators, underwrites, marine surveyors and vocational trainers and academic experts. There were also public consultations through trade shows, fishery management council meetings and other public venues. Regional studies and investigative reports were reviewed in areas relevant to the subject.

The report indicated that the national average death toll was near 100, with a loss of 250 vessels annually. It found that the largest number of vessel casualties and fatalities involved vessels under 79 feet. Over 65 feet, casualties more often occurred as a result of accidents onboard. Fatalities were prominent in vessels under 50 feet and most often resulted from a casualty to the vessels. In one period from 1982-87, at least 6,558 casualties resulted in 1,298 vessel losses and \$378 million in damages. At the same time, 3,100 SAR cases were recorded with 648 fatalities occurring. One revealing feature found that over 80 percent of the accidents were within 20 miles off the coast and 5 percent were within 3 miles. The report concluded that

exposure to life threatening situations occurred whether fishermen operated offshore, inshore, inland waterways, in all environmental conditions and in all sizes of vessels.

The report was clear in its view that no single cause factor dominated fishing vessel casualties. It was seen as a complex interaction involving vessels, equipment, fishermen, and external influences, such as environmental variables and fishery management practices. It concluded that human failure, in some form, contributed to most fishing vessel casualties, fatalities and injuries.

In considering external influences on safety, the report was especially critical of fisheries management practices. It was indicated that the management system's inability to match harvesting capacity to biological productivity of fish stocks resulted in highly competitive operating environments in which fishermen take unnecessary risk to maintain their livelihood. While accidents were attributed to human error, it was noted that economic conditions and fishery management regimes increase the pressure on fishermen to earn a living. Fishermen were found to risk fishing in foul weather during short seasons, overload boats and install gear or operate on fishing grounds for which a vessel is not designed. In examining the system of Fisheries Management Councils (FMC), it was a requirement to consider safety in its management plans. Nevertheless, it was found to be subordinated in favor of economic interest in virtually all cases where decisions involved catch limits and time lines for harvesting.

The report described a situation where a poor fishing vessel safety record was a reflection of overall approach to the industry. Lack of a safety culture among fishermen, lack of standards in carriage equipment, training and an ad hoc approach to prevention failed to sustain an adequate safety standard at the fishermen's level. It was noted that the United States fishing industry and government have pursued voluntary, piecemeal safety measures that lack cohesive leadership and coordination and are constrained by limited resources. It indicated that while improvements in safety had been experienced on a vessel-by-vessel, person-by-person basis, industry wide, voluntary measures have not achieved measurable results. The report pointed to intense lobbying efforts by fishermen themselves against safety oriented measures, as one of the main reasons for not having a suitable safety regime within the fishing industry.

The report concluded that the fishing industry's safety record could be improved, but it would require a mandated, systematic attention to safety throughout the industry. Greater federal involvement would also be required to bring safety measures used into a cohesive and effective program. Leadership initiatives by the Department of Transportation through Coast Guard was recommended as a first step. All impacting agencies would also have to align with common objectives. An integrated safety strategy was proposed with a view to a more pro-active approach in areas, such as safety administration, increased resources, improved safety data collection, vessel and equipment standards, regulatory enforcement, mandatory inspections, prevention and safety awareness programs, mandated survival equipment, improved emergency preparedness, establish professional qualifications standards, require competency certification and enhanced education and training infrastructure.

Finally, an improved emphasis on safety was proposed for fisheries management regimes. Flexibility in opening and closing dates was recommended as a means of mitigating environmental adversities affecting fishing activities. More attention to safety was suggested through concrete objectives reflected in fishery management policy and practices. In the final analysis, the report was attempting to create a fundamental shift from a voluntary to a mandatory system, as a means of improving the poor fishing vessel safety performance of American fishermen.

8. Report on the Fishing Vessel Casualty Task Force - United States Coast Guard (1999)

Captain James D. Spitzer of the United States Coast Guard chaired the 1999 Task Force report. It was conducted under the authority of Rear Admiral Robert C. North, the Coast Guard's Assistant Commandant for Marine Safety and Environmental Protection. It was initiated in response to the loss of eleven lives in four separate fishing vessels' casualties during a three-week period near the end of 1998 and the beginning of 1999. Secondly, it required an examination of the incidents in the context of historical high accident rates involving fishing vessels.

The terms of reference for the Task Force included the following:

- Investigate and evaluate recent serious casualties and relate to historical data;
- Provide quick feedback to the industry;
- Review current past and current fishing vessel safety initiatives;
- Recommend significant measures to reduce loss of life and vessels; and
- Develop direction for government and industry.

In its investigation of the subject casualties the Task Force concluded there was no common element that could enable a "quick fix" solution to fishing vessel safety. There were, however, common conditions, such as poor vessel or equipment condition, inadequate preparation for emergencies, and lack of awareness of or ignoring stability issues. This was consistent with historical trends established for decades in the United States. In a comparison to casualty rates for the previous four years, the Task Force found there was no significant shift in casualty rates. In comparing fatality and vessel loss rates for a five year period after the 1988 fishing Vessel Safety Act was passed in 1991, a 20 percent decrease of lives and vessel losses were noted. This, however, was not enough to meet Coast Guard's goals to reduce levels approaching that of other commercial vessels.

In its study, the Task Force noted almost a decade of experience under the Fishing Vessel Safety Act of 1988 (implemented in 1991). Meanwhile, very little advancement in recommended approaches occurred to improve safety. Most of the measures proposed and started as a result of

the NRC study of 1991 were cancelled or did not otherwise succeed. There existed a strong reluctance to mandate safety both from government and industry. The report noted that many fishermen strongly opposed standards that might have saved their own lives. Many fishermen accept that fishing is dangerous and lives are often lost. It was indicated that multiple and sustained initiatives to address important factors of vessel conditions and crew competency have not been adopted.

The Task Force was clear in its position that unsafe conditions latent in the system are not exclusively created by mariners themselves. Consequently, influences outside the control of the mariner set the stage for accidents to happen. Fisheries management was again targeted as an area of concern. It was noted that fisheries management policy was conducted in the absence of safety objectives.

The Task Force concluded that solutions to fishing vessel safety are basic and straightforward in the form of seaworthy boats, competent crews, adequate survival equipment, and safety conscious resource and industry management regimes. As in previous reports, the Task Force outlined a series of recommendations aimed at improving safety in a very fundamental way. The 48 recommendations that followed focused around principle items, such as the establishment of operator and crew standards, establish safety and stability standards, improved program management, coordinate fisheries management with safety, ensure vessel compliance, conduct research and development and communicate with fishermen. Knowing that these recommendations were similar to other in the past, the Task Force left no doubt that until these types of changes are enacted, fishing vessel safety will continue to repeat its history of failures.

9. Report of the Fishing Vessel Safety Review Group - Irish Department of Marine and Natural Resources (1996)

The Irish report was conducted in 1996 under the authority of the Minister for the Marine. The report was driven by the large number of recurring tragedies at sea involving Irish fishing vessels. The primary objective was to determine the cause of fishing vessel accidents and attempt to implement a solution. The core terms of reference included the following:

- Review safety status, including training and manning requirements of all categories of fishing vessels; and
- Make recommendations and assess financial and sectarian implications.

In carrying out the study, the group relied on statistical databases. A fishing vessel profile was conducted, using random samples from the statistical database. There were also consultation forums with the fishing industry, government and training institutions. Finally, the study group attempted to measure the effects of existing legislation and International Conventions.

In the reference study period (1990-96), 32 fatalities were recorded from a total of 48 fishing vessel accidents. Relative to the size of the fleet (1,352 registered in 1996), this was considered high. From the period 1991-95, a total of 669 lifeboat launches were tasked on SAR incidents. The most common type of incidents (244) were classified as mechanical failures. During the same period, more than one-half of the accidents involved vessels less than 24 meters and accounted for two-thirds of the fatalities. The study found that the smaller the vessel, the more likely it will be involved in an accident that results in fatalities.

As in other jurisdictions, the study found that fishing vessel accidents were the result of a number of variables prevalent in the industry. The overall lack of a safety discipline was most evident. Safety standards, suitable training, equipment standards and competency standards were all seriously deficient. A random inspection sample of fishing vessels concluded that 64 percent had serious deficiencies with respect to navigational and safety equipment such as liferafts, lifejackets, and fire-fighting equipment. The survey also showed a high number of manning deficiencies. It found that only 13 percent of the fleet carries EPIRB's. It also found that the smaller the vessel, the more likely it was to be lacking in proper training and safety equipment.

In profiling the fleet the study found that most of the vessels were old and lacked modern equipment. While fishing activities take place up to 250 miles offshore, mostly vessels greater than 20 meters fish outside of 70 miles. Trends evident up to 1996 show an annual decrease of registered fishing vessels of 5 percent annually. Licensing policy restrictions is resulting in vessel replacement by larger vessels. The EU Commission is targeting less fishing vessels in line with availability of resources, but was maintaining a 100 percent replacement policy. In other words, new vessels entering the fleet must be equivalent to tonnage and power leaving. For example, the study found that in years 1994-95, 155 vessels left and 41 entered the fishery, resulting in average size of 49 GRT leaving, while the average size entering was 254 GRT.

In mitigating the effects of existing fleet problems due to age and size restrictions, the report made reference to EU programs designed specifically to improve safety. The EU Multi-annual Guidance Program approved modernization grants and a key eligibility criteria is that it lead to improvements in vessel safety. Approximately 90 percent of the grants approved contained substantial safety related elements. To qualify, fishing vessels had to be registered and registration linked to a level of seaworthiness. The study highly recommended additional grants of up to 50 percent to improve the safety of old existing or second-hand vessels in the fleet.

As noted in the U.S. experience, vessel size alone was not seen as the answer to major safety issues. The report put forward a large number of recommendations that by design would fundamentally change the approach to fishing vessel safety. It was felt that Ireland should follow the lead of EU countries, such as Norway, France and Denmark, who mandated items like basic safety training. This type of training was recommended in areas, such as first aid, fire fighting, radio communications and ships stability. An overall pro-active approach through statutory requirements and aggressive prevention programs was recommended for government. More stringent vessel inspections and operator certification was seen as essential for all sizes of vessels. The report suggested more manpower was required to enforce safety regimes

established by government. The report believed that the penalty for non-compliance should be significantly increased to ensure additional compliance. It also recommended a structure be put in place to enhance a two-way communication between government and the industry in general.

Finally, the report outlined very comprehensive recommendations with significant implications, financially and structurally. Mandatory compliance was seen as a necessary ingredient in improving safety regimes. The report committee saw this as the most viable solution to an age-old problem. To ensure its implementation, they recommended a structured approach and an adequate monitoring mechanism as a means of achieving its ultimate goals.

10. Conclusion

It is clear from literature reviews that the problem of fishing vessel safety is universal. While most fisheries carried out in all jurisdictions have unique characteristics, they are also bounded by commonality. They all carry a similar level of inherent risk, but more importantly, they all seem to compound risk through normal human behavior. In examining the literature on fishing vessel safety, common elements that prevail in affecting safety are as follows:

- Lack of a safety culture;
- Willingness by fishermen to accept large risk;
- Subordinating safety for economic gains;
- Lack of a structural approach in establishing and discharging safety regimes;
- Reluctance of safety providers to impose mandatory safety regimes;
- Reluctance of fishermen to accept mandatory safety regimes; and
- External influences such as fishery management regimes with conflicting goals and objectives.

All of these elements have manifested themselves into a lackluster safety culture that has invariably carried a heavy price. Numerous studies point to fatalities and huge loss of property as a result of poor seamanship, fatigue, lack of safety or survival equipment, lack of training, inadequate vessel design, improper loading, questionable management practices, poor communications and a multitude of incidental factors. Meanwhile, it seems that every study or report has identified similar factors contributing to fishing vessel safety. Likewise, each report has reached similar conclusions and recommended practical solutions. However, previous attempts to address issues affecting fishing vessel safety has not been sustained by the appropriate authorities and consequently, the cycle continues.

Annex “D”

History of the Vessel Replacement Policy, <65’ Newfoundland Region

The registration of fishing vessels was introduced in Newfoundland on November 14, 1973. There were no restrictions on the replacement of vessels up to 1981.

The first vessel replacement guidelines were introduced in 1981.

- These rules varied for full-time and part-time fishers, and by NAFO Division.
- For example in Division 2J3KL, full-time fishers who did not have a vessel could register one up to 34’11”. Vessel owners were permitted to register one additional vessel up to 34’11”.
- Part-time fishers were not permitted to register additional vessels and could replace an existing vessel on a foot-by-foot basis.
- Vessel owners 35’ to 64’11” were permitted to replace on a foot-by-foot basis and hold-for-hold for groundfish vessels.
- This was further revised to restrict fishers to remain within their 5-foot interval. Fishers were permitted not more than 10% increase in the fish hold capacity.

In 1982, there was the introduction of the “combining” rules whereby a full-time fisher could replace his registered vessel, with one beyond his 5-foot interval by acquiring another vessel and its groundfish license (to a max of 65’).

In 1986, replacement rules for vessels 35’ to 64’ applied to all vessels, not just groundfish.

In 1989, the cubic number approach was adopted for vessel replacement 35’ to 65’ LOA.

- Full-time fishers could replace a vessel 35’ to 54’ with a 50% increase in its cubic number to a max of 330 (11,655 cub ft) and 54’11” LOA. Likewise in the 55’ to 64’ class where they could increase by 50% to a max of 600 (21,191 cub ft) and 64’11” LOA.
- Combining was permitted to cross the 54’11” barrier provided both licences were active.
- Vessels <35’ LOA could not be used in combining.
- Full-time fishers could still register vessels up to 35’, however, a max of 2,500 cubic feet was imposed.
- Along with length barriers, the cubic number approach continues to be the basis of the vessel replacement guidelines today.

In 1990, the 50% increase in the cubic number provision was dropped for the 35' to 64', but combining to pass the 54'11" was still permitted.

- The replacement policy was then based on the same cubic number.
- Full-time fishers could retain their eligibility for the larger one up to two years if they removed their vessel.

In January 1991, there was a freeze on any vessel registrations less than 35' LOA.

In 1992, the restriction on registering additional vessels was eased to allow the fulltime fishers with one vessel greater than 25' to register another vessel <25' provided they hold licences other than groundfish, or a cod trap validation.

- "Combining" to pass the 54'11" was eliminated. It continued for 2J crab licence holders until June 30, 1994.
- On October 14, 1992, the two-year limit to re-enter the larger vessel class was changed to no limit. This continues to be policy today.

In 1994, Icelandic scallop licence holders in 3Ps were permitted to replace their vessels up to 65' LOA to enable them to fish off the St. Pierre Bank. These vessels were not permitted to fish groundfish.

In 1995, replacement of vessels <25' was restricted to a max of 25'. Vessels 25' to 34' could be replaced on a foot-by-foot basis. On December 20, 1995 a new licensing policy for Eastern Canada was introduced. Part of this policy included the introduction of Core for the <65' fleet. This policy included the "current" vessel replacement rules.

Under today's licensing policy, Core fishers can opt to use either the "current" or "supplementary" vessel replacement rules. The basis for the replacement of vessels today is the cubic number approach and length barriers. The primary length restrictions in the inshore fleet are the 34'11" and the 65' barriers.

Vessel Replacement Rules Under Existing Policy

Vessel Replacement Rules (Current & Supplementary)

Licence holders may replace vessels provided it is done within the current vessel replacement guidelines. Core fishers with vessels between 35' to 64'11" LOA can opt for either the "Current" Rules or the "Supplementary" Rules. Supplementary rules do not apply to vessel owners less than 35' LOA, unless they have a 2J3KLPs supplementary crab licence or a 4R purse seine licence.

Supplementary Rules

On April 24, 1997 Fred Mifflin, Minister of Fisheries and Oceans, announced supplementary rules governing the replacement of fishing vessels in Newfoundland and Labrador. These supplementary rules apply to:

- Core enterprises with vessels in the 35 to 64'11" length overall fleet (LOA).
- Core enterprises with vessels less than 35' LOA with a 2J3KLPs supplementary crab licence or a 4R purse seine licence.

The supplementary vessel replacement rules took into account a review of vessel replacement policy by the Fishing Industry Renewal Board and consultations with the Government of Newfoundland and Labrador, the Fish Food and Allied Workers' Union, and the province's fish harvesters.

The supplementary rules were developed in response to fish harvesters regarding safety concerns. These rules were developed to allow fishers greater flexibility to increase their vessel size, provided the registered vessel operator agrees, in writing, to operate the larger vessel only under an Individual Quota (IQ) program or Individual Harvesting Restriction (IHR) for designated fisheries.

The rules allow fishers flexibility regarding vessel replacement while avoiding an increase in the harvesting capacity. The IHR is based on the fishermen's pre-expansion (original vessel) history in a particular fishery. Core fishers who choose to increase their vessel size must do so on condition that they fish designated species under Individual Quota (IQ) or Individual Harvesting Restrictions (IHR).

The Current and Supplementary vessel replacement rules are outlined in the following sections.

ANNEX 31 - VESSEL REPLACEMENT RULES**A. Core Fishers**

This section outlines the vessel replacement rules for Core enterprises.

Vessels less than 35' LOA

- (i) Core enterprise (<35' LOA) owners will be permitted, on a one-time basis only, to replace their largest vessel up to a maximum of 34'11" LOA and 2500 cubic feet. Fishers who opt to increase their vessel to the maximum 34'11" LOA, under this provision, will not be permitted to reissue (transfer) the increased vessel registration for a period of 24 months.
- (ii) Vessels less than 20' may be replaced with a vessel up to a maximum of 24'11" LOA.
- (iii) Vessels 20' to 34'11" may be replaced with a vessel having a 33 1/3% increase in length up to a maximum of 34'11" LOA and 2500 cubic feet.
- (iv) Supplementary crab licence holders (<35') in Divisions 2J3KL3Ps and purse seiners in 4R may replace their vessel up to a maximum capacity of 6,004 cubic feet and 44'11" LOA.

A. Core Fishers (cont'd)	
This section outlines the vessel replacement rules for Core enterprises	
Vessels 35' – 64'11" LOA	
Current Rules	Supplementary Rules
<p>2GHJ, 3KL, 3Ps:</p> <p>(i) Vessels 35' - 54'11" LOA – Replacement is permitted with a vessel having the assigned cubic number or Annex B, whichever is greater, up to a maximum of 54'11" LOA and 11,655 cubic feet.</p> <p>(ii) Vessels 55' - 64'11" LOA – Replacement is permitted with a vessel having the assigned cubic number or Annex B, whichever is greater, up to a maximum of 64'11" LOA and 21,192 cubic feet.</p>	<p>(i) Supplementary rules are available to Core fishers only.</p> <p>(ii) Individuals will be required to fish under individual quotas (IQ's) or Individual Harvesting Restrictions for designated species (see Annex 5).</p> <p>(iii) Vessels 35' to 44'11" may be replaced with a vessel having a maximum cubic capacity of 6,004 cubic feet and a maximum length of 44'11". (Vessels in this category include those less than 35' LOA with a 4R purse seine licence or 2J3KLPS supplementary crab licence.)</p> <p>(iv) Vessels 45' - 64'11" may:</p> <ol style="list-style-type: none"> (1) increase their cubic feet by 33 1/3%; (2) vessels with an existing capacity of less than 11,655 cubic feet may be increased up to 11,655 cubic feet or by 33 1/3%, whichever is greater; and (3) the maximum allowable size is 21,192 cubic feet and 64'11" in length. <p>Fishers may opt out of the supplementary rules and return to a vessel authorized under the current vessel replacement rules and will no longer be subject to IHR's. However, they cannot re-register another vessel until the 12-month registration period has expired.</p>
<p>3Pn, 4R:</p> <p>(i) Vessels 35' - 44'11" LOA Replacement is permitted with a vessel having the assigned cubic number or Annex B, whichever is greater, up to a maximum of 44'11" LOA and 6,004 cubic feet.</p> <p>(ii) Vessels 45' - 64'11" LOA Replacement is permitted with a vessel having the assigned cubic number or Annex B, whichever is greater, up to a maximum of 64'11" LOA and 21,192 cubic feet.</p>	

B. Non-Core Enterprises (Level I or Level II) Current rules only**(a) Vessels less than 35'LOA**

- (i) Vessels less than 25' LOA may be replaced with a vessel up to a maximum of 24' 11" LOA.
- (ii) Vessels 25' - 34' 11" LOA may be replaced on a foot-per-foot basis with a maximum of 2500 cubic feet.

Vessels 35' - 64' 11" LOA.

- (i) Replacement is permitted with a vessel having the same length and cubic number up to a maximum of 64' 11" LOA and 21,192 cubic feet.

C. Non-Core Fishers (No Level) – Current rules only

- (a) Vessels less than 35' LOA – Replacement is permitted on a foot-per-foot basis up to a maximum of 34' 11" LOA and 2500 cubic feet.
- (b) Vessels 35' - 64' 11" LOA – Replacement is permitted with a vessel having the same length and cubic number up to a maximum of 64' 11" LOA and 21,192 cubic feet.

ANNEX “E”

FISHING VESSEL SAFETY REVIEW

DFO INTRA-DEPARTMENTAL WORKING GROUP

Merv Wiseman	Department of Fisheries & Oceans - Canadian Coast Guard Maritime Search & Rescue, SAR Controller
Hedley Burge	Department of Fisheries & Oceans - Canadian Coast Guard Marine Communications & Traffic Services, Officer in Charge
Wayne Follett	Department of Fisheries & Oceans Canadian Coast Guard, Regional Director
Ray Browne	Department of Fisheries & Oceans - Canadian Coast Guard Marine Programs, Director
Jim Baird	Department of Fisheries & Oceans Fisheries Management, Regional Director
John Collins	Department of Fisheries & Oceans Policy & Economics, Director
Frank Corbett	Department of Fisheries & Oceans Policy & Economics, Senior Economic Analyst
Tom Curran	Department of Fisheries & Oceans - Fisheries Management Resource Management, Chief
Roy Russell	Department of Fisheries & Oceans - Fisheries Management Resource Management, Director
Gary Brocklehurst	Department of Fisheries & Oceans - Fisheries Management Resource Management, Chief
Derek Tobin	Department of Fisheries & Oceans - Fisheries Management Resource Management, Staff Officer Licencing
Ken Carew	Department of Fisheries & Oceans Policy & Enonomics, Chief
Paul Cahill	Department of Fisheries & Oceans Policy & Enonomics, Senior Economic Analyst
Anthony Patterson	Department of Fisheries & Oceans - Canadian Coast Guard Maritime Search & Rescue, Superintendent
Brian Avery	Department of Fisheries & Oceans - Canadian Coast Guard Office of Boating Safety, Supervisor

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