1996

A Policy Analysis of the Commercial Fishing Industry Vessel Safety Act of 1988

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A POLICY ANALYSIS OF THE COMMERCIAL FISHING INDUSTRY VESSEL SAFETY ACT OF 1988

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MAJOR PAPER SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF MARINE AFFAIRS

UNIVERSITY OF RHODE ISLAND

1996

MASTER OF MARINE AFFAIRS MAJOR PAPER

OF

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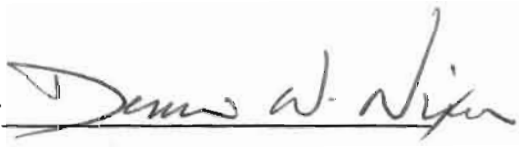
Major Professor 

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1996

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ABSTRACT

During the mid-1980's, the crisis in marine insurance and growing concern over fishing vessel safety combined to stimulate passage of the Commercial Fishing Industry Vessel Safety Act of 1988. This law was enacted with the goal of improving the overall safety of commercial fishing industry vessels. However, the Act as passed by Congress contained no provisions for marine insurance reform. As a result, the Commercial Fishing Industry Vessel Safety Act offered little incentive for the industry to improve upon its dubious safety record. With the exception of self-insurance clubs, the vast burden of implementing the Act has fallen upon the U.S. Coast Guard.

Implementation of any Congressional mandate necessarily involves identification of Congressional intent. In the case of the Commercial Fishing Industry Vessel Safety Act, the intent of Congress was to promote a proactive risk management system and the use of voyage terminations as a primary enforcement mechanism. Unfortunately, this policy has been implemented within the Coast Guard such that the authority to terminate a fishing vessel voyage is concentrated at a high level within that agency, and the Coast Guard has been precluded from effectively utilizing the enforcement tool which Congress provided for in the Act. Instead, the Coast Guard has focused its enforcement efforts on post-contact control measures such as mandating exposure suits and life rafts, and in so doing has missed the opportunity to prevent accidents by creating a new risk management regime. By refocusing enforcement efforts within the Coast Guard in order to create a

more effective risk management system, the fishing vessel safety program currently in place in this country could be vastly improved. Likewise, a more aggressive data gathering protocol and the utilization of risk management methodology to measure and identify hazards within the commercial fishing industry is necessary to the effectiveness of this program.

ACKNOWLEDGEMENTS

I would like to express appreciation to my family for all the support and love anyone can ever expect to have, to Elise for being so wonderful and putting up with me, and to the Coast Guard for footing the bill for this excellent adventure. Finally, to my brother Paul, whom I miss more and more each day, thanks for looking down on me from above and keeping me out of trouble.

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INTRODUCTION

The crisis in marine insurance and concern over fishing vessel safety fused during the mid-1980's to create the Commercial Fishing Industry Vessel Safety Act of 1988. This law was enacted with the goal of improving the overall safety of fishing industry vessels. The success of the the commercial fishing vessel safety program has been a subject of much controversy. This paper is an attempt to conduct a complete policy analysis in order to evaluate and suggest improvements to the program.

BACKGROUND

Commercial fishing is one of the most dangerous occupations in the nation, with one of the worst safety records. The death rate in the commercial fishing industry is seven times greater than the national average for all industrial groups, and the loss rates for fishing vessels over 100 gross tons are 5 to 7 times greater that the loss rates for U.S. ocean going cargo ships.[1] Although the poor safety record within this industry is well established, there is no single causal factor that can account for the majority of the casualties which occur in the commercial fishing industry.[2] Rather, these casualties are the result of a complex series of interactions between the vessels, the fishermen, the environment and other factors such as fisheries management

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[1] Kathleen Castro and Joseph DeAlteris, Atlantic Coast Fishing Vessel Safety Manual. Produced by Rhode Island Sea Grant in cooperation with the U.S. Coast Guard. Sea Grant Publication P119 RUI-H-91-001, 1991. p 1.

[2] National Research Council, Fishing Vessel Safety: Blueprint for a National Program. National Academy Press, Washington DC, 1991. p 7.

practices.[3] Despite years of study, the causal relationships between these factors are not well understood. Due to its regional nature, combined with the inherent dangers associated with handling dangerous equipment on an unsteady platform, the fishing industry is unlike any other industry in this country. These considerations are further complicated by factors such as the independent spirit of the fishermen themselves, the decentralized management of the industry as a whole, and the economics which drive the entire system. As a result, it is especially difficult to effectively implement a safety program within the commercial fishing industry.

Fishermen work in a difficult environment that is remote from the nearest assistance. The isolated nature of their work has fostered an independence among fishermen that is one of the few common bonds that transcends throughout the industry. Perhaps it is this independent streak that drives the fishermen to resist government intervention or regulation. Government involvement in the fishing industry is often seen as an unnecessary intrusion.[4] As a result, unlike miners[5] , fishermen have resisted taking action to ensure a safer working environment. It is also extremely difficult to oversee an industry composed of thousands of individual enterprises.[6] The pressure to enact legislation and impose regulations to improve safety has come from outside the

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[3] National Research Council. p xvi.

[4] Yoder, Ellen. "For Those in Peril on the Sea: Progress in Commercial Fishing Safety," Nor'easter, Spring, 1990. p 10.

[5] The mining industry operates under hazardous conditions which are comparable to those encountered within the commercial fishing industry. However, miners actively sought government intervention to improve working conditions within that industy.

[6] Yoder. p 11.

industry. Such forces as the Coast Guard, marine insurers, the Sea Grant program and Congress united in the past to take action.[7]

Economics also plays an important role in fishing vessel safety. Of the fisheries where the status of the stocks are known, 83 percent are either fully utilized or over utilized.[8] This fact is important to note because fishermen do not get hurt as often in profitable fisheries as they do in less profitable ones. The reasons for this are that increased competition for scarce resources force vessels to fish harder and longer, leading to fatigue, a major contributor to accidents. Also, preventative maintenance or replacement of equipment is often put off to a later date when profits are smaller, making equipment failures more likely.[9] Finally, where there are few prospects for the future because stocks are depleted, some fishermen may be tempted to "cash out" by staging an accident or exaggerating a minor injury.[10] Because of these important economic factors, one of the simplest opportunities to contribute to fishing vessel safety is for management plans to improve the status of fish stocks. However, the rebuilding of fish stocks is a slow process and not entirely within the purview of the U.S. Coast Guard, the regulatory agency charged with establishing and enforcing vessel safety standards.

Voluntary fishing vessel safety programs began in the U.S. in

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[7] Yoder. p 10.

[8] Our Living Oceans, Report on the Status of U.S. Living Marine Resources, December 1993, NOAA Tech. Memo. NMFS-F/SPO-15. p 19.

[9] Nixon, Dennis, W. "Recent Developments in U.S. Commercial Fishing Vessel Safety, Insurance, and Law," Journal of Maritime Law and Commerce, Vol 17, No 3, July, 1986. p 263.

[10] Nixon, p 263.

1959. The first program started in New England and consisted of dockside training programs and the distribution of information on identified hazards through vessel safety bulletins.[11] Another program was initiated in Alaska in 1972.[12] An attempt in the mid-1970's by the Coast Guard to obtain the regulatory authority to require safety equipment, vessel inspection, and licensing of vessel personnel was unsuccessful.[13] As a result, the Coast Guard proposed a nation-wide voluntary safety program as an alternative to greater government regulation. This program took a two pronged approach by addressing vessel safety standards through a voluntary program and by increasing safety awareness through education of fishing community.[14] The Coast Guard also participated in developing international standards for fishing vessel design and construction.[15] Unfortunately, the voluntary program proved ineffective because of its piecemeal approach to safety that lacked a coherent strategy and did not reduce the numbers of accidents.[16]

State Universities have also been active in educating and training fishermen in safety practices. For over 25 years, the University of Rhode Island has offered courses in seamanship,

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[11] Sigfryed Jaeger, "An Overview of Commercial Fishing Vessel Safety in the Northwest and Alternatives for Loss Prevention," A Joint Publication, Marine Advisory Services, Washington and Alaska Sea Grant Programs. (WSG-AS 74-3) April 1974. p 4.

[12] Jaeger p 5.

[13] Department of Transportation, U.S. Coast Guard Statement of Rear Admiral Arthur E. "Gene" Henn on Commercial Fishing Vessel Safety Before the Committee on Merchant Marine and Fisheries Subcommittees on Coast Guard and Navigation, Fish and Wildlife, and Oceanography, House of Representatives, July 30,1991. p 2.

[14] Yoder p 11.

[15] National Research Council. p 7.

[16] National Research Council. p xvi.

shipboard safety and navigation in addition to technical courses in gear technology and marine engineering. The University has also offered a fishing vessel safety training program developed with Saltonstall-Kennedy funding and implemented by the Rhode Island Sea Grant Marine Advisory Service and URI's Cooperative Extension Service.[17]

In the mid-1980's, as the safety issue continued at a slow boil, another problem was emerging. There was a crisis in marine liability insurance.[18] During that time, the marine insurance industry was highly unregulated. The large number of sinkings in the mid 1980's contributed to higher hull insurance rates.[19] Financial difficulties caused by declining interest rates, increased competition and high awards granted by the courts to injured fishermen were causing marine insurance companies to fold or charge extremely high amounts for premiums.[20] This resulted in a strong call for tort law reform. Also, for many years, the federal government subsidized commercial fishermen's medical care. This ended in 1981 when the U.S. Pubic Health Service medical care and health facilities were ended. This resulted in an increase in

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[17] Yoder p 11.

[18] Nixon. p. 361. Two other crises in the fishing vessel insurance industry occurred. The first crisis was in the mid 1950's over compensation to injured fishermen. The second crisis was in the mid 1970's and resulted in proposed reform that was not adopted by Congress. See Nixon for a full discussion.

[19] Statement of Hon. Don Bonker, U.S. Representative from the State of Washington. July 27, 1985 Hearing Before the Subcommittees on Coast Guard and Navigation and the Fisheries and Wildlife Conservation and the Environment, and Merchant Marine of the Committee on Merchant Marine and Fisheries House of Representatives. Ninety Ninth Congress, First Session on The Insurance Problem facing the Commercial Fishing Industry. July 27, 1985 Seattle WA, October 11, 1995, New Bedford MA, October 15, 1985, San Diego CA.

[20] Yoder p 12.

medical costs for the private sector.[21]

Tort law reform needed to focus on the major avenues that fishermen used to gain compensation for injuries. There are three distinct legal remedies for injured crewmen. They are known as "maintenance and cure," the Jones Act and the unseaworthiness doctrine or more affectionately know as the "blessed trinity" to personal injury lawyers.[22]

Maintenance and cure is the legal obligation of the owner of a vessel to maintain and provide medical care for members of the crew injured in the service of the vessel, regardless of fault. This obligation continues until the injured seaman is recovered to the maximum extent practicable.[23] Maintenance and cure is limited in that it does not effectively cover permanent injuries and is only intended to compensate a fisherman for expenses actually incurred.

The second remedy for injured seamen is the Jones Act. In 1920, the Jones Act was passed to cover some of the inadequacies of the maintenance and cure remedy. It allowed fishermen to sue their employers in federal court for compensation for injuries sustained because of employer's or fellow crewmember's neglect.[24] Jury trials resulted in an increase in the amounts awarded during lawsuits. As a consequence, the Jones Act has led to some extreme

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[21] Background Memorandum from subcommittee staff to members of Merchant Marine and Fisheries Subcommittee on Coast Guard and Navigation, Fisheries and Wildlife Conservation and the Environment and Merchant Marine, July 25, 1991. p 6

[22] Nixon, p 364.

[23] Nixon. p 365. See Nixon for a full discussion on the legal issues related to maintenance and cure.

[24] Nixon. p 367. Contributory negligence on the part of the seaman does not preclude an award of damages, but the award is reduced in proportion to his degree of negligence.

abuses. In one case, a fisherman in Massachusetts sued his own company for compensation after he had broken his arm on his own boat.[25] Also it was not uncommon for fishermen with temporary disabilities to find doctors that will testify that they are, in fact, permanently disabled. Once a settlement is reached, then the person goes back to sea on another vessel.[26] Abuses such as these forced many underwriters to leave the field and the cost of fishermen's Protection and Indemnity (P&I) policies to skyrocket. This led to some fishermen to resort to alternatives such as self insurance clubs.

The third remedy is that of unseaworthiness. The warranty of seaworthiness enables an injured seaman to recover full indemnity if the injury resulted from an unseaworthy condition of a vessel, equipment or it's crew, regardless of negligence.[27] Examples of unseaworthiness include defective welds, the lack of proper equipment, undermanning of a vessel, incompetence of the crew, a violent crewmember and even the failure of equipment under proper operating conditions.[28]

In late 1984, the insurance crisis prompted a series of formal and informal meetings between members of the House Subcommittee on Fisheries Wildlife Conservation and the Environment and the full Merchant Marine and Fisheries Committee.

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[25] Yoder. p 12.

[26] Daniel Hof, Comments in Panel Discussing "Broker's View on Insuring the Fishing Industry," Summary of the Proceedings of the National Workshop on Fishing Vessel Insurance and Safety, Washington DC, February 4-6, 1987. p 42. See Hof's comments for other abuses of the Jones Act liability provisions.

[27] Nixon, p 368. As in the Jones Act, any award is reduced in proportion to his degree of negligence by the seaman seeking damages.

[28] Nixon, p 371. Unseaworthiness is designed to protect seamen from dangerous conditions beyond their control. It is not a remedy available to a seaman who engages in deliberate self injury.

These meetings also included representatives of the fishing industry, marine insurance industry, Coast Guard and other interested parties.[29]

With the marine insurance crisis squarely on the national agenda, a focusing event occurred that brought the fishing vessel safety issue to the agenda at the same time. Since fishermen tend to die in twos and threes, mostly out of the public eye on the high seas, the industry had not had a single catastrophic incident that could drive reform.[30] Thus getting the public spotlight on the fishing industry was difficult. Unfortunately, in August, 1985, the Western Sea, a leaky 70 year old fishing vessel sank in the waters off Alaska. One of the crewmembers that died in that tragedy was a college student who was working in Alaska for the summer. His father, Robert Barry, a career foreign service officer, wrote a letter to the Bremerton Sun the day after his son's memorial service expressing dismay at the lack of regulation in the commercial fishing industry, calling his son's death a needless tragedy. His wife, Peggy, joined him in a crusade to enact safety regulations in the commercial fishing industry and their story was picked up by the Associated Press. The parents of other victims joined them in lobbying Congress for legislation mandating safety laws. This effort ultimately led to the enactment of the Commercial Fishing Industry Safety Act of 1988, which mandated safety standards on fishing vessels but did not include provisions on liability limits.

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[29] Bill Woodward, Comments in Panel Discussing "Legislative and Regulatory Discussions with Congressional Personnel," Summary of the Proceedings of the National Workshop on Fishing Vessel Insurance and Safety, Washington DC, February 4-6, 1987. p 53.

[30] Bill Saporito, "The Most Dangerous Job in America," Fortune, May 31, 1993, p 138.

PERCEPTION OF THE PROBLEM AND SOLUTIONS

The public's perceptions of the safety and insurance crises in the commercial fishing industry had a tremendous impact on the final outcome of the Commercial Fishing Industry Vessel Safety Act of 1988. Policy experts note that:

> [i]t is critical to consider which perceptions, definitions, and aggregations get represented. If events can result in various problems (depending as they do on definition) and some publics have more access than others to decision making, then obviously policy output is affected accordingly.[31]

Therefore, these perceptions should be reviewed in light of their impact on the outcome of the law.

The marine insurance industry saw a threefold problem. The economic conditions within the industry combined with the cyclical nature of the liability insurance industry and the problems of the current legal system used to compensate fishermen.[32] Thus they felt that the solution was to enact legislation limiting the liability and right to sue to more tolerable levels than those allowed under the Jones Act. This would provide underwriters with a degree of predictability necessary for them to feel comfortable about lowering insurance rates.[33]

The trial lawyer lobby saw things from a different angle. They saw that the problem was not with temporary disabilities but with the loss of life. They felt that the equipment required by

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[31] Jones, p 55.

[32] Nixon, p 362.

[33] Robert O'Sullivan, Comments in Panel Discussing "Fishing Vessel Insurance: Views from National and International Perspectives," Summary of the Proceedings of the National Workshop on Fishing Vessel Insurance and Safety, Washington DC, February 4-6, 1987. p 35.

the safety portion of the bill would take care of that problem. The temporary injuries were primarily caused by the vessels "being manned by the worst captains, and the most inexperienced crews." And the solution to this problem was "training, training, training."[34] This view of the problem is consistent with the fact that the trial lawyers have a significant stake in perpetuating the status quo with respect to any reform of marine insurance.

The families of the victims saw the problem the lack of regulation in the fishing industry.[35] They felt that mandatory safety equipment and professional standards were necessary to solve the problem.

The fishing industry saw no safety problem. They simply saw the casualties as a cost of doing business. It had enjoyed an unregulated status for many decades and had always managed to derail attempts to impose inspection and licensing requirements on its vessels primarily on the grounds that regulation would be an unaffordable cost for the fisherman to bear. However, they did see a problem with insurance. The high cost of insurance was a major problem in allowing fishermen to be competitive with their counterparts in other countries.[36] Therefore, insurance costs had to be controlled.

The next interest group to be discussed will be the National

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[34] Statement of Edward White, Association of Trial Lawyers of America, Hearing Before the Subcommittees on Fisheries and Wildlife Subcommittee on the Merchant Marine of the Committee on Merchant Marine and Fisheries House of Representatives. One Hundredth Congress, First Session on HR 1836 and HR 1841.

[35] Anonymous, "Student's Death At Sea Inspires Parent's Crusade for Fishing Boat Safety Laws," People Weekly, Vol 25, April 14, 1986. p 52.

[36] Congressman Gerry Studds, Chairman, House Subcommittee on Fisheries and Wildlife Conservation and the Environment, Introduction, Summary Proceedings of the National Workshop on Fishing Vessel Insurance and Safety. Washington DC, February 4-6, 1987. p 6.

Sea Grant College Program. Sea Grant is a university based program of research focused on development and the wise use of the nation's coastal and marine resources.[37] From the point of view of the researchers, fishing vessel safety problems should be addressed by focusing on education, training, advisory services, information gathering and research. Sea Grant also saw the need to coordinate safety activities around the country and facilitated such efforts.[38] From the point of view of researchers, the field of fishing vessel safety research is a fruitful topic. Thus, not surprisingly, the scientists and researchers thought the solution lay in more research. The necessity of including Sea Grant in solving the problem of fishing vessel safety is important "because there is a close relationship between Sea Grant and the fishing community."[39]

According to the Coast Guard, the problem of fishing vessel safety is primarily due to human error, which was directly or indirectly responsible for approximately 80 percent of all accidents. Its records in 1985 showed that approximately 68 percent of fishing vessel accidents were caused by stability problems such as flooding, floundering, capsizing, or fire and

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[37] Ronald K Dearborne, Director, Alaska Sea Grand College Program, University of Alaska, Welcoming Remarks, Summary Proceedings of the National Workshop on Fishing Vessel Insurance and Safety. Washington DC, February 4-6, 1987. p 1.

[38] Summary of the Meeting, National Sea Grant College Program, Fishing Vessel Safety Conference held in Washington DC, November 9-10, 1983. p 37.

[39] Thor Lassen, Presentation: National Council of Fishing Vessel Safety and Insurance, Fishing Vessel Safety Conference held in Washington DC, November 9-10, 1983. p 29.

explosion.[40] The solution offered by the Coast Guard was to create a framework where the fishing industry could improve its safety record without government regulation. This resulted in the two pronged voluntary approach of vessel standards and safety awareness. The Coast Guard was opposed to the imposition of a mandatory licensing and inspection scheme because it estimated that it would take 4 years to implement and increase the licensing activity by 67 percent and inspection activity by 200 percent.[41] Such a scheme would require user fees to provide the resources to accommodate such an increased workload. At the time, the Coast Guard felt that while a licensing and inspection scheme was attractive because it would provide a degree of enforcement, "a voluntary program would provide an equivalent degree of safety in a much shorter time frame."[42]

In looking at the different perceptions of the various interest groups, it is interesting to note that the marine insurance industry is the only interest group to see their solution drop from the agenda. The fishing industry never really proposed any substantive solution during the legislative process with the exception of establishing self insurance clubs. Meanwhile the solutions posed by the other interest groups were adopted into what would later become the Commercial Fishing

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[40] Statement of Captain John E. DeCarteret, Chief, Marine Safety Division, 13th Coast Guard District, U.S. Coast Guard in Hearing Before the Subcommittees on Coast Guard and Navigation and the Fisheries and Wildlife Conservation and the Environment, and Merchant Marine of the Committee on Merchant Marine and Fisheries House of Representatives. Ninety Ninth Congress, First Session on The Insurance Problem Facing the Commercial Fishing Industry. July 27, 1985 Seattle WA, October 11, 1985, New Bedford MA, October 15, 1985, San Diego CA p 5.

[41] DeCarteret, p 6.

[42] DeCarteret, p 5.

Industry Vessel Safety Act of 1988. The next step in the first part of this analysis is to examine why the marine insurance issue was dropped from the agenda.

AGGREGATION AND ORGANIZATION

There are a number of characteristics to describe the dynamics of getting an issue set on the national agenda for Congress to take action. These characteristics can include the scope of an issue, the significance of an issue, the existence of a feasible solution, the structure of the policy process, the organization/resources of groups that are affected and the access or representation of a group.[43] The first step in this analysis will be to examine the organization and access of the different interest groups involved in the issues. It is useful to compare different issues with these characteristics "to yield generalizations about agenda setting."[44] By comparing these characteristics, it is possible to gain insight into why the safety issue triumphed while the marine insurance issue fell from the agenda.

With respect to the safety issue, the conflicting interest groups were the families of the victims and the commercial fishing industry. The former group, which supported safety requirements, was poorly organized without established access to decision makers while the latter group, which opposed mandated safety measures, was also poorly organized but had established access to lawmakers such as Gerry Studds, (D-Massachusetts) who has a significant

[43] Jones, p 65.
[44] Jones, p 65-66.

commercial fishing constituency to consider. The U.S.Coast Guard, and the Sea Grant program, both well organized and possessing established access provided support for mandatory regulations.

With the marine insurance issue, the marine insurers were poorly organized and had no access to decision makers. This is surprising because one would consider the insurance industry to be a powerful lobby. However, the marine insurers were represented by the American Institute of Marine Underwriters instead of the regular insurance lobby. Because marine insurance is such a small part of the insurance industry, the powerful industry lobby was not concerned with the issue.[45] On the other hand, the Trial Lawyers Association was a well organized group with established access. There was also less support from the Coast Guard and Sea Grant to solve the insurance issue.

Thus, there were two interest groups with similar characteristics seeking regulatory reform. However, the opposition to that reform was greater in the marine insurance issue. There was also less support from the other interested parties such as the Coast Guard and Sea Grant in pursuing the marine insurance issue because that issue did not fit with their problem definition or solution. Therefore, the characteristics of the different interest groups and their alignment on the safety and insurance issues explain why the marine insurance issue was dropped from the agenda while the fishing vessel safety problem was acted upon.

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[45] Bill Woodward, Comments in Panel Discussing "Legislative and Regulatory Discussions with Congressional Personnel," Summary of the Proceedings of the National Workshop on Fishing Vessel Insurance and Safety, Washington DC, February 4-6, 1987. p 57.

PREREQUISITES FOR AGENDA ACCESS

Policy analysts such as Cobb and Elder list four prerequisites for an issue to gain access to the agenda. They are (1) widespread attention or awareness; (2) shared concern that action is required; (3) a shared perception that the issue falls within the bounds of authority of a government agency and (4) the issue is correctable by government action.[46] They observe that the wider the audience, the greater the chance that the dispute will reach the docket of problems confronting decision-makers."[47] These prerequisites need to be present in order for the issue to expand to a wider audience. It is clear that all four of these prerequisites were present in the case of bringing fishing vessel safety to the agenda. But it is equally clear that these prerequisites were not as strong for the marine insurance issue.

By utilizing the strategy of issue expansion, advocates of the safety issue were able to expand the issue to the mass public, earning it a spot on the government agenda. The marine insurance issue, however, could only be expanded to the attentive public, which meant that the issue had "reached the stratum of well informed people." This guaranteed that the issue would get on the agenda, but was not enough to ensure that legislation was enacted.[48]

While both issues identify a shared concern that action is required, distrust of the insurance industry lead to a lesser concern that action is required to solve the insurance problem.

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[46] Cobb and Elder, p 86.
[47] Cobb and Elder, p 159.
[48] Cobb and Elder, p 156.

There was also a greater perception that the safety issue falls within the bounds the authority of a government agency such as the U.S. Coast Guard. Meanwhile, Congressman Studds, at hearings on the marine insurance problem expressed the lack of a clear role for government in the insurance issue by stating:

> I want to make clear my own personal hope that this problem will be resolved without requiring the federal government to intervene. We are, after all, dealing with issues that are first and foremost, a matter between the fishing industry and the insurance industry.[49]

The above statement also demonstrates that the marine insurance issue was not considered correctable by government action. This is contrasted by the certainty of the need to mandate safety regulations. After the defeat of HR 5013, the first attempt at passing a safety and insurance bill, Bob Barry recommended that the fishing vessel safety regulations be delinked from the debate over tort liability limitation. Barry stated that:

> regardless of whether there is a consensus about a liability crisis, there is a safety crisis that can best be dealt with through legislation mandating new safety requirements.[50]

Thus, he saw the need to take quick action on the safety issue and less of a need for the government to take action on the insurance issue.

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[49] Opening Statement of Hon. Gerry Studds, Chairman, Subcommittee on Coast Guard and Navigation. July 27, 1985 Hearing Before the Subcommittees on Coast Guard and Navigation and the Fisheries and Wildlife Conservation and the Environment, and Merchant Marine of the Committee on Merchant Marine and Fisheries House of Representatives. Ninety Ninth Congress, First Session on The Insurance Problem Facing the Commercial Fishing Industry. July 27, 1985 Seattle WA, October 11, 1995, New Bedford MA, October 15, 1985, San Diego CA. p 2

[50] Robert Barry, Comments in Panel Discussing "Legislative and Regulatory Discussions with Congressional Personnel," Summary of the Proceedings of the National Workshop on Fishing Vessel Insurance and Safety, Washington DC, February 4-6, 1987. p 58.

ISSUE CHARACTERISTICS

Cobb and Elder also list five different issue characteristics that describe the nature of the conflict. An analysis of these characteristics can also provide insight into why the insurance issue was dropped from the agenda because they have an important impact on the outcome of a conflict. They are (1) the abstractness or concreteness of an issue; (2) the scope of the impact of the issue; (3) the extent to which the issue is short lived or more enduring; (4) how easily the issue is understood and (5) whether the issue has any precedence.[51]

Starting off, safety is a much more concrete issue than insurance. The marine insurance issue was also not as easily understood by the general public as the safety issue. This is clearly demonstrated by examining the background section on the House report on HR 1841. In that section, there were 24 paragraphs devoted to insurance and liability limitations. By contrast, there were only two paragraphs discussing safety issues.[52] Both issues had limited scope and temporal relevance. Finally, there was no precedence for regulation in the marine insurance field. This was because the marine insurance industry comprises approximately two or three percent of the entire insurance industry. Because it was such a tiny portion, along with the international nature of maritime travel, this explains why the insurance industry had been exempt from regulation by the

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[51] Cobb and Elder, p 96-100.

[52] Committee on Merchant Marine and Fisheries. House Report to Accompany H.R. 1841, 100th Congress, 2nd Session, Report 100-729. pp 8-16.

federal government.[53] But the fishing industry had been regulated by the Magnuson Act for almost 20 years at that time. Therefore, there was some precedence for the safety issue. Thus, an examination of the issue characteristics also show that the marine insurance issue had less ability to expand, less support, was a more vulnerable issue and was consequently dropped from the agenda. Now that it is apparent as to why the marine insurance issue was dropped from the agenda, the question of how that issue was contained should also be explored.

CONFLICT CONTAINMENT STRATEGIES

There are several different ways to stop the expansion of an issue. You can attack the interest group that supports an issue directly, by attempting to discredit the group and limit its appeal. It is also possible to indirectly attack the group by attempting to undermine its credibility. It is also possible to attack the issue directly by diffusing the situation through some sort of symbolic rewards or reassurance. Finally, it its also possible to attack an issue indirectly by side-stepping it or blurring the issue.[54] In this case, the trial lawyers used a process know as redefinition to effectively "blur" the marine insurance issue.

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[53] Statement of David Rodgers, Chief Deputy Insurance Commissioner, State of Washington in Hearing Before the Subcommittees on Coast Guard and Navigation and the Fisheries and Wildlife Conservation and the Environment, and Merchant Marine of the Committee on Merchant Marine and Fisheries House of Representatives. Ninety Ninth Congress, First Session on The Insurance Problem facing the Commercial Fishing Industry. July 27, 1985 Seattle WA, October 11, 1995, New Bedford MA, October 15, 1985, San Diego CA p 5.

[54] Cobb and Elder. pp 124-128.

Public issue formation is critical to understanding social conflict. In order to change the status quo, a group must enlist support for its position. This can be done by utilizing a "red herring" to substitute one conflict for another. This is referred to as "redefinition." This process is considered by policy experts to be critical to getting an issue on the agenda.[55] However, the process of redefinition is not limited to use only in agenda setting. This tactic was also used by the trial lawyers in the legitimation process to kill the tort reform provisions of both HR 5013 and HR 1841, the bill that eventually became the Act. This was accomplished despite the fact that the fishing vessel safety and the marine insurance issues had bipartisan support within the House and Senate.[56] The tactic used was to enlist the help of various consumer groups by substituting the conflict over tort reform with product liability concerns. Consumer groups, anxious to prevent the seamen from having their rights of grievance denied, threw their support behind the trial lawyers lobby. This tactic also drew the support of key legislators such as Sen Ernest Hollings (D-South Carolina), a product liability champion who happened to sit as Chair of the National Ocean Policy Study of the Senate Committee on Commerce, Science, and Transportation. As a result of the heavy lobbying by trial lawyers, the tort provisions were reluctantly dropped while the act was in House and Senate Committees.[57] As Don Young, R-Alaska,

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[55] Cobb and Elder. p 44.

[56] Rod Moore. Comments in Panel Discussing "Legislative and Regulatory Discussions with Congressional Personnel," Summary of the Proceedings of the National Workshop on Fishing Vessel Insurance and Safety, Washington DC, February 4-6, 1987. p 54.

[57] Anonymous, "Fishing Vessel Safety," CQ Weekly Report, July 2, 1988, Vol. 46, No. 27, p 1829.

stated:

> In spite of every effort we made to accommodate legitimate concerns by the trial lawyers, the only compensation provisions they would support were those which were so watered down as to be worthless to the commercial fishing industry.[58]

A similar tactic is presently being used in the Congress to oppose health care reform legislation being contemplated that would limit malpractice awards for "pain and suffering" to less than $250,000.[59] Eventually, the act was passed, without the tort reform provisions.

THE COMMERCIAL FISHING INDUSTRY VESSEL SAFETY ACT OF 1988

On September 9, 1988, the Commercial Fishing Vessel Industry Vessel Safety Act was passed with the goal "to improve the overall safety of fishing industry vessels."[60] The act required the Secretary of Transportation to establish regulations that required fishing vessels to be equipped with specific safety gear.[61] It

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[58] Anonymous, "Fishing Vessel Safety," CQ Weekly Report, July 2, 1988, Vol. 46, No. 27, p 1829.

[59] Judith Havemann, "Overhaul of Health System Proposed," The Washington Post reprinted in the Providence Journal-Bulletin, Saturday, March 9, 1996. p A5.

[60] House Report 100-729 on H.R. 1841, "Commercial Fishing Industry Vessel Safety Act and Compensation Act of 1987," June 23, 1988. p 8.

[61] 46 USC § 4502 This equipment includes fire extinguishers, a life preserver for each member on board the ship, flame arrestors for gasoline powered engines, proper ventilation for engine compartments and fuel tanks, visual distress signals, a buoyant apparatus, emergency position indicating radio beacons (EPIRBS) and a safety placard. In addition to these requirements, the Act also requires documented vessels that operate beyond an established boundary line or with greater than 16 individuals on board to install and maintain life rafts sufficient for all persons on board, immersion suits for each individual on board, radio communications equipment, navigation equipment, first aid equipment and other equipment required to minimize the risk of injury to the crew during vessel operations. Navigation equipment includes compasses, radar reflectors, nautical charts and anchors.

also required certain safety standards for fishing vessels that were built after December 31, 1988 or had undergone a major conversion after that date.[62] Fish processing vessels built or modified after July 27, 1990 also had to meet survey and classification requirements prescribed by the American Bureau of Shipping or another similarly qualified organization.[63] The act mandated that regulations be promulgated for the operating stability of fishing vessels that were built or substantially altered after December 31, 1989.[64]

The act also established the Commercial Fishing Industry Vessel Advisory Committee (CFIVAC). The Committee advises the Secretary on matters relating to the safe operation of fishing vessels.[65] Another section of the act concerned itself with fishing voyage requirements[66] and the obligation of a seaman to

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[62] 46 USC § 4502(c). These standards relate to navigation equipment, life saving equipment, fire protection and fire fighting equipment, the use and installation of insulation material, storage methods for flammable or combustible material and fuel, ventilation and electrical systems.

[63] 46 USC § 4503.

[64] 46 USC § 4502(d). Evidence of compliance for this provision can be issued by the person providing insurance or another qualified person approved by the Secretary.

[65] 46 USC § 7101.It consists of seventeen members representing the fishing industry, experts in the fields of maritime safety and the marine insurance industry, naval architects or marine surveyors, manufacturers of marine safety equipment, education or training professionals and underwriters that insure fishing vessels. The Act required that the Secretary, in consultation with the CFIVAC submit a plan for the licensing of the operators of documenting fishing and fish processing, and fish tender vessels.

[66] 46 USC § 10602. It requires a master of a fishing vessel that is greater than 20 gross tons and originates from a port in the U.S. to sign a written agreement with each seaman working on the vessel on the terms of compensation. The Act also requires the owner to produce an accounting of the sale of fish and division of the proceeds under the agreements. The Act also makes the vessel liable in rem for the wages and shares of the proceeds of the seamen. This section does not affect a common law right of the seaman to bring an action to recover his share of the fish or proceeds.

notify the master regarding any illness, disability or injury within seven days of such an incident and that a placard be posted on board vessels describing this duty.[67] Finally, the two sections of the act that will be examined in closer detail, the enforcement and data gathering provisions.

In order to provide some incentive for compliance with the act, Congress provided the Coast Guard with enforcement tools. Fishing vessels in violation of the Act can have their voyage terminated and be ordered to return to port by an authorized officer until the situation creating the hazard has been corrected.[68] Terminating a voyage of a fishing vessel has significant economic ramifications because it prevents the fishermen from pursuing their livelihood. They may also be fined up to $5,000 for each violation and willful violators can be imprisoned for up to one year.[69] Vessels that are less than 36 feet in length and do not operate on the high seas are exempt from the law.[70]

Another important part of the Act is the section that deals with data collection. The Act required the Secretary to compile statistics concerning marine casualties from data compiled by marine insurance companies that insure fishing vessels. These insurance companies are required to periodically submit data to the Secretary. The Secretary is also required to consult with insurance companies to gather a statistical base to analyze vessel

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[67] 46 USC § 10603.
[68] 46 USC § 4504-5.
[69] 46 USC § 4507.
[70] 46 USC § 4506.

risks.[71] Civil penalties not to exceed $5,000 may be imposed on those companies that do not comply with this requirement.[72]

SAFETY SYSTEMS

What the act calls for, essentially, is the imposition of a safety system on the commercial fishing industry. A safety system attempts to control risk in various ways to prevent, guard and mitigate damage from accidents. Accidents can be considered to be an unplanned exchange of energy. There are three stages of control associated with accidents. They are pre-contact, contact and post-contact control.[73] The goal of pre-contact control is the prevention of accidents by using proper safety procedures and by identifying risks and taking action to suppress them. It is the most fruitful stage because it is where the greatest savings can occur. If pre-contact control fails, then an accident occurs. Contact control is primarily concerned with reducing the amount of harmful contact once the accident occurs. Effective controls at this stage minimize the exchange of energy when an accident occurs and keeps minor losses from becoming major ones. Post-contact control is concerned with limiting damage after the accident occurs. They do not prevent the damage but attempt to minimize the losses after an accident occurs. This is where the current fishing vessel safety program has focused its activity with its requirements for survival equipment and Emergency Position

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[71] 46 USC § 6104.

[72] 46 USC § 6103.

[73] Frank E. Bird, Jr and George L. Germain. "Practical Loss Control Leadership," Copyright International Loss Control Institute, Inc., Loganville, Georgia, 1985. Revised edition, 1990 p 2.18.

Indicating Radio Beacons (EPIRB's). This focus on post-contact control suggests that there is a lack of understanding of the underlying causes of fishing vessel accidents. As a result, more knowledge of the causes of fishing vessel accidents is needed to better implement the program because "[t]o properly understand a safety management system, one must understand how system parts relate to one another."[74]

The concepts of industrial safety are standard and can be applied to any industry, given proper variations. They can be applied to the fishing industry as well as any other. There are four basic elements that must be part of a fishing vessel safety system. They are: (1) periodic safety audits with written reports and follow up mechanisms; (2) on board safety training including emergency drills and industrial safety issues; (3) individual training such as alcohol and drug awareness, vessel stability and survival at sea; and (4) investigation and analysis.[75] The current program, in one form or another, has the first three requirements but lacks the fourth.

THE IMPLEMENTATION OF PUBLIC POLICY

Implementation of policy is defined as "a set of activities directed toward putting a program into effect."[76] These activities

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[74] Carder, Brooks, "Quality Theory and the Measurement of Safety Systems," Professional Safety, Vol 39, No 2, Feb 94. p 24.

[75] Ford, A. B., "Safety from Management's Perspective," National Fishing Industry Safety and Health (FISH) Workshop Convened by the National Institute for Occupational Safety and Health, October 9-11, 1992, Anchorage, Alaska. p 116.

[76] Charles O. Jones. An Introduction to the Study of Public Policy, Third Edition (Books/Cole Publishing Company: Monterey CA) p 166.

are broken down into three distinct categories. The first is the organization of resources and methods for putting a program into effect. The second is the interpretation of the statute into plans, directives and regulations. The third activity is the prudent application of those plans, directives and regulations.[77]

Many actors are involved in the implementation of policy. In addition to the federal agency, there are state and local agencies that are involved as well as interest groups that were responsible for the initiating the program in the first place. The Congress is also involved to ensure their constituents are being served by the program that has been created and sometimes, the courts get involved, when necessary, to interpret the statutes, regulations and administrative decisions.[78]

Implementation of a government program is not as simple a concept as one might at first think. Determining and carrying out the intent of Congress has not always proved to be an easy task. Often this is because the intent of Congress is deliberately vague in order to gain the support necessary to pass a law. Eugene Bardach has stated that:

> [i]t is hard enough to design public policies and programs that look good on paper. It is harder still to formulate them in words and slogans that resonate pleasingly in the ears of political leaders and the constituencies to which they are responsive. And it is excruciatingly hard to implement them in a way that pleases anyone at all, including the supposed beneficiaries or clients.[79]

Implementation of the Commercial Fishing Industry Vessel Safety

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[77] Jones. p 166.

[78] Glendon Schubert, Judicial Policy-Making (Glenview, Illinois:Scott, Foresman, 1965). p 60.

[79] Eugene Bardach, The Implementation Game, (Cambridge, Mass.: MIT Press, 1977), p 3.

Act has not been an exception to this rule.

ORGANIZATION

"Public policies are rarely self executing."[80] Therefore there is a need for an organization to implement the policy. It is also realized that "[v]ictory in the legislative halls may be short lived if the program goes to the wrong place in the bureaucracy."[81] Thus, it is critical to select the right agency to implement a program or have a new agency created. In this case, the organization that was given the primary authority to implement the Act was the Department of Transportation which designated that the U.S. Coast Guard be given the responsibility. The many reasons for this choice are summarized the passage below:

> An effective fishing safety program will require a suitable administrative structure capable of implementing safety alternatives mandated by law or regulation. It will also need a network capable of mobilizing the affected parties (fishermen, government agencies, trade associations, and fisheries commissions and management councils) and their willingness to pay for safety services.
>
> The only government agency with a national infrastructure capable of addressing fishing vessel issues from port to fishing grounds is the Coast Guard. It is a well established public safety organization with administrative and technical capability to develop and administer a comprehensive safety program.[82]

The selection of the Coast Guard to implement the act was not a controversial decision because of the reasons described above and its long history of involvement with fishing vessel safety.

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[80] Edwards, George C., III. Implementation and Public Policy (Washington DC: Congressional Quarterly, Inc, 1980) p 1.

[81] Jones, p 176.

[82] National Research Council. p 15-16.

However, this decision while logical, also had implications for the implementation of the program.

It has been pointed out that the implementation of policy may vary depending on the particular stage of agency development. It is also known that there is an axiom in government known as the "law of increasing conservatism" which means that "[a]ll organizations tend to become more conservative as they get older."[83] Since the Coast Guard has been around since 1790 in one form or another, it can be considered a conservative organization. As we will see, this factor, combined with others, will have an impact on the implementation of the act.

Another important aspect that must be considered is the need for organizations to build and nurture their constituencies.[84] This can create problems for an enforcement agency because the constituents you rely on for support are also the same people that occasionally must be punished when they fail to comply with laws and regulations. It is noted that "[a]gencies have power when they command the allegiance of fervent and substantial constituencies." Conversely, "[t]he lack of such support severely circumscribes the ability of an agency to achieve its goals, and may even threaten its survival as an organization."[85] The Coast Guard has some built in immunities to this sort of pressure because of its multi-mission nature, which spreads support over several constituencies. Also, its Search and Rescue (SAR) mission, produces committed, lifelong supporters, some of whom are

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[83] Anthony Downs. Inside Bureaucracy (Boston: Little, Brown, 1967), p 20.

[84] Jones, p 172.

[85] Francis E. Rourke. Bureaucracy, Politics and Public Policy, (Boston:, Little, Brown, 1969) p 1, 11.

in Congress and the commercial fishing industry. This fact, however, does not make the Coast Guard immune to outside influences from the commercial fishing industry, which has well established access to their representatives in Congress, many of whom sit on key congressional committees and subcommittees.

The final consideration with respect to organization is the notion of "incrementalism." This is simply an institutional constraint that applies to practically every organization. It is best described as the tendency to make small changes as opposed to larger ones. Put another way,

> don't expect any agency accustomed to doing things in a particular way to innovate very often. Rather, look for an effort to integrate new demands into an existing pattern of doing business.[86]

Perhaps it is incrementalism that explains why the Coast Guard has pursued old policies such as mandatory safety equipment and voluntary vessel inspections and not looked at a new direction such as the creation a new risk management system.

INTERPRETATION

Any study of interpretation necessarily leads back to the letter of the law. Often that is vague because of the need for support described above. In this case, the intent of Congress can be found in the legislative history. Vagueness also allows for the use of discretion for those charged with the implementation of the policy to interpret what was intended by the law and how those intentions should be carried out.[87] An analysis of the purposes

[86] Jones, p 83.
[87] Jones, p 178.

and goals of the Act, the legislative history show that the creation of a new risk assessment system and vigorous enforcement by using voyage terminations were clearly what was intended by Congress. The regulations prescribed by the Coast Guard, along with its policy show movement in another direction.

PURPOSES AND GOALS OF THE ACT

The act, PL 100-424 does not explicitly list any purposes or goals. However, the House report on H.R. 1841, which eventually became the act, does comment on the purpose of the legislation. The report states that:

> the legislation has two immediate purposes: to establish a predictable compensation as an alternative to the admiralty-tort system for crew members of commercial fishing industry vessels who suffer temporary illness, disability, or injury during the course of their employment and to establish new and comprehensive safety requirements for commercial fishing industry vessels.[88]

The report also identifies the two goals of the act, which are "to improve the availability and lower the cost of vessel liability insurance for payment of claims against fishing vessel owners or employers and to improve the overall safety of fishing industry vessels."[89] As discussed above, the tort reform provisions were reluctantly dropped prior to House and Senate passage in order to speed enactment of the act.[90] Thus the ultimate goal of the act, according to its legislative history is to improve the overall

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[88] House Report 100-729 on H.R. 1841, "Commercial Fishing Industry Vessel Safety Act and Compensation Act of 1987," June 23, 1988. p 8.

[89] House Report 100-729 on H.R. 1841, "Commercial Fishing Industry Vessel Safety Act and Compensation Act of 1987," June 23, 1988. p 8.

[90] Anonymous, "Congress Clears Fishing Safety Bill," CQ Weekly Report, August 13, 1988, Vol. 48, No. 34, p 2303.

safety of the commercial fishing vessel industry. In order to accomplish this goal, the act undertakes several initiatives listed previously. Our search for the intent of Congress will focus on risk management and enforcement sections of the Act.

Despite the mandate to improve safety in the commercial fishing industry, Clear national goals and objectives were not laid down to guide the implementation of the act.[91] Also, some key questions were not answered by Congress. They were:

· What realistic level of safety is to be achieved; i.e., what are acceptable casualty and fatality rates?

· What costs - culturally, technically, and economically - are acceptable for achieving these rates? and

· What is an acceptable time frame for reaching these goals?[92] Because Congress did not answer these questions, that task was left to the Coast Guard.

The Coast Guard has attempted to answer the first question in its Business Plan for Marine Safety, Security and Environmental Protection. It states that the goal for the fishing vessel safety program is to "[r]educe fatality rates aboard uninspected fishing vessels…halfway towards the average fatality rate of the U.S. inspected fleet."[93] The other questions remain unanswered.

In looking for answers to those other questions, the legislative history offers some insights. It is clear from the Committee Report that the compilation of vessel casualty statistics is considered to be a critical component of the

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[91] National Research Council. p 15.

[92] National Research Council. p 15.

[93] US Coast Guard Business Plan for Marine Safety, Security and Environmental Protection. January 1995.

program. The report recognized the necessity of establishing a good database of vessel casualty statistics because the marine insurance sector of the insurance industry was so small, insurance companies either were not able to compile these statistics or did not feel that "compilation of statistics is worth the financial costs."[94] This view by the House Committee suggests that due to the lack of a private sector solution to the database problem, it is incumbent on the government to create one, thus leading to the assignment of the Secretary of Transportation and the Coast Guard to accomplish this task. Unfortunately, there has been little progress toward the establishment of such a database or risk management system.[95] Neither has there been a similar effort to utilize the use of voyage termination to ensure compliance.

With respect to terminations, the letter of the law is equally clear. The law states that:

> An official authorized to enforce this chapter-
> (1) may direct the individual in charge of the vessel to which this chapter applies to immediately take reasonable steps necessary for the safety of individuals on board the vessel if the official observes the vessel being operated in an unsafe condition that the official believes creates an especially hazardous condition, including ordering the individual in charge to return the vessel to a mooring and to remain there until the situation creating the hazard is corrected or ended.[96]

The legislative history gives little discussion to the voyage termination issue. The Committee Report noted that in the hearings on HR 1836, the bill that eventually became the Act, the

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[94] House Report 100-729 on H.R. 1841, "Commercial Fishing Industry Vessel Safety Act and Compensation Act of 1987," June 23, 1988. p 23.

[95] Personal Communication with LT Wyman Briggs, Office of Marine Safety, Security and Environmental Protection, US Coast Guard Headquarters, Washington DC, February 28, 1996

[96] 46 U.S.C. § 4505 The voyage termination also applies to uninspected fish processing vessels

Coast Guard came out in opposition to the voyage termination provisions. This opposition centered the practical ground that "if a vessel is out many miles from shore, the termination would mean he would have to be escorted all the way in."[97]

What is interesting to note is that in the Coast Guard's Business Plan for Marine Safety, Security and Environmental Protection, one of the goals of the Marine Environmental Protection program is to enforce the safety standards of some international treaties such as the Convention for the Safety of Life at Sea (SOLAS). The primary measure of effectiveness for that goal is the use of voyage termination.[98] In fact, the use of voyage terminations has increased exponentially since 1991 in pursuit of this goal. In 1991, there were 18 safety interventions on foreign flagged vessels in U.S. ports. In 1994, there were 236 such interventions. This indicates that the Coast Guard feels that voyage terminations can be reasonably successful in enforcing safety regulations. However, the reason for the lack of use of voyage terminations against domestic vessels is obvious. The foreign flagged commercial vessels do not elect Representatives and Senators to Congress.

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[97] Statement of Captain Gordon Piche, Manager, Fishing Vessel Safety Task Force, US Coast Guard. Hearing Before the Hearing Before the Subcommittee on Fisheries and Wildlife Conservation and the Environment and the Subcommittee on Coast Guard and Navigation and the Subcommittee on Merchant Marine of the Committee on Merchant Marine and Fisheries House of Representatives. One Hundredth Congress, First Session HR 1836 To Establish Crew Licensing, Inspection and Additional Safety Requirements for Certain Fishing Industry Vessels and HR 1841 To Establish Guidelines for Timely Compensation for Temporary Injury Incurred by Seamen on Fishing Vessels and To Require Additional Safety Regulations for Fishing Industry Vessels. p 15.

[98] US Coast Guard, Office of Marine Safety, Security and Environmental Protection, Marine Safety and Security and Marine Environmental Protection Programs FY 94 Performance Report, March, 1995. p 14.

REGULATIONS

Since the act is not fully self-executing, the Coast Guard needed to publish regulations in order to implement some provisions of the act. The creation of implementing regulations is a crucial point of implementation. It is also provides an opportunity for opponents of the program to effect change. This is because:

> [d]ie-hard opponents of the policy who lost out in the adoption stage seek, and find means to continue their opposition when, say, administrative regulations and guidelines are being written.[99]

In addition to being a soft point in the policy process, maneuvering to subvert a policy by impacting the regulations provides cover for the subversive elements because it is often out of the public spotlight.

An advance notice of proposed rule making was published in the Federal Register on December 29, 1988 addressing potential requirements for uninspected fishing, fish processing and fish tender vessels. There were nearly 200 comment letters received.[100] The extensive public comment delayed the enactment of a final rule until late in 1991. In her testimony to a 1991 Congressional oversight committee, Peggy Barry, expressed exasperation at the long process of getting regulations established, noting that there had been "a number of efforts to undo through the back door what we felt we had accomplished through the open process of

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[99] Bardach. p 38

[100] Federal Register, Vol 56, No 157, Wednesday, August 14, 1991, p 40364.

legislation."[101] Specifically, she made reference to an effort to have aluminum skiffs similar to the one that was on the boat on which her son was killed, be considered as fulfilling the requirement for life rafts. By allowing such a move, that portion of the law would have been rendered useless.

The 1991 regulations imposed many requirements on fishing vessels. Many requirements are based on the size of the vessel. One of the requirements is safety gear such as personal flotation devices, exposure suits, survival craft, EPIRB's, distress signals and fire extinguishers.[102] On larger fishing vessels, masters, mates and engineers must have a Coast Guard license.[103] For fishing vessels that operate offshore, other equipment is required such as fireman's outfits, first aid equipment and training, guards for exposed hazards, navigation equipment and information, communications equipment, alarm systems, bilge draining systems, emergency instructions and mandatory emergency drills.[104] There are also some construction requirements for different classes of vessels.[105]

With respect to terminations, the regulations state that an enforcement official that discovers a hazardous situation "may direct the master of the vessel to a mooring until the hazardous condition is corrected."[106] The regulations also offer other options such as immediate correction of the hazardous condition,

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[101] Statement of Peggy Barry Before the Committee on Merchant Marine and Fisheries Subcommittees on Coast Guard and Navigation, Fish and Wildlife, and Oceanography, House of Representatives, July 30,1991. p 95.

[102] 46 CFR 28

[103] 46 CFR 8304

[104] 46 CFR 28

[105] 46 CFR 28.

[106] Federal Register, Vol 57, No 208, Tuesday, October 27, 1992, p 48673.

filing a report of violation, referral to the Marine Safety Office for investigation and possible suspension and revocation action against Coast Guard issued licenses.

Three topics generated so much concern, over 500 letters, that they had to be separated from the initial rulemaking process. These issues were stability for vessels less than 79 feet in length, requirements for survival craft operating near shore and the administration of exemptions authorized by 46 U.S.C 4506 in relation to high density fisheries. For these issues, a Supplemental Notice of Proposed Rule making was placed in the Federal Register on October 27, 1992.[107] This issue has not yet been resolved.[108]

COAST GUARD POLICY

The Coast Guard fishing vessel safety program has several features. It:

> focuses on education, public awareness, voluntary dockside examinations of vessels, required biennial examinations of fish processing, and Aleutian Trade Act vessels and at-sea boardings as the means to achieve industry safety improvements.[109]

What is missing from this statement is some form of risk management system to communicate hazards back to the fishing industry. The first part of this program couples the voluntary dockside examinations with credible enforcement at-sea. Voluntary

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[107] Federal Register, Vol 57, No 208, Tuesday, October 27, 1992, p 48670.

[108] Personal Communication with Bob Higgins, Fishing Vessel Safety Coordinator, Marine Safety Division, First Coast Guard District, Boston MA . April 12, 1996.

[109] U.S. Coast Guard Commandant Instruction 16711.13B, Implementation of the Commercial Fishing Industry Vessel Regulations. p 2.

dockside exams are intended to be educational, "no fault and non-adversarial."[110] Vessels that undergo a dockside exam will receive a decal that serves as an indicator to a boarding officer that the vessel has been previously examined. Violations and voyage terminations are the tools used to address compliance.

It is Coast Guard policy that voyage terminations must be approved by the District Commander.[111] The fact that such a high level of clearance is needed is a natural curb on the use of such a tool. According to Coast Guard policy, terminations can be issued for (1) insufficient lifesaving equipment on board such as personal flotation devices or life rafts; (2) no electronic means of communicating distress; (3) inadequate fire fighting gear (4) excessive fuel or fuel vapors in bilges; (5) instability; (6) inoperable bilge drainage system; (7) intoxication of the operator; (8) total lack of operable navigation lights; (9) inoperable or missing watertight closures; (10) flooding and (11) lack of current load line certificate.[112]

APPLICATION

Application simply means "doing the job."[113] However, by no means is it a simple task. Application is often a dynamic process

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110 U.S. Coast Guard Commandant Instruction 16711.13B, Implementation of the Commercial Fishing Industry Vessel Regulations. p 3.

111 U.S. Coast Guard Commandant Instruction 16711.13B, Implementation of the Commercial Fishing Industry Vessel Regulations. Encl. 1, Guidance on Termination of Unsafe Operations on Board Commercial Fishing Industry Vessels.

112 U.S. Coast Guard Commandant Instruction 16711.13B, Implementation of the Commercial Fishing Industry Vessel Regulations. Encl. 1, Guidance on Termination of Unsafe Operations on Board Commercial Fishing Industry Vessels.

113 Jones, p 180

in which the implementer or enforcer is guided generally by program directives or standards and specifically by actual circumstances.[114] It is also noted that enforcement of laws requires a delicate balance. "While rules may not strictly be made to be broken, they are typically made to be prudently applied."[115] Because the Coast Guard is a conservative organization, it tends to favor prudent application of the laws that Congress requires it to enforce. It is this tendency toward prudent application of laws, combined with the concern over its fishing industry constituency and their access to members of Congress, that likely explains the lack of the use of voyage terminations as a tool to enforce fishing vessel safety. As we have stated, terminating a voyage of a fishing vessel has significant economic ramifications because it prevents the fishermen from pursuing their livelihood. These same fishermen are also a powerful voting block in the districts of many powerful members of Congress who sit on key committees or subcommittees that have an important impact on the Coast Guard budget.

Another important consideration in the application of policy is the notion of "incrementalism" discussed in the organization section. The Coast Guard has continued its post-contact control focus primarily because it represents a close tie to the voluntary program implemented prior to the passage of the act. Unfortunately, that program proved unsuccessful.

The Coast Guard has taken some action with respect to casualty data. In 1990, the Coast Guard accepted the use of the Marine Index Bureau, (MIB) as a qualified third party collection

[114] Jones, p 180.
[115] Jones, p 181.

agency as allowed for in the act.[116] However, the MIB statistics, known as the Commercial Fishing Claims Register (CFCR) do not include uninsured vessels.[117] They are also not used in any attempt at pre-contact control by identifying risks.[118] In fact, with the exception of requiring guards for exposed hazards and construction standards, all the requirements of the Coast Guard regulations are made to deal with accidents after they have happened. To date, the regulations Congress mandated to be published to "gather a statistical base for analyzing vessel risks"[119] has not been published. Instead, the Coast Guard has continued to rely on the same system of analysis that is already recognized as not useful for analyzing risks.

With respect to voyage terminations, their issuance has been extremely limited. In 1992, the first year after the regulation were implemented, there were 117 termination orders. In 1993, there were 130 termination orders. And in 1994, there were only 59 termination orders issued.[120] The decline in termination could possibly indicate increased compliance with regulations. But, steady accident rates and input from fishing vessel safety specialists in the field suggest that the district commander's approval hinders a boarding officer's desire to initiate a

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[116] Department of Transportation, U.S. Coast Guard Statement of Rear Admiral Arthur E. "Gene" Henn on Commercial Fishing Vessel Safety Before the Committee on Merchant Marine and Fisheries Subcommittees on Coast Guard and Navigation, Fish and Wildlife, and Oceanography, House of Representatives, July 30,1991. p 65.

[117] National Research Council, p 139.

[118] Personal Communication with LT Wyman Briggs, Office of Marine Safety, Security and Environmental Protection, US Coast Guard Headquarters, Washington DC, February 28, 1996

[119] 46 U.S.C. 6104.

[120] Data provided by US Coast Guard Headquarters, Office of Marine Safety, Vessel Safety Branch, 1 May, 1995.

termination order and that hazardous conditions that would allow for termination are commonplace. Thus the lack of effective use of termination orders has probably led to noncompliance because it is a limited threat to fishermen.[121]

Finally, when considering how the laws are applied, it must be noted that the Coast Guard has seen little in the way of support with respect to funding for the fishing vessel safety program. In fact, when the program was initiated, the Coast Guard requested $5.4 million dollars in funding and the authorization to hire 129 people to implement the act. This request was reduced by the administration to $335,000 and 18 personnel.[122] Little has changed since then.[123]

OVERSIGHT HEARINGS

One of the ways in which Congress can check on the implementation of a law is to conduct oversight hearings to ensure the law is being implemented appropriately. On July 30, 1991, the Merchant Marine and Fisheries Subcommittee on Coast Guard and Navigation, Fisheries and Wildlife Conservation and the Environment and Merchant Marine conducted an oversight hearing to review actions of the Coast Guard in implementing the Act.[124] At

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[121] Personal Communication with Jeff Ciampa, Fishing Vessel Safety Specialist, Marine Safety Office, Portland ME. February 2, 1996.

[122] U.S. Coast Guard Memorandum on Implementing the Commercial Fishing Vessel Safety Act of 1988 dated December 14, 1989.

[123] Personal Communication with Bob Higgins, Fishing Vessel Safety Coordinator, First Coast Guard District, Boston, MA. May 23, 1996.

[124] Background Memorandum from subcommittee staff to members of Merchant Marine and Fisheries Subcommittee on Coast Guard and Navigation, Fisheries and Wildlife Conservation and the Environment and Merchant Marine, July 25, 1991. p 3.

the hearing, as well as every other hearing in the legislative history, members of Congress asked pointed questions to the Coast Guard about the different causes of accidents. The Coast Guard testimony provided some insight on how little effort has gone into addressing the pre-contact control of accidents. The testimony stated that:

> On the average, about 100 lives and 250 vessels are lost annually in the commercial fishing industry. The high casualty rate can only partially be attributed to the harshness of the environment in which the industry operates. The human element and the economics of the industry are the underlying causes of most casualties.[125]

While economics, as described earlier, is a significant problem beyond the control of the Coast Guard, a basic understanding of safety systems finds that stopping an analysis at the "human error" level is insufficient because it does not reveal the underlying safety problems that need correction. Clearly a more detailed analysis is needed in order to get to the underlying causes of accidents. As Carder notes. "[a]ttributing an accident to an employee's 'unsafe act' does not contribute to understanding, nor does it help predict future accidents."[126] It also does nothing to help prevent them.

Also in that hearing, the Coast Guard was sharply criticized by the family members of the fishermen killed when the fishing vessel Aleutian Enterprise, sank in the Bering Sea in March of 1990. In their testimony, they called for "prompt Coast Guard action on [s]afety [i]ssues" by calling for:

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[125] Department of Transportation, U.S. Coast Guard Statement of Rear Admiral Arthur E. "Gene" Henn on Commercial Fishing Vessel Safety Before the Committee on Merchant Marine and Fisheries Subcommittees on Coast Guard and Navigation, Fish and Wildlife, and Oceanography, House of Representatives, July 30,1991. p 59.

[126] Carder. p 24.

> [n]o more softness on high level industry or government appeals and intercession on vessel safety issues. Prudent judgment dictates porting a vessel while debating a safety condition. Irresponsible to allow a vessel to operate in dangerous water while unsafe vessel condition is being argued (sic).[127]

Peggy Barry, also added that "[i]t will be the ENFORCEMENT of the regulations which determines whether the Safety Act really saves lives."[128] Thus it is clear that there is some considerable discontent about the Coast Guard's tight hold on the use of voyage terminations

However, the fishing industry supports the idea of having the District Commander be responsible for authorizing terminations of fishing vessels. They consider the safety regulations too complex for a boarding officer to grasp all of them. The industry was also concerned that "[w]ith shorter fishing seasons, an unwarranted termination could be extremely costly to the vessel operator."[129] The fishing industry clearly knows that District Commanders are more responsive to political pressure from Washington. However, the minuscule fines imposed by the act on violators suggest that the cost of a voyage termination was exactly the right tool to give the law some "teeth."

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[127] Testimony of Aleutian Enterprise Families Before the Committee on Merchant Marine and Fisheries Subcommittees on Coast Guard and Navigation, Fish and Wildlife, and Oceanography, House of Representatives, July 30,1991. p 109.

[128] Statement of Peggy Barry Before the Committee on Merchant Marine and Fisheries Subcommittees on Coast Guard and Navigation, Fish and Wildlife, and Oceanography, House of Representatives, July 30,1991. p 97.

[129] Testimony of Alan Dujenski, Hearing before the Subcommittees on Coast Guard and Navigation and Fisheries Management of the Committee on Merchant Marine and Fisheries, House of Representatives, One Hundred Third Congress, First Session on Implementation of the Commercial Fishing Industry Vessel Safety Act of 1988 Regarding Rules on Lifesaving and Fire fighting Equipment and Design Requirements for Certain Fishing Vessels. p 75.

PROGRAM EVALUATION

The next step in this policy analysis is to determine if the program is working. In some ways, it is working. There is anecdotal evidence that fishing vessels experienced the same rate of accidents in 1995 as in 1994, but improved survival from those accidents.[130] The Coast Guard claims that the equipment and training required by the Act has resulted in the saving of 31 lives in 1992 and 55 lives in 1993.[131] Despite these claims, many people feel that the act had little to do with these success stories because "[m]ost vessels already had most of the minimum safety equipment required."[132] Thus, the overall impact of this law on safety in the industry is inconclusive. The present measures of effectiveness being used by the Coast Guard fail to provide concrete evidence of program success. This lack of ability to measure success is a symptom of a bigger problem, the lack of an effective database and measurement of problem areas that enable managers to focus resources where they are needed and improve management of the fishing vessel safety program.

EVALUATING PROGRAMS

In an era of contractive government, meaningful evaluation is absolutely critical to the continuation of any government program

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[130] Marine Safety and Security and Marine Environmental Protection Programs FY94 Performance Report, United States Coast Guard, Office of Marine Safety, Security and Environmental Protection, (Government Performance and Results Act Pilot Project) March 1995. p 12.

[131] Glass, Pamela. "Is the vessel safety law saving lives?" National Fisherman, Vol.75, No 10, February 1995. p 22.

[132] Glass, p 23.

because of the dwindling discretionary budget. Traditionally, management in government has focused on measuring program activities such as the amount of money spent on a project or the amount of staff assigned to fix a problem.[133] Another item that can also be classified as an input into a program is the amount of enforcement actions taken in the pursuit of a certain goal. The number of boardings or violations issued for failure to comply with regulations, by itself, does not provide any indication of a program's success. This fixation on "inputs" gives an agency no indication of whether it is effective in achieving its goals. "Outputs" are measures of how government programs and policies affect their customers.[134] It is the most desirable measurement to ensure a program is achieving its goals. Unfortunately, as we shall see, the Coast Guard is hampered by its present database in making the leap from measuring inputs to outputs.

This inability to measure outputs is not uncommon. In fact, the linkage between strategic plans and intended results in many organizations including government is rather nebulous. In conducting research for the National Performance Review, a 1993 survey of the largest federal agencies showed that while two thirds of the 103 largest agencies had business plans, only nine could link those plans to the intended results of the program.[135] One observer noted that such an approach is akin to "trying to steer a ship by looking at its wake."[136]

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[133] Al Gore. From Red Tape to Results: Creating a Government that Works Better and Costs Less, The Report of the National Performance Review, September 7, 1993. p 72.

[134] Gore. p 73.

[135] Gore, p 72.

[136] Gore, p 72.

According to policy analysts, there are three types of research that can be done to evaluate a program. They are program monitoring, impact assessment and cost effectiveness. Program monitoring is concerned with ensuring that the program is reaching its intended customers and providing its intended service. Impact assessment is research designed to ensure that the program is effective in achieving its goals. Cost effectiveness research is designed to answer the question of whether the program is an efficient use of resources.[137] In order to properly evaluate the fishing vessel safety program, measurement must be accomplished in all three areas.

IMPACT ASSESSMENT

The primary measurement used for impact assessment in the fishing vessel safety program is the fatality rate. As stated earlier, the Coast Guard has established that its fishing vessel safety goal is to reduce fatality rates aboard uninspected fishing vessels halfway toward the average fatality rate of the U.S. inspected fleet. The fatality rate is measured in terms of deaths per one hundred thousand workers. This measurement allows for comparisons with other occupations

The primary problems with the use of the fatality rate to measure impact assessment are the lack of reliable data on commercial fishing vessel employment and the lack of accountability for exposure to hazards. Since most fishermen are

[137] Jones, p 211.

self-employed, they are not included in most employment data.[138] Depending on whose employment figures are used, different fatality rates can be calculated to suit the purpose of the user of that data. It is generally acknowledged that while the National Marine Fisheries Service (NMFS) employment data is "crude," there exists no better source of data.[139] With respect to exposure, it is known that accident rates require a stable system to have any predictive capability.[140] The fishing industry is probably one of the most unstable systems in terms of exposure to hazards. Simply put, calculating the number of employed fishermen is only half the battle. After that is done, you must account for whether they get underway and fish, thus exposing them to the hazards of the industry, or sit at the dock because a fishery is closed or bad weather has moved in.

A proposed solution to the exposure problem is to calculate the days at sea spent fishing for the various fishing fleets and use that number as a proxy for exposure and compare it along with the fatality rate. This dual comparison will still allow for cross comparison with other occupations. It will also allow for comparisons over time within the same fishery or geographic area while at the same time providing some accountability for exposure, thus affording some measure of stability in the comparison. All reports on the fishing vessel safety program should include a measure of fishing effort for each fishery in order to give an indication of exposure to hazard.

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138 Gunnar Knapp and Nick Ronan. "Fatality Rates in the Alaska Commercial Fishing Industry," Alaska Sea Grant College Program, Report No. 90-03, 1990. p2.

139 Knapp and Ronan. p 4.

140 Carder. p 24.

An assessment of fishing vessel safety in the Northeast region from 1989-1993 shows that the fatality rate per 100,000 workers in the documented fleet (chart 1) demonstrated an upward trend. At the same time, the calculation of the fatality rate per 100,000 days at sea for the same fleet also demonstrates an upward trend (chart 2). By accounting for this exposure, it is possible to discern that the increase in fatalities is not the result of an increase in exposure (i.e. fishing pressure). In fact, in 1993, the decrease in fishing pressure did not result in less fatalities than in previous years. This conclusion begs further study, but as we shall see, the Coast Guard's current database cannot provide any answers.

Unfortunately, "taken alone,... accident rates provide no useful information for system improvement; they have only face validity."[141] Measuring the number or frequency of accidents can give a meaningful comparison of performance between two similar time periods. However, this type of measurement has serious limitations. In addition to being subject to many variables and forms of manipulation, the greatest problem with this measurement is that it is reactive. In fact, these measurements of "unsafety" tell you nothing about the nature of your problems or what to do about them.[142] Thus the need for effective program monitoring.

PROGRAM MONITORING

It is absolutely imperative in any safety system to implement

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[141] Brooks Carder. "Quality Theory and the Measurement of Safety Systems," Professional Safety, Vol 39, No 2, Feb 94. p 24.

[142] Dan Petersen, Techniques of Safety Management, Second Edition (New York: McGraw-Hill, 1978). p 127.

some form of program monitoring to ensure that the effort of the program is focused toward specific areas where it is possible to achieve the greatest impact. In the field of occupational safety, this means establishing a comprehensive database of casualties. As early as 1974, it was concluded that if there is to be an effort to improve fishing vessel safety, "[a]ny program...must have an evaluative yardstick to measure progress, and if possible, a reasonably accurate base line of casualty data to start from."[143] Early attempts by the Coast Guard to use casualty information to assess risks associated with fishing vessel safety involved the compilation of monthly Search and Rescue (SAR) reports that were "summarized annually and categorized in terms of the nature of the breakdown and the vessel." These reports attempted to identify the most prevalent breakdowns and identify repeat offenders.[144]

As discussed above, Congress intended for a master database of fishing vessel casualty statistics to be compiled to analyze vessel risks. This database could provide information to assess the effectiveness of the fishing vessel safety program and effectively put resources where they can accomplish the greatest results. Unfortunately, there has been no action taken to date to move toward the establishment of such a database on a national level.[145]

The need for effective program monitoring cannot be

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[143] Siegfried Jaeger, "An Overview of Commercial Fishing Vessel Safety in the Northwest and Alternatives for Loss Prevention," A Joint Publication, Marine Advisory Services, Washington and Alaska Sea Grant Programs. (WSG-AS 74-3) April 1974. p. 6.

[144] Jaeger. p.4.

[145] Personal Communication with LT Wyman Briggs, Office of Marine Safety, Security and Environmental Protection, US Coast Guard Headquarters, Washington DC, February 28, 1996

overstated. It is clear that "[p]rocedures don't matter unless they facilitate the accomplishment of objectives encompassing these needs. Efficiency is beside the point if the objective being achieved at lowest cost is inappropriate."[146] This is especially true in a field as dynamic as fishing vessel safety where fishing practices or gear types can change rather quickly as new fisheries emerge. It is therefore, absolutely vital that a more effective and detailed risk management system be initiated and utilized to identify dangerous fishing operations and suppress them. The current database in use by the Coast Guard and the measures of effectiveness it can calculate are inadequate to accomplish this task.[147]

The collection of the data is an enormous obstacle to the establishment of an effective risk assessment program. The National Research Council has described the problem in its study on fishing vessel safety. In its report, the Council acknowledges that:

> [a]ccurate historical and current data on vessels, fishermen, professional experience, hours and nature of exposure, and safety performance of personnel and equipment are fundamental to addressing safety problems, monitoring results of safety programs and measuring the effectiveness of safety improvement strategies. Very few data are regularly collected or published on these parameters. The limited data make it difficult to quantify safety problems to determine causal relations, and assess safety improvement strategies.[148]

The enormity of the U.S. fishing fleet and the joint state/federal management of fisheries is a tremendous obstacle to the collection

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[146] Aaron Wildavsky. "The Self Evaluating Organization," Shaffritx and Hyde. p 382-3.

[147] Personal Communication with LT Wyman Briggs, Office of Marine Protection, US Coast Guard Headquarters, Washington DC.

[148] National Research Council. p xvi.

of data. Further complicating the collection of accurate casualty data is that after a bad accident, often, there is no vessel to examine or people to interview.[149] Another problem is the incompatibility of databases among the states and various federal agencies, making an accurate count of fishing vessels virtually impossible.[150] As a result, it is necessary for the Coast Guard to meet with representatives of the marine insurance industry and state fisheries enforcement officials to agree upon reporting formats to combine all data into a master database.

The Coast Guard's main casualty (CASMAIN) database is fed by the Marine Safety Information System (MSIS) and is generally recognized as the best source of vessel casualty statistics.[151] However, it has several limitations including the lack of data on state numbered fishing vessels and the inability to analyze data by region, fishery, gear type, or other criteria.[152] The CASMAIN database is also unable to analyze personal injury data based on vessel length, deck layout, or other factors.[153] The National Research Council noted in 1991 that the monitoring techniques for evaluating safety in the commercial fishing industry tend to be rudimentary.[154] Even the Coast Guard's 1995 Business Plan acknowledges that it still needs "better tools for risk

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[149] W. Douglas Rabe, Presentation of the National Transportation Safety Board. National Sea Grant College Program Fishing Vessel Safety Conference held in Washington DC, November 9-10, 1983. p 24.

[150] Burt W. Thompson, Karen Fischer, Debbie Meehan. Identification of Sources and Types of Commercial Fishing Vessel Population Data Currently Available Within the United States, Volume 1, March 1993. p 5.

[151] National Research Council. p 41.

[152] National Research Council. p 442-43.

[153] National Research Council. p 67.

[154] National Research Council. p 17.

assessment" and a "better feedback loop for sharing best-practices in the field."[155]

Other transportation regulation agencies have much better information systems. The National Highway Traffic Safety Administration (NHTSA) is fortunate in that it three excellent databases that provide plenty of information. The Fatal Accident Reporting System (FARS) provides information from police accident reports, driver records, vehicle registration files and medical examiner records. The National Accident Sampling System (NASS) reports on approximately 8,000 light vehicle crashes each year. It differs from FARS in that it includes an in-depth examination of the vehicle and information on injuries based on medical records. Finally, NHTSA has automated accident records from 25 states that contain information on more than 3 million crashes per year. A sample of this data is used to create a Crash Avoidance Research Data File (CARD file). The CARD file has over 4 million crashes in it and can inventory the data in a number of different ways using various accident descriptors as relevant parameters.[156] The NHTSA uses this information to identify common causes of accidents and attempt to prevent them by using technology to eliminate the hazard.

The Federal Aviation Administration (FAA) works with the National Aeronautics and Space Administration (NASA) to administer the Aviation Safety Reporting System (ASRS). NASA awarded the Battelle Memorial Institute as the contractor for the ASRS in

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[155] US Coast Guard Business Plan for Marine Safety, Security and Environmental Protection, February 6, 1995. p 2.

[156] Finkelstein, p 3-4.

order to give it considerable independence from the FAA.[157] The goal of the system is to eliminate unsafe conditions and prevent avoidable accidents. This program is run by an independent, confidential third party reporting system whereby pilots, air traffic controllers, and others report actual or potential discrepancies and deficiencies involving the safety of aircraft operations without fear or punitive consequences. Since 1975, approximately 90,000 reports have been filed. This system allows for the analysis of data in the reports from which conclusions are made concerning aviation safety.

In addition to the ASRS, the FAA also maintains a 24 hour/7 day a week Aviation Safety Hotline. Its purpose is to receive confidential reports about safety deficiencies from users of the National Airspace System.[158] A similar hotline could serve several purposes in the fishing vessel safety program. It could serve to promote the dissemination of "near miss" information, which will be discussed later. It could also serve as a method to report unsafe practices that create conditions that foster "forced operator errors" such as inadequate crew rest or working conditions.[159]

While the NHTSA and the FAA have adequate databases to conduct their research, the Coast Guard still relies on the CASMAIN database, which as we have seen, is not useful in conducting any sort of analysis along the lines necessary to make improvements in the fishing vessel safety program. With the power

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[157] Charles Perrow. Normal Accidents: Living With High Risk Technologies, (New York: Basic Books Inc., 1984) p 168.

[158] Federal Aviation Administration, Office of System Safety, Safety Analysis Page. [http://nasdac.faa.gov/asy200/asy200.htm] May 1996.

[159] Perrow, p 175.

and speed of modern desktop computers increasing and the costs decreasing, it is possible to put together a database on a spreadsheet that can accomplish this task for an entire district for a small investment. If this action is coordinated with other districts, a national database can be assembled from the bottom up and it can provide effective information and analysis where it is needed, at the local level to prevent accidents.

NEAR MISSES

In proposing a safety system, the study of near misses must be considered. In a 1969 study of industrial accidents it was found that for each serious accident, there were 10 minor injuries, 30 instances of property damage and 600 near misses or close calls. This ratio suggests that it is foolish to concentrate effort at the relatively small number of serious or major injuries. Rather a much more effective method of prevention is to focus on the larger numbers of accidents to achieve more effective control of total accident losses.[160] This study was not taken of the fishing industry but the main point should not be lost that there are numerous opportunities at the lower levels to prevent major losses from occurring by studying near misses.

Unfortunately, there is no data collection system in place to implement such an analysis. It has been pointed out that:

> in the case of aircraft, not only accidents get reported, but all near accidents or potential accidents must also be reported. As a result, in air transportation, there is a rich body of data to work with. Unfortunately, in the maritime industry we do not have that kind of reporting, so there is little information to deal with in addressing the problems of

[160] Bird and Germain, p 2.5.

maritime safety.[161]

In addition to the lack of a database or collection system, near miss programs are difficult to establish. Many employees, fearing criticism, do not report near misses. Also establishing an objective operational definition of a "near miss" is difficult.[162] This is especially true in the fishing industry where one person's "near miss" is another person's routine daily occurrence. Finally, the practical matter of reporting near misses by the 120,000 documented and state numbered fishing vessels is a logistical problem.[163] Obviously, a near miss component of a safety system is not possible until a more basic system is already in place. But once a better reporting system is in place, some user friendly options to report near misses must be explored. Some suggestions that should be considered in addition to establishing a confidential hotline includes soliciting confidential lessons learned and near miss stories and publishing them in a newsletter that is disseminated to the fishing industry. A more modern approach would be to establish a site on the World Wide Web and run a bulletin board for fishermen to share near misses.

DATA ENTRY AND ANALYSIS

Another problem with the present Coast Guard data system involves the entry and analysis of that data. The fishing vessel

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[161] Ostenso. p 3.

[162] Carder, p 25.

[163] Estimate of Marine Safety Office, USCG Headquarters, Washington DC, May, 1995.

safety program is incorporated under the Coast Guard's Marine Safety and Security Program. The goal of this program is aimed at eliminating deaths, injuries, and economic loss associated with commercial marine transportation.[164] As a result, fishing vessel accidents are being analyzed by Coast Guardsmen trained to view accidents through the paradigm of the marine transportation industry. The problem in using the marine transportation paradigm is that it categorizes risks in a different fashion. For example, flooding through a steel hull would be seen under the transportation paradigm as a cause of poor maintenance. However, for a fishing vessel, the forces behind hull failure have a completely different origin.

Also, the cause of a grounding, under the transportation paradigm, is normally interpreted as a "human error" or failure by the captain to monitor his course and position. But under the fishing vessel paradigm, the cause of the grounding may actually be caused by the vessel's intentional entry into shoal waters to pursue a certain fishery.[165] A final example is when a fishing vessel capsizes and, under the marine transportation paradigm, inadequate stability is seen as the causal factor. However, if the fishing vessel was engaged in a "derby" style fishery, the vessel may be overloaded because the fishery was only open for a short time, thus creating a rush to fish. A good example of a management plan that created a dangerous environment for fishing vessels was the Pacific Halibut fishery. During one 24 hour halibut opening, the Coast Guard received 13 mayday calls from

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[164] US Coast Guard Business Plan for Marine Safety, Security and Environmental Protection, February 6, 1995. Encl 1, p 3.

[165] Personal Communication with Jeff Ciampa, Fishing Vessel Safety Examiner, USCG Marine Safety Office, Portland, ME.

sinking fishing vessels in a single hour.[166] By changing the management plan to an individual transferable quota system, a more orderly fishery has resulted with less accidents.

Out of 32 fishing vessel groundings investigated in 1994 in the First Coast Guard District, 21 (65%) were attributed to "pilot error."[167] According to safety systems experts, this analysis is not useful because it does not reveal underlying problems that need correction.

> If, as many experts postulate, individual behavior cannot account for more than 15 percent of variation in system output, then operator error cannot be a principle cause of more than 15 percent of accidents. In fact, it is probably much lower.[168]

This reveals that a more detailed analysis is needed to get to the underlying causes of accidents.

Solutions to safety problems come from understanding causality. By categorizing the cause of the accident in the marine transportation paradigm, sometimes the wrong cause is attributed to a casualty and as a result, the wrong solution is pursued. In the example of the grounding, education and the improvement of professional standards are seen as the solution. However, the vast majority of fishermen that have been plying the waters near their homes for their entire lives need no lessons in seamanship. Also, no sophisticated navigational equipment will keep a fishermen from pursuing his fishery. Therefore, a

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166 Rodman D Griffin. "Marine Mammals vs. Fish," CQ Researcher, Vol 2, No 2, August 28, 1992. p 754.

167 US Coast Guard, First District "Fishing Vessel Casualties" Compiled February, 21, 1995

168 Carder, p 25. Some experts have placed this figure at between 5 and 10 percent. For a detailed analysis of operator error in marine accidents, see Perrow, Charles. Normal Accidents: Living With High Risk Technologies, (New York: Basic Books Inc., 1984) Chapter 6.

management measure such as closing areas where fisheries are pursued in shoal waters or using other management measures to keep fishermen out of harm's way is probably a more effective solution. Thus, a new paradigm of analysis that involves the perspective of a fishery manager is necessary.

Another aspect of the transportation paradigm centers on the entry of data. Because fishing vessel safety program was assigned to the Marine Safety Program, the people entering data into MSIS were trained in transportation safety and code the accidents in that mode. Without any experience or formal training in fisheries management or fishing vessel and gear identification, many of the people entering the data into MSIS do not know the difference between a scalloper and a dragger. Thus, the type of gear a vessel used or the fishery it was involved in was not deemed important in analysis.[169] The addition of fisheries specialists in the Coast Guard's marine safety program as a result of the additional resources granted to the Coast Guard to implement the act has lead to a greater understanding of the fishing vessel safety problem. However, there is still a strong need to train marine safety inspectors that conduct the examiniations and enter the data. This training can be provided by the Coast Guard's regional fisheries training centers.

HUMAN ERROR

Because of the high attribution of incidence of human error in accidents and personal injuries, it is important to give this

[169] Personal Communication with Robert Higgins, Fishing Vessel Safety Officer, Marine Safety Division, First Coast Guard District, Boston, MA.

issue further consideration. The following is an example that shows why simply labeling accidents as "human error" is not productive. The example is a common car accident where the time of crash was 2:00 AM on Saturday, the location of crash would be a 2 lane rural highway, the vehicle is an 8 year old passenger car, the driver is a 20 year old male and it is raining.

> The report describes a fatal crash where a young driver was speeding, he entered a curve going too fast, he hit his brakes and lost control of the car. The vehicle left the road and struck a tree, and the driver (who was not wearing his safety belt) was killed on impact.
>
> We would correctly attribute the primary cause of this crash to driver error, with speed being the principle component of that error. However, if this crash occurred on a typical rural road, there probably were no visible edge markings to help the driver -- particularly an inexperienced driver. Further, a newer car might have had anti-lock brakes, reducing the likelihood of loss of control during braking. Newer tires might also have helped improve vehicle traction. Better lighting, either road-based or vehicle-based, or better driver training, could have also changed the outcome...The point of this discussion is that even though we have identified the principle cause of the crash as "driver error" there are a very large number of interventions, all of which could reduce the likelihood of that crash happening.[170]

This example demonstrates that a more in-depth analysis can provide information that could lead to countermeasures that can prevent accidents. Regulatory agencies of transportation systems have noted this fact and are taking action in this area.

The NHTSA estimates that the driver is the primary factor in

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[170] Finkelstein, Michael M., "Future Motor Vehicle Safety Research," Presented at the Twelfth International Technical Conference on Experimental Safety Vehicles, Gothanburg Sweden, May 31, 1989. p 2-3.

over 80 percent of all crashes.[171] As a result, the NHTSA is attempting to prevent accidents by analyzing data, identifying common causes and taking action to prevent recurrences. For example, by examining information on rollovers and turning to determine what particular events preceded the rollover, such an analysis can allow you to begin concentrating on potential countermeasures such as brake system changes or suspension modifications.[172]

The Federal Aviation Administration (FAA) is also concerned with human factors research. Aviation experts believe that most aviation accidents are primarily due to human error.[173] This is because the problems of materials, structures and power plants have largely been solved and they contribute little to accident causation. Thus, significant improvements in safety must come as a result of human factors research.[174] The FAA has conducted a number of programs aimed at improving human performance and reducing human error. They include general aviation judgment program, cockpit resource management training, line oriented flight training, wind shear training and continued analysis of

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[171] Statement of Michael Finkelstein, Associate Administrator, Office of Research and Development, National Highway Traffic Safety Administration, Department of Transportation, in the Hearing Before the Subcommittee on Transportation, Aviation and Materials of the Committee on Science, Space, and Technology, U.S. House of Representatives, One Hundred First Congress, First Session, June 7, 1989. p 6.

[172] Finkelstein, p 4.

[173] Statement of Professor Earl L Wiener, University of Miami, Before the House Committee on Science, Space, and Technology, Subcommittee on Transportation, Aviation, and Materials, House of Representatives, One Hundredth Congress, Second Session. June 16, 1988. p 73.

[174] Wiener, p 73.

data generated by the ASRS.[175] It is also instrumental in fostering a better understanding of the relationships between human factors and aviation safety.[176] Finally, the FAA has launched a Human Factors Data Project "to break down human error information in order to enhance the ability of the aviation community to determine the possible causes of human error and develop appropriate prevention strategies."[177]

Human factors research centers on taking into "account the limitations of the human, rather than the human having to adapt to the limitations of the system."[178] The area of human factors research is a complex, multidisciplinary field of study that includes the fields of anthropometry (the study of people), biomechanics (the study of human anatomy and how it relates to work), workplace design, equipment design, and information transfer between workers and machines.[179]

With both the FAA and the NHTSA looking into human factors, it is also an area that the Coast Guard should look into for the fishing vessel safety program. As a former administrator of the FAA has noted, "[w]e cannot afford to ignore the human factor in anything we do. People are too important a link in the safety

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[175] Statement of the Honorable T. Allan McArtor, Federal Aviation Administrator, Before the House Committee on Science, Space, and Technology, Subcommittee on Transportation, Aviation, and Materials, Concerning Legislation Pending before the Subcommittee. June 16, 1988. p 19.

[176] Statement of Mr Cecil Rosen, III, Director for Aeronautics, Office of Aeronautics and Space Technology, National Aeronautics and Space Administration Before the House Committee on Science, Space, and Technology, Subcommittee on Transportation, Aviation, and Materials, House of Representatives, One Hundredth Congress, Second Session. June 16, 1988. p 57.

[177] Federal Aviation Administration, Office of System Safety, Safety Analysis Page. [http://nasdac.faa.gov/asy200/asy200.htm] May 1996.

[178] Rosen, p 57.

[179] Richard A. Wadden and Peter A. Scheff. Engineering Design for the Control of Workplace Hazards, (New York: McGraw-Hill, 1987) p 377.

chain."[180] Sea Grant has sponsored similar research in the past. The Coast Guard should sponsor work with Sea Grant to look into the human factors involved in fishing vessel safety. Since all this research involves transportation systems, an initiative should be generated to combine them in order to avoid reinventing the wheel.

It is also important to consider including human factors data in a a risk management database. Experts recommend that accident investigations should consider the following types of human factors data to provide a complete analysis.

1. Type of activity
2. Location of the error
3. Actors of the error
4. Task being conducted
5. Nature of the error
6. Stage of the task at which the error occurred
7. Factors involved in the error.[181]

Collecting data along these lines make it is possible to accurately analyze these human factors.

As a result of the marine transportation paradigm, the emphasis of the fishing vessel safety program has been focused on the technological aspect of safety. Simply put, more equipment on the vessel and everything will be all right. Equally important and further complicating the issue is the fact that few fishermen stress the importance of human error in fishery accidents.[182] However, with the amount of accidents and personal injuries being attributed to human error, it is important to further investigate this area to generate a greater understanding of causality in

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[180] McArtor, p 21.

[181] M. Griffon-Fouco and F Ghertman, "Data Collection and Human Factors," New Technology and Human Error, Edited by Jens Rasmussen, Keith Duncan, and Jaques Leplat, (New York: John Wiley & Sons, 1987) p 195.

[182] Poggie, J., R.Pollnac, and S. Jones. p 416.

order to make improvements in fishing vessel safety.

PREVENTION THROUGH PEOPLE PROGRAM

To look further into the human factors arena, The Coast Guard has initiated the Prevention Through People (PTP) program. It is "designed to enhance marine safety…through improvements in areas where the the human element is the major factor in accidents."[183] Like the FAA, this focus represents a break with the traditional focus on materials and technology to address safety issues. The goal of the PTP program is to "mature into a comprehensive program that is nonregulatory in nature and the uses incentives to draw industry into a cooperative partnership with the Coast Guard."[184] The Coast Guard established a Quality Action Team in June of 1995, comprised of members of the Office of Marine Safety, Security, and Environmental Protection and the Office of Navigation and Waterway Services to look into developing a strategy and implementation plan for addressing safety through human factors.[185] One of the key findings of the team was that human factors were found to be the primary cause of between 75 and 96 percent of all marine casualties.

The Coast Guard analysis also found that the following factors contributed significantly to marine casualties. They

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[183] Andrew Card, RADM, US Coast Guard, Chief, USCG Office of Marine Safety, Security and Environmental Protection "Prevention Through People," Speech to the American Club, June 8, 1995. p 6-7.

[184] Card, "Prevention Through People," Speech to the American Club, June 8, 1995.

[185] USCG Office of Marine Safety, Security, and Environmental Protection and Office of Navigation, Safety and Waterways Services Prevention Through People Quality Action Team Report, July 15, 1995. p 2.

included: (1) the lack of conducting root cause investigations of marine casualties that leads to an inability to identify human error problems that cause casualties; (2) the lack of systematic analysis of high risk operations; (3) the lack of development and implementing measures to prevent human error problems and (4) the absence within the marine industry to analyze problems and share the results of lessons learned.[186] Unfortunately, It is exactly this type of "total safety system" that the legislative history of the act laid out above and the study conducted by the National Research Council called for the Coast Guard to implement. It is this type of safety system that is necessary. It is also clear that this type of system is not possible for the commercial fishing industry to initiate on its own because of its diversified nature. It is incumbent on the Coast Guard to fill the management role for the industry which is primarily made up of owner/operators.

The PTP project is right on the mark. It is exactly what is necessary to improve the fishing vessel safety program. The Coast Guard study on human factors developed a strategy that calls for collaboration between government agencies and the maritime industry, the use of risk management tools to identify root causes of accidents, the establishment of preventive measures, the capture of near miss data, inclusion of human factors in accident investigations and improved feedback mechanisms within the industry.[187] Unfortunately, it is not being considered for initial

[186] USCG Office of Marine Safety, Security, and Environmental Protection and Office of Navigation, Safety and Waterways Services Prevention Through People Quality Action Team Report, July 15, 1995. p 3.

[187] USCG Office of Marine Safety, Security, and Environmental Protection and Office of Navigation, Safety and Waterways Services Prevention Through People Quality Action Team Report, July 15, 1995. p 4.

implementation in the fishing operations sector.

To implement the PTP project, the Coast Guard identified several of the highest risk marine transportation areas that "offer the greatest potential to reduce maritime fatalities, injuries, and pollution."[188] The three areas of towing, tankship, and tankship/barge operations were selected. Combined, these three sectors account for 15 percent of fatalities, 16 percent of personal injuries and 83 percent of oil spills in the marine transportation industry.[189] Fishing operations, on the other hand, was not selected as an area to be pursued for this important project. This was despite the fact that fishing operations were also identified as one of the most dangerous areas with 42 percent of the fatalities, 10 percent of the personal injuries, and 3 percent of the oil spills within the entire marine transportation sector.[190]

It is difficult to understand why the area of fishing operations was not selected if the Coast Guard is interested in maximizing the impact of the PTP project. However, it is also clear that the focus on solving oil spill problems suggests that the marine transportation paradigm described earlier is preventing the Coast Guard from looking at human factors in the fishing vessel safety area because of a lack of understanding of the fishing industry. The focus of effort in this project is clearly aimed at oil spills because it is something that is easily

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[188] USCG Office of Marine Safety, Security, and Environmental Protection and Office of Navigation, Safety and Waterways Services Prevention Through People Quality Action Team Report, July 15, 1995. p 4.

[189] Card, "Prevention Through People," Speech to the American Club, June 8, 1995. p 6-7.

[190] Card, "Prevention Through People," Speech to the American Club, June 8, 1995. p 6-7.

quantified, measured, and understood by the marine safety program.

Another major problem with the PTP program in its application to fishing vessel safety is its reliance on the insurance and commercial fishing industries. In a recent speech on PTP, Rear Admiral Card, the Chief of the Coast Guard Office of Marine Safety, Security and Environmental Protection stated that:

> I foresee a changing role for the Coast Guard, as public and industry facilitator, auditor and educator, while enabling the industry, mariners, the public, and yes - the insurance industry - to be the safety program implementers and benefactors.[191]

This approach is appropriate for other sectors of the maritime transportation industry. However, as it has been noted earlier, the insurance industry is unable to play a major part in fishing vessel safety because the tort reform provisions were dropped from the act prior to passage in 1988. The high losses, combined with the lack of reform in the insurance industry has resulted in many underwriters abandoning the commercial fishing industry. This has effectively factored the fishing vessel insurance industry out of the safety equation. Presently, the underwriting community does not see itself as being in a position to exert cohesive national leadership in the fishing vessel safety field because only a small fraction of the fishing industry has insurance through marine underwriters.[192] As a result, some fishing vessels have joined self-insurance clubs but many fishing vessels remain uninsured.[193] Since the safety performance of many ships are not tied to insurance rates, there is very little financial incentive to

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[191] Andrew Card, RADM, US Coast Guard..Chief, USCG Office of Marine Safety, Security and Environmental Protection "Prevention Through People," Speech to The Chua Chor Teck Conference, Singapore, January, 1996. p 5.

[192] National Research Council, p 138.

[193] National Research Council, p 137.

reduce production pressures or spend money on safety items other than those required by federal regulations.

The lack of any other organization with the ability to implement a fishing vessel safety program makes it imperative that the Coast Guard take the lead in establishing a more effective safety program. And as the only organization capable of such an initiative, it is even more important for the Coast Guard to have effective enforcement tools such as vessel voyage terminations to enforce the implementation of a safety program.

COST BENEFIT ANALYSIS

Cost benefit analyses provide an opportunity to demonstrate the effectiveness of the fishing vessel safety program. Assuming the program is successful in preventing accidents, effective program monitoring can make it possible to calculate how much has been saved by the reduced number of personal and vessel casualties. Most managers do not see beyond the immediate costs of an accident such as medical treatment, workers compensation and the replacement of equipment. The hidden costs being the production losses and quality problems.[194] However, the safety records of leading organizations prove that accidents are not the inevitable cost of business.[195] Unfortunately, in the fishing industry, the danger is seen as a "cost of doing business." As Representative Don Young, R-Alaska stated:

> [f]ishermen know the risk they face; its man vs the sea,…It's not a safe profession, pure and simple. It's

[194] Bird and Germain. p 2.1.

[195] Bird and Germain. p 2.1.

> like riding bulls in a rodeo - you can't make it totally fail safe. There's nothing Congress can do unless we say let's stop fishing.

Further, insurance companies are not charitable organizations. The amounts they pay in claims are charged back to the insured in higher premiums based on the accident experience of the industry.[196] While these hidden savings from investments in safety are difficult to calculate, it should not stop an effort to educate fishermen in occupational safety because of the potential payoff. By educating fishermen on the potential savings that can be realized from a safety program, it may spur the fishing industry to initiate safety programs on their own.

The initiation of occupational safety programs has proven to benefit fishing companies in two ways. First is reduced fines and penalties for violations of government regulations and second is the savings in prevented injuries and mitigated damage when accidents occur. For example, in an instance where a fishing vessel caught fire, a well trained crew was able to quickly extinguish an engineroom fire and avoid approximately 1 million dollars in repairs to the ship.[197]

In addition to reductions in costs for the fishing industry, an effective fishing vessel safety program can also produce savings for the Coast Guard by reducing the amount of SAR cases involving fishing vessels. While comprising a smaller number of total numbers of SAR cases, responses to fishing vessel distress often utilize more aircraft and cutter time, thus costing more than four times as much as the more numerous recreational boating

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[196] Bird and Germain. p 2.1.

[197] Ford, p 118-120.

SAR cases.[198] These costs are more easily calculated but are not presently being considered by the Coast Guard in evaluating the fishing vessel safety program in its fiscal year 1994 Performance Report.[199]

ANALYSIS AND EVALUATION OF THE COMMERCIAL FISHING INDUSTRY

With an effective casualty database, it is possible to conduct an analysis of the information. The primary objectives of a safety system analysis are:

1. Hazard identification.
2. Logical procedures for formulating countermeasures.
3. Selection of the best countermeasures to implement.[200]

It is this type of analysis that the Coast Guard should be conducting, at the local or district level, to ensure that the fishing vessel safety program is improving the safety level in the commercial fishing industry.

For any safety analysis to be effective, it must be conducted in a logical and systematic manner with results that are presented in a clear and concise manner.[201] Such an analysis does not need to be terribly complicated.

> Far too often, in the current world of computers, analysis is related only to math modeling techniques

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198 Barry Gristwood, "Fishing Vessel Insurance: Views from National and International Perspectives," Summary of the Proceedings of the National Workshop on Fishing Vessel Insurance and Safety, Washington DC, February 4-6, 1987. p 18.

199 US Coast Guard Business Plan for Marine Safety, Security and Environmental Protection, February 6, 1995. p 13.

200 David B.Brown. System Analysis and Design For Safety, (Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1976) p 42

201 William P. Rodgers. Introduction to System Safety Engineering, (New York: John Wiley & Sons, inc, 1971. p 29.

> involving statistics and probabilities. We often lose sight of the fact that a straightforward, methodical, experienced-based reasoning process is one of the most effective analysis methods that can be used.[202]

In fact, one of the best accident prevention tools is known as Job Safety Analysis (JSA). It is a "hazard hunt" where "jobs" such as commercial fishing are broken down and analyzed for hazards. Solutions are then developed to eliminate or guard against hazards.[203] At the industrial level, JSA is conducted by a first line supervisor and a skilled operator.[204] In the case of fishing vessel safety, the role of first line supervisor can be assigned to the fishing vessel safety specialists located at a Marine Safety Office or the district fishing vessel safety coordinator. It is absolutely imperative, in any safety system, for analyses to be conducted by highly experienced personnel that are thoroughly familiar with the subsystems that are being analyzed and their operations.[205] Ideally safety data should also be analyzed with representatives of the fishing industry to assist in developing solutions to prevent or safeguard against hazards.

When conducting a JSA, it is important to identify the jobs in which most accidents occurred in order to enjoy immediate accident prevention benefits and maximize the impact of limited resources. It is also important to consider jobs that have a high potential for severe accidents and to study newly established jobs as well to identify hazards that have not previously been

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202 Rodgers p 29.

203 National Safety Council, Supervisors Safety Manual, 6th Edition, (Chicago:National Safety Council, 1985) p 73.

204 National Safety Council. p 73.

205 Rodgers. p 29-30.

encountered.[206] When analyzing fatality and personal injury data in the fishing industry, it is imperative to break down the data into distinct units or "jobs". The most logical break down in a fisheries management context would be accomplished by grouping accidents according to fishery and gear type. This is because different vessels use the same gear in different fisheries and other vessels use different gear types in different fisheries. By analyzing data across the different fisheries and across gear types, the overlap will cover all unsafe practices. After analyzing this data, it is possible to see if some units experience more accidents than others. Therefore, "when the injury data for a particular unit are higher than for other units, the safety professional must decide what action to take in order to apply corrective measures."[207] The National Research Council noted that "regional, local and even fishery specific analyses could be most beneficial,"[208] Once hazards are identified, these units can be broken down even further for more detailed analysis and action can be take to address the danger.

There are two types of analyses that should be conducted, a general and detailed hazard analysis. A detailed analysis is an overall look at the system or component under evaluation. It is designed to identify and isolate safety problems that require more detailed analysis. The detailed analysis takes a more in-depth look at a smaller component of a specific hazard using historical records such as accident investigations to provide more insight.[209]

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[206] National Safety Council. p 73.
[207] Anton, p 74.
[208] National Research Council, p 139.
[209] Brown, 49-54.

With respect to analysis, there are some other considerations. First, any analysis should be easily understood by the fishing industry. This will facilitate dissemination within the fishing industry. Another common theme that runs through the literature on safety system analysis is that analyses must be current to be valid. This means a constant effort to keep them current and ensuring that they are completed when fisheries or gear types are substantially modified.[210] All reports on the fishing vessel safety program should contain some sort of JSA broken down by fishery and gear type.

OTHER CONSIDERATIONS IN ANALYSIS

According to experts, the principle factors associated with accidents to fishing vessels include the location of the boat, day versus night, visibility, wind speed, sea conditions, hull type, and captain/crew error.[211] Others have concluded that "work in other areas needs to be done such as the identification of losses based on geographic areas and specific fisheries."[212] To this list, the gear type being used and home port of the fishing vessel should be added.

The principle factors contributing to accidents to fishermen are age, job on board vessel, location of job, vessel age, time of

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[210] National Safety Council. p 78.

[211] J.J. Poggie, Jr., R.B. Pollnac, and C. Van Dusen, "Intracultural Variability in the Cognition of Danger Among Southern New England Fishers," Paper Presented at the 92nd Annual Meeting of the American Anthropological Association, Washington, DC, November 1993. p 3.

[212] Tony E. Hart and Frank Perrini. 1984. Analysis of U.S. Commercial Fishing Vessel Losses, 1970-1982.

year, vessel size and carelessness.[213] Perceptions about fishing vessel safety also differ among fishermen. Studies have found that variables relating to fishing vessel safety include such factors as the fishermen's age and experience, type of fishing, including days at sea and distance from home port, relationships with crew members, home port of vessel and the level of education.[214] Because people act on the beliefs and perceptions they have, it is important to gain a better understanding of the causal factors associated with these accidents. Operating in a high risk environment without adequate understanding of the dangers involved creates "an unrealistic mental environment…where the real danger is not being adequately addressed."[215] What is needed is the alignment of the fishermen's perceptions of danger with the identification of risks to improve fishing vessel safety. Any effort at assessing risk should attempt to use these factors to identify problem areas and separate personal injuries from vessel accidents. An analysis based on these factors should help flag problems in a particular fishery and allow for more effective analysis of hazards and communication of those hazards back to the fishing industry..

According to experts, the measurement of a safety system must meet the following objectives:

· Measurement must provide data that can serve as a basis for system improvement.

· Measurement must be valid. It must facilitate the understanding of the underlying system. Validity may be evaluated by the

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213 Poggie, Pollnac, and Van Dusen. p 3.

214 Poggie, Pollnac, and Van Dusen. p 1.

215 Poggie, Pollnac, and Van Dusen. p 10.

measure's ability to predict future loss or by its ability to enable effective system improvement.

· Measure must be reliable. Essentially, measurement must be repeatable. The method must be specified so that others can follow the same steps and obtain a similar result.

· The measurement must not, in and of itself, interfere with improvement efforts. For example, the use of incident rates as a a criterion to evaluate employees may increase the potential that some incidents will not be reported.[216]

Thus, the creation of a more effective program monitoring system needs to take these criteria into account.

CURRENT EFFORTS AT SAFETY MANAGEMENT

An example of an aggressive safety system is being implemented in Portland Maine. This system documents all the marine casualties in the Area of Responsibility (AOR) of the Marine Safety Office in a database that is more modern and flexible than CASMAIN and includes casualties to state numbered vessels that are not even included in MSIS. This database is capable of sorting marine casualties by fishery and gear type. It has produced some successful results.

An examination of marine casualties by gear type showed that fully a third (33%) of marine casualties in 1993 occurred in the sea urchin fishery. Also, nearly 30% of the marine casualties occurred in dive boats. This lead to further analysis and the realization of a large number of decompression sicknesses in the fishery due to the unsafe repeat diving practices employed by the

[216] Carder. p 24.

participants of that fishery that are well in excess of standard diving practices recommended in the U.S. Navy dive tables.[217] After discovering this, the hazard was communicated back to the fishing fleet. As a result, the communication of this hazard reduced the number of decompression sickness injuries in half in 1994.[218]

In another instance, feedback from boarding officers was utilized to communicate a hazardous condition to vessels in the sea urchin dive fishery. The hazard was identified by boarding officers who noticed the proximity of portable space heaters used to keep divers warm and portable fuel containers on board small skiffs (approximately 15-20 feet in length) used to prosecute the fishery. This feedback led to an experiment where similar conditions were created on a small boat. The gasoline and the heater were tipped at the same time, simulating a wake or a large wave rocking the vessel. The experiment showed that it took 33 seconds for large amounts of flame to develop and after two minutes, ten seconds, fire spread from stem to stern. A little over a minute later, the hull failed.[219] This danger was communicated through a "Safety Alert" publication that is distributed to the fishing industry. The rapid nature of this type of accident would leave little time for any sort of post contact control, such as the use of fire extinguishers or even putting on an exposure suit prior being forced in the water. Thus

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[217] Personal Communication with Jeff Ciampa, Fishing Vessel Safety Examiner, USCG Marine Safety Office, Portland ME.

[218] Marine Casualty Database provided by Jeff Ciampa, Fishing Vessel Safety Examiner, USCG Marine Safety Office, Portland ME.

[219] U.S. Coast Guard Marine Safety Office Portland, Maine Safety Alert No.5402.

it is necessary for the proactive approach demonstrated here to save lives. This program utilizes the total safety concept recommended by the National Research Council Report and is a good example of the type of national program that needs to be established. By working closely with state officials, the fishing vessel safety specialists assigned to Marine Safety Offices can also overcome many of the federal/state barriers to data collection.

ANALYSIS OF FISHING VESSEL SAFETY IN THE NORTHEAST

The First Coast Guard District has also made an effort to create a more effective database. This database is compiled on a small personal computer and is quite versatile. It compiles data on fishing vessel accidents by vessel name, date, location, vessel length, general casualty, specific cause, number of injuries, deaths and persons saved, persons on board the vessel, the gear type of the vessel, responding unit and marine casualty number, which is a reference to the accident investigation.[220]

Unfortunately, there are also some significant omissions in the database established in the First District. For instance, from 1993 to 1995, there were approximately 1200 accidents of all types on board fishing vessels that were reported to the Coast Guard. In approximately 300 of these cases, rudimentary information such as the gear type of the vessel is simply not

[220] U.S. Coast First District Fishing Industry Casualty Data.

known because it was not included in the investigation.[221] In the case of vessel sinkings, 32% of the fishing vessels that sunk did not have an identified gear type listed on the accident investigation.[222] Such omissions in casualty investigations degrade the utility of the entire database.[223] It is especially critical that accurate technical information be included in the database to increase its accuracy. The solution to this problem is one of simple communication between the user of the information or customer (i.e.the First District fishing vessel safety coordinator) and the supplier of the information (i.e. the fishing vessel safety specialists in the Marine Safety Offices. After all, the purpose of the accident investigation is to discover the point of failure and the causative factors, hazardous conditions and/or practices that brought about the accident.[224] The customer and suppliers must align their needs to eliminate gaps that reduce the effectiveness of the database. Training inspectors on the specifics of the commercial fishing industry could dramatically improve incomplete accident investigations and help marine inspectors part with the marine transportation paradigm.

Despite this significant gap, the data does reveal some interesting information. For instance, from 1993-1995, there were 35 fatalities on fishing vessels. A general analysis shows that nearly half of all deaths were in the lobster and dive boat gear

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221 U.S. Coast First District Fishing Industry Casualty Data. It should be noted that this number was initially much larger but the district fishing vessel safety coordinator utilized his experience to fill in some of the information not included in many investigations.

222 U.S. Coast First District Fishing Industry Casualty Data.

223 Rodgers. p 47.

224 Anton, p 3.

types.[225] (chart 3) A review of the trends over those years show that the dive boats had seven deaths in 1993, none in 1994 and one in 1995. The reason for this sharp decline has been discussed earlier and is the result of effective intervention in Portland, Maine. The lobster industry, on the other hand, has had a steady death rate of two deaths in 1993, four in 1994 and three in 1995.[226] This evidence suggests that a detailed analysis of the accident investigations needs to be conducted to determine if there is some common causes and industry representatives from that sector should be consulted to find appropriate countermeasures.

One final note with respect to fatalities is that over seventy percent are attributed to sinkings and man overboard situations.[227] Armed with this knowledge, it is possible to work with the fishing industry and survival suit manufacturers to develop creative solutions such as worksuits that offer protection from the cold water, yet are comfortable enough to be worn on deck. Surely this is not an original idea, but by providing sound quantified data, these numbers may be alarming enough to spur interest in developing a solution.

A "hazard hunt" into equipment casualties shows that approximately 46% of all reported equipment casualties occur on board trawlers.[228] (chart 4) A further look into this shows that over 40% of the equipment casualties are the result of engine failures and another 30% are the result of fouled propellers.[229]

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[225] U.S. Coast First District Fishing Industry Casualty Data.
[226] U.S. Coast First District Fishing Industry Casualty Data.
[227] U.S. Coast First District Fishing Industry Casualty Data.
[228] U.S. Coast First District Fishing Industry Casualty Data.
[229] U.S. Coast First District Fishing Industry Casualty Data.

(chart 5) The trends in both of these categories show a constant frequency from 1993 through 1995. This data shows that a more detailed analysis needs to be conducted with respect to the engine failures. It also documents an obvious problem with trawlers, the fact that by dragging a net behind a vessel dramatically increases the chances for a fouled screw. No other gear type exhibits this sort of casualty in significant numbers. This documentation should prompt the development of some sort of guard that can prevent the net from contacting the screw.

Personal injury data also reveals some interesting information. The scallop and trawl vessels each account for over 30 percent of personal injuries on board fishing vessels.[230] (chart 6) This concentration begs more detailed analysis to provide an opportunity for prevention. An examination of injury data on board scallop vessels show that contact with the dredge and falls are the primary hazards with 25 and 18 percent of personal injuries respectively.[231] The primary hazard of the trawl industry is contact with the winch or wire. That hazard comprises 30 percent of all personal injuries on board trawlers.[232] Again, this data provides a focus to make improvements in safety. A more detailed analysis of these injuries would be better served with information such as location on deck and some human error data.

GETTING FEEDBACK TO THE FISHERMEN

While analysis of past accidents will help to identify

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[230] U.S. Coast First District Fishing Industry Casualty Data.
[231] U.S. Coast First District Fishing Industry Casualty Data.
[232] U.S. Coast First District Fishing Industry Casualty Data.

dangerous practices, improvements in safety will ultimately depend on changing many social and cultural attitudes of fishermen. This is clearly the most critical part of the fishing vessel safety program and one in need of dramatic improvement by the Coast Guard. Fishermen have proven they are extremely flexible in adapting to technological innovations and other measures to improve their harvesting capacity. However, there are some impediments in the culture of fishermen that inhibit change with respect to safety issues. They are the independent nature of fishermen and the lack of a perception of danger.[233] Poggie, Pollnac and Jones define the independence as "a relatively enduring tendency of fishers to think and act autonomously without wanting, requiring, or relying on assistance or guidance from others."[234] This attribute is found to be common among fishermen.

The second characteristic that inhibits change is the failure to perceive danger. Poggie, Pollnac and Jones state that fishermen's perceptions of safety and danger differ substantially from those of non-seagoing people.[235] Many factors are responsible for this. First, the culture surrounding the fisherman is based on bravery and lack of fear. Second, fishermen are known to exhibit the common trait of fatalism which helps them cope with loss. Third, fishermen have a common personality type that minimizes perceived dangers. Finally, denial is a common trait among fishermen that forces them to trivialize the dangers of their occupation or claim that the danger only affects other

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[233] Poggie, J., R.Pollnac, and S. Jones. "Perceptions of Vessel Safety Regulations, A Southern New England Fishery," Marine Policy, Vol 19, No 5, 1995. p 413.

[234] Poggie, J., R.Pollnac, and S. Jones. p 412.

[235] Poggie, J., R.Pollnac, and S. Jones. p 413.

fishermen that are less safe. While this combination relieves the stress of being constantly exposed to danger, it also makes fishermen more vulnerable to safety hazards than their counterparts on land.[236]

In a study on fisherman's attitudes concerning fishing vessel safety, several common themes were present. These are: (1) denial of danger; (2) independence; (3) fatalism regarding danger; and (4) technological primacy, the view that safety is a problem that primarily requires a technological solution.[237] It is in these psychological characteristics of fishermen that improvements in the fishing vessel safety program can be made.

A major step toward dealing with these issues is to understand that they exist and establish strong participation of the fishing industry at the local level with respect to safety issues. They must be included in analyzing safety data in order to break the chain of denial. A significant effort must also be made to change the fatalistic attitude toward accidents. Cultural changes are possible. Not long ago, fishermen thought the resources of the sea were inexhaustible. Now, it is clear that they must be managed. If perceptions for fisheries management can be changed, the perceptions about safety can also work. Perhaps a more relevant analogy to the change in cultural attitudes is the societal view toward drunken driving. In a short time, society has changed its view of drinking and driving from one of acceptance to one of intolerance. Hopefully this is possible with the fishing industry. Finally, it must be made clear to the

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[236] Poggie, J., R.Pollnac, and S. Jones. pp 413-415.

[237] Poggie, J., R.Pollnac, and S. Jones. p 416.

industry that technology will not help prevent accidents.[238] In reality, as we have seen, the technology required by current regulations is only of use in mitigating damage once it occurs.

CONCLUSIONS

It is clear that the marine insurance issue was not destined to remain on the national agenda because it could not widen its audience enough to overcome the powerful lobby of the trial lawyer association. The consequence of this is that much of the incentive for the industry to take the initiative to improve safety was removed from the bill that eventually became the Commercial Fishing Industry Vessel Safety Act. With the exception of self insurance clubs, the vast burden of implementing the act has fallen upon the Coast Guard. That burden, as with any mandate from Congress, is subject to their intent.

An examination of the intent of Congress shows that a proactive risk management system and the use of voyage terminations for enforcement were clearly envisioned by the Act. By keeping the authority to terminate a fishing vessel voyage at a very high level, the Coast Guard has adopted a policy that has kept it from effectively utilizing that enforcement tool which Congress provided in the Act. Also, by keeping its focus on post-contact control measures such as mandating exposure suits and life rafts, the Coast Guard has missed an opportunity to focus its efforts on prevention of accidents by creating a new risk management system. By changing these two policies, the Coast

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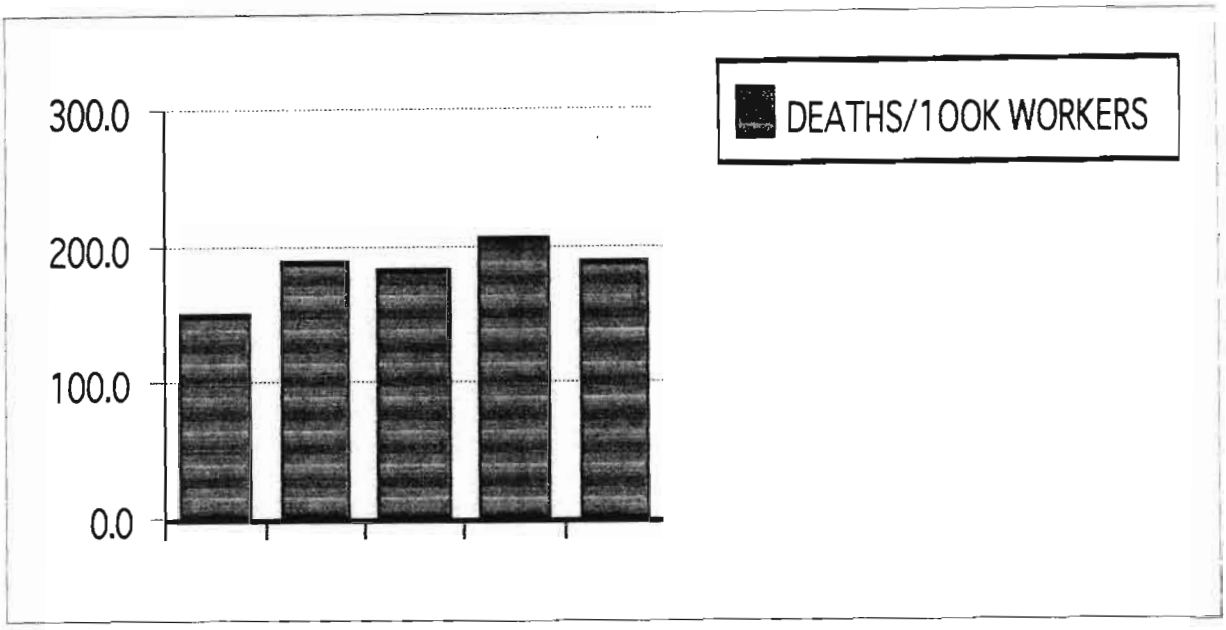
[238] Perrow, Charles. Normal Accidents: Living With High Risk Technologies, (New York: Basic Books Inc., 1984) p 180.

Guard can significantly improve the fishing vessel safety program.

Finally, measurement of the fishing vessel safety problem must improve. Aggressive data gathering and the use of risk management methodology are necessary to improve the effectiveness of the program. Effective measurement and evaluation of the program will result not only in a true indication of the effectiveness of the program, it will create a positive feedback loop for improving the program. It is recognized that the above recommendations represent a massive undertaking on the part of the Coast Guard. However, any other approach would represent half measures that will not result in an effective program.

Chart 1



Year	1989	1990	1991	1992	1993
Fatality Rate	151	192	184	207	189

Sources:

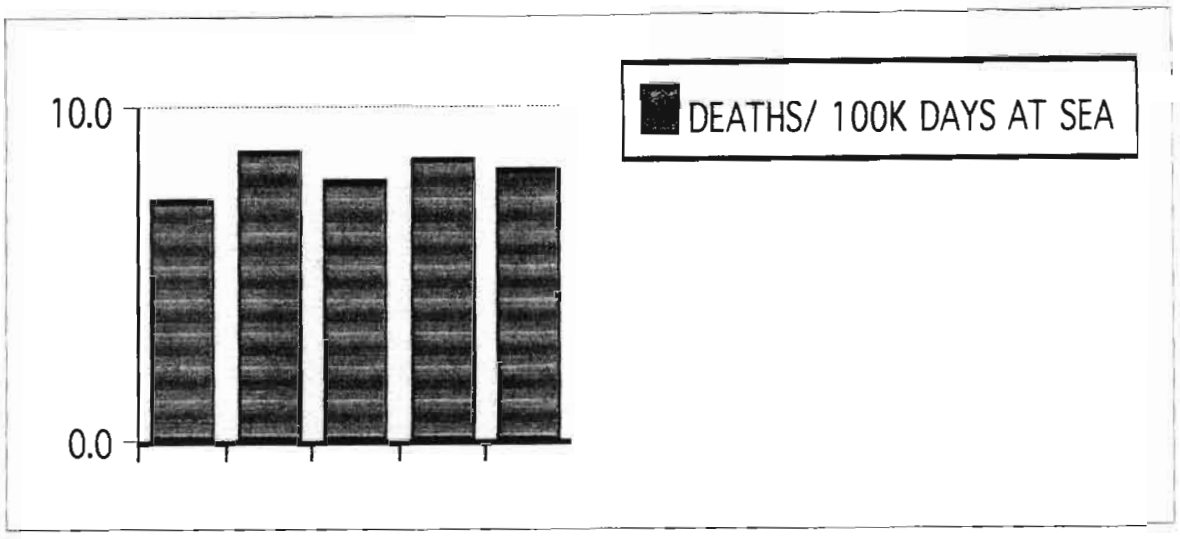
Labor and Fishing Effort Data:

Status of the Fishery Resources off the Northeastern United States for 1994. NOAA Technical Memorandum NMFS-NE-108. January, 1995

Fatality Data

US Coast Guard Headquarters, Marine Safety and Environmental Protection Directorate, Strategic Planning and Analysis Branch. April 19, 1995.

Chart 2



Year	1989	1990	1991	1992	1993
Fatality Rate	7.3	8.7	7.8	8.4	8.3

Sources:

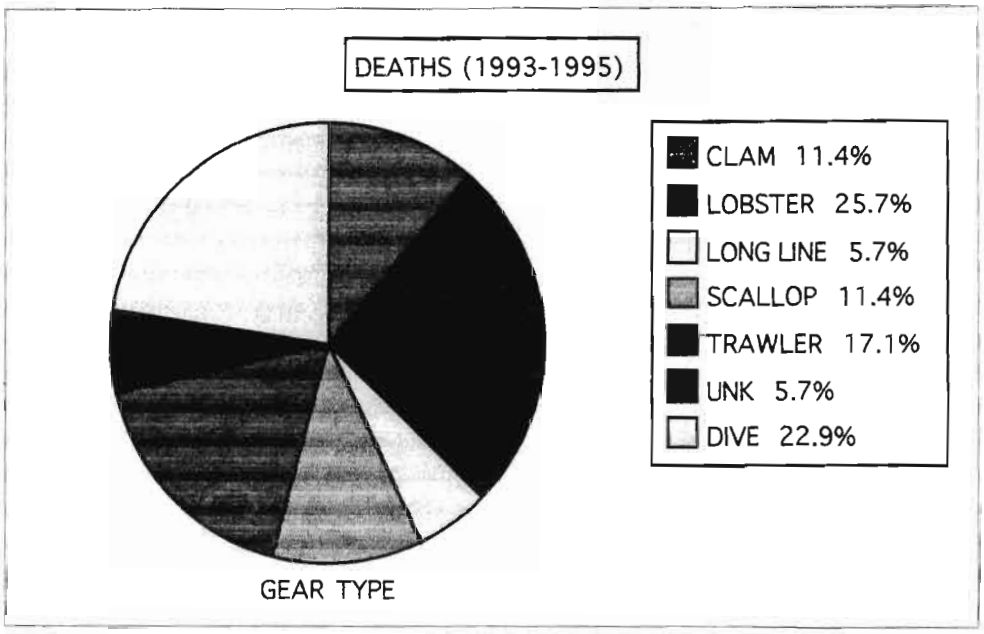
Labor and Fishing Effort Data:

Status of the Fishery Resources off the Northeastern United States for 1994. NOAA Technical Memorandum NMFS-NE-108. January, 1995

Fatality Data:

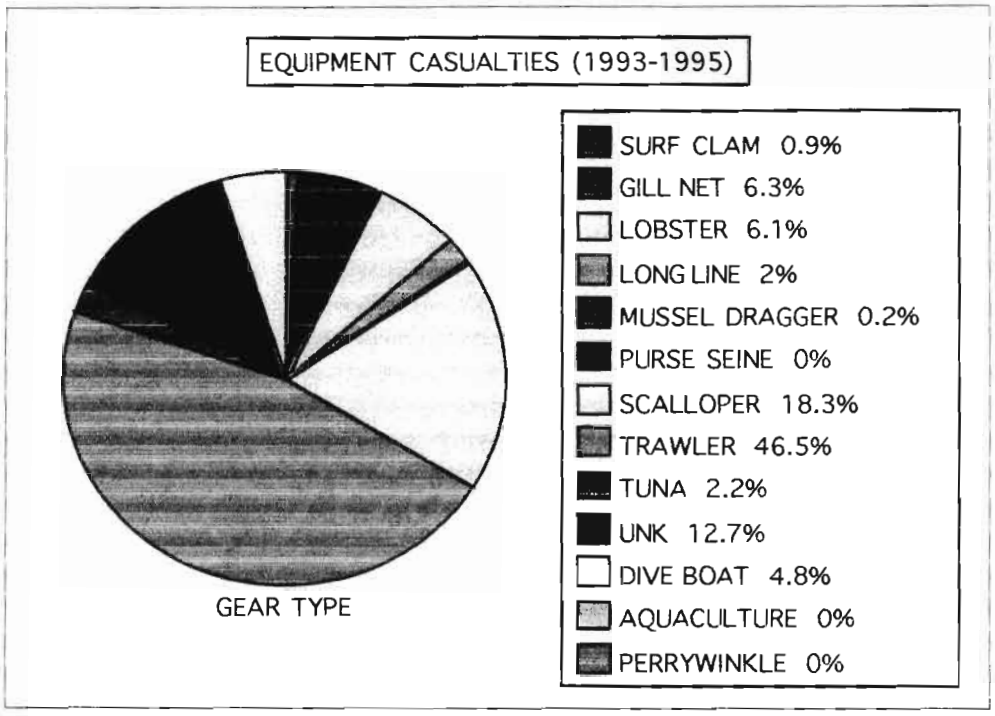
US Coast Guard Headquarters, Marine Safety and Environmental Protection Directorate, Strategic Planning and Analysis Branch. April 19, 1995.

Chart 3



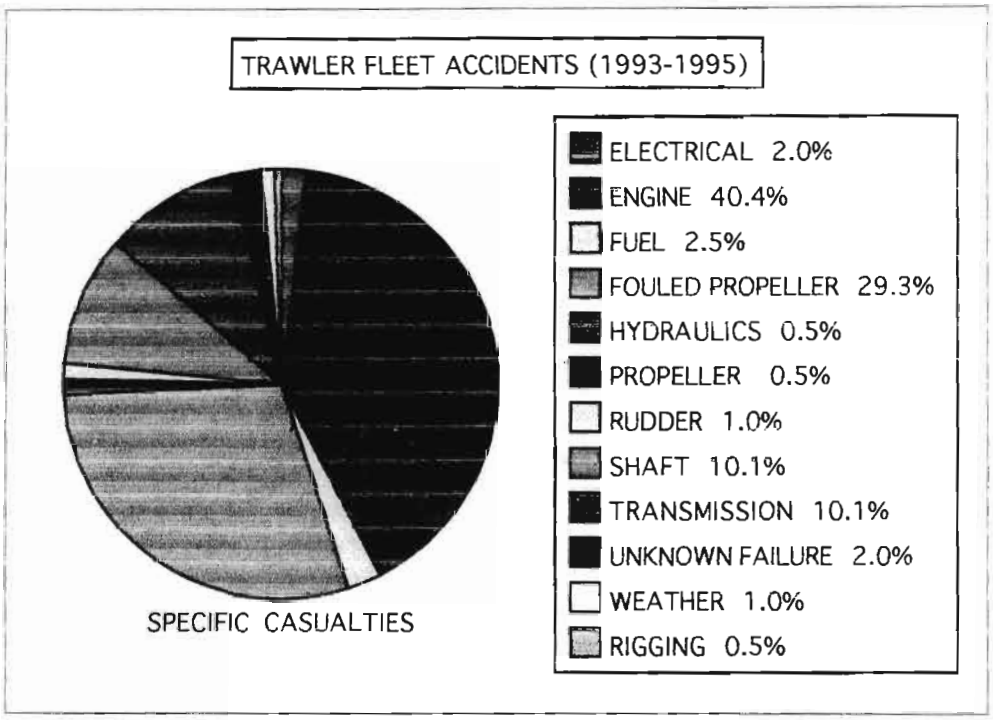
Source: U.S. Coast Guard First District Fishing Vessel Casualty Data

Chart 4



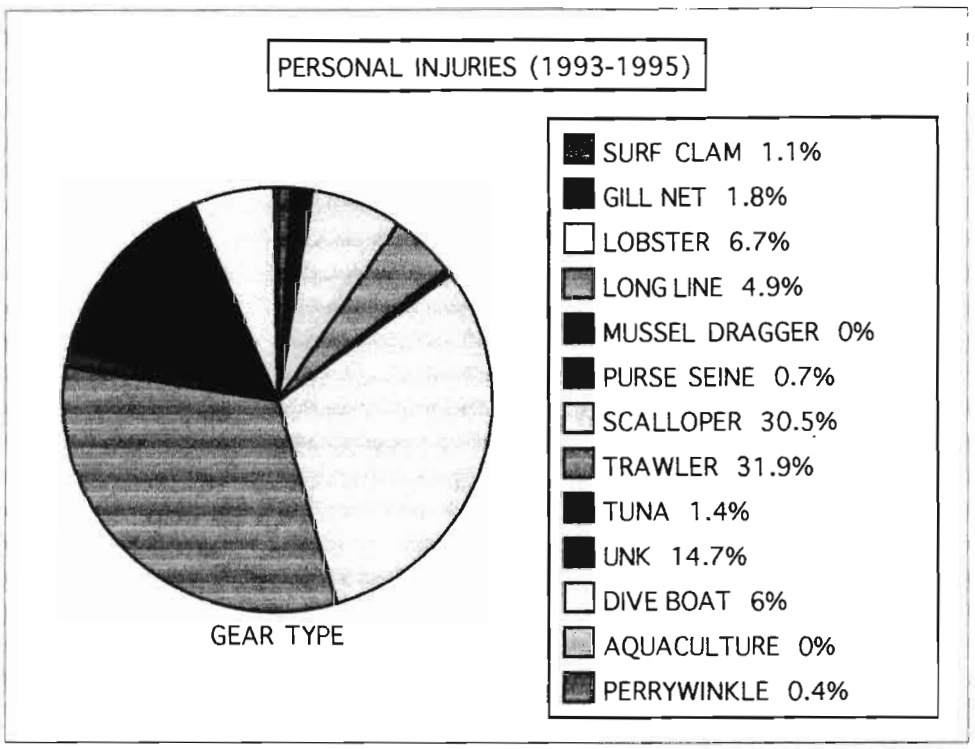
Source: U.S. Coast Guard First District Fishing Vessel Casualty Data

Chart 5



Source: U.S. Coast Guard First District Fishing Vessel Casualty Data

Chart 6



Source: U.S. Coast Guard First District Fishing Vessel Casualty Data

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