THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

November 12, 1992

The Honorable Dan Quayle
President of the Senate
Washington, DC 20510

Dear Mr. President:

The Commercial Fishing Industry Vessel Safety Act of 1988, P.L. 100-424 (the Act), requires the Secretary of Transportation to conduct a study of safety problems on commercial fishing industry vessels and to make recommendations regarding whether a vessel inspection program should be implemented. The Act further requires that the Secretary of Transportation conduct a study of fish processing vessels that are not surveyed and classed and make recommendations regarding what hull and machinery requirements should apply to these vessels. This letter transmits the Coast Guard's report which contains recommendations associated with each study. A copy of each study is also enclosed for your review. Both studies and all Coast Guard recommendations were discussed with the Commercial Fishing Industry Vessel Advisory Committee as required by the Act.

The enclosed report provides a synopsis of each study and discusses inspection program options that address and incorporate the recommendations. Several plans are presented, including one preferred by the Coast Guard. The report also addresses the actions necessary to implement the preferred program, such as additional legislative authority, and an analysis of the additional resources required.

An identical letter has been sent to the Speaker of the House of Representatives.

Sincerely,

Andrew H. Card, Jr.

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Enclosures

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Speaker of the House of
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Washington, DC 20515

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U. S. COAST GUARD

# COMMERCIAL FISHING INDUSTRY VESSEL SAFETY ACT OF 1988

P. L. 100 - 424

## REPORT TO CONGRESS

## FOR THE INSPECTION OF

## COMMERCIAL FISHING INDUSTRY VESSELS

## EXECUTIVE SUMMARY

The Commercial Fishing Industry Vessel Safety Act of 1988, P.L. 100-424, (the Act) requires the Secretary of Transportation to conduct a study of the safety problems on fishing industry vessels, to make recommendations regarding whether a vessel inspection program should be implemented and, if necessary, to define the nature and scope of the program. This study was conducted utilizing the National Academy of Engineering (NAE) and in consultation with the National Transportation Safety Board and the Commercial Fishing Industry Vessel Advisory Committee (CFIVAC). The Act further requires the Secretary of Transportation to conduct a study of fish processing vessels that are not surveyed and classed and to make recommendations regarding what additional hull and machinery requirements should apply to these vessels. The study was conducted by the Worcester Polytechnic Institute for the Coast Guard in consultation with the CFIVAC and with representatives of persons operating fish processing vessels. The purpose of the studies and the Coast Guard recommendations is to enable Congress to address the historically poor safety record of the commercial fishing industry.

As a result of the Act, safety requirements for commercial fishing industry vessels were published in Title 46 Code of Federal Regulations (CFR) Part 28. Previous to this effort, the Coast Guard published extensive guidelines and standards for the design, construction, and operation of commercial fishing industry vessels. These standards were the basis of a voluntary program which the commercial fishing industry failed to embrace over the last six years. Overall, the problems have proved to be beyond the scope of effective action through voluntary measures.

One of the recommendations of the study of safety problems in the fishing industry was that a compulsory inspection program should be instituted to ensure vessel fitness for the intended service. Similarly, the study of fish processing vessels concluded that classification has a positive influence on safety and that it could be an integral part of a program to improve the safety record of this portion of the industry. Both studies point to mandatory, regular examinations for the fleet to ensure minimum standards are met and maintained. The federally-mandated CFIVAC-endorsed recommendations would impose additional safety measures on the industry. This report presents the recommendations from these studies along with comments and recommendations of the Coast Guard.

The Coast Guard recommends a mandatory tiered inspection program for commercial fishing industry vessels, tied to vessel length. The NAE study concluded that not only were fishermen more likely to die on the job than workers in most other U.S. industries, but the fatality rate increased dramatically with increasing vessel

length. A detailed explanation of the basis for the recommendation is included. It requires:

- Self-examination for all commercial fishing industry vessels, new and existing, less than 50 feet in length. The existing requirements of the fishing vessel safety regulations in Title 46 CFR 28 would be applicable.

- Third party examination for all commercial fishing industry vessels, new and existing, of length greater than or equal to 50 feet but less than 79 feet. These vessels would also be examined for compliance with the fishing vessel safety regulations in Title 46 CFR 28.

- Coast Guard inspection and load line assignment for all commercial fishing industry vessels, new and existing, greater than or equal to 79 feet in length. These vessels would be required to meet the fishing vessel safety regulations in Title 46 CFR 28, load line requirements and additional hull and machinery standards, which for new vessels would include design and construction to classification society standards and for existing vessels, similar requirements as deemed necessary by the Coast Guard.

This proposed inspection program incorporates recommendations of both previously mentioned studies. The proposal for additional standards for all vessels 79 feet or greater in length would have the additional advantage of alleviating the existing difficulties with respect to the three fishing industry vessel definitions, contained in 46 United States Code §2101. It would make safety requirements for each class of vessel identical as a function of length, not whether the vessel is defined as a "fishing vessel," "fish tender vessel," or "fish processing vessel."

Three alternative plans are also discussed, including total industry self-examination, total industry third party examination, and total industry Coast Guard inspection.

The Coast Guard currently lacks the authority to provide for inspection of commercial fishing industry vessels, except for fish processing vessels. Legislative actions necessary to enable the Coast Guard to implement the inspection plan and institute the new hull and machinery requirements are herein provided.

Additional resources will be required for the Coast Guard to carry out the inspection program. An analysis is provided, along with the assumptions made, which show that operating this program will require an additional 27 billets at a recurring annual cost of approximately $1,387,000, in 1992 dollars.

The first year cost to the commercial fishing industry to show compliance with the inspection program is estimated at $8.0 million. This is less than one-third the cost of the complete third party or complete Coast Guard inspection alternatives.

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## I. INTRODUCTION

Recognizing that the fishing vessel industry was experiencing one of the highest death rates of any U.S. industry, the Coast Guard undertook a voluntary safety initiative, approved by the Department of Transportation. The voluntary approach, i.e., getting industry itself to be proactive, was determined to be better and able to be implemented more quickly than the traditional vessel inspection approach in reducing the human errors which were found to be a cause in most of the losses.

Several Navigation and Vessel Inspection Circulars (NVICs), documents published by the Coast Guard to promulgate guidance that is advisory in nature, were written in 1985. These contained voluntary standards and were based upon experience and casualty data review. Later combined into one circular, NVIC 5-86, the guidance put forth recommended standards for stability, fire safety, lifesaving equipment, hull design and construction, maintenance and repair, machinery and electrical installations, and pollution requirements. The Coast Guard also cooperated with the publishing of the North Pacific Fishing Vessel Owners Association's (NPFVOA) vessel safety manual and subsequently endorsed it. The manual was found to be suitable for crew training and has since been used as a foundation for local training manuals in the Gulf and Atlantic coast fisheries.

Despite the efforts in this voluntary program, the casualty rate for the commercial fishing industry remained high. Congress became dissatisfied with the voluntary approach and enacted Public Law 100-424, the Commercial Fishing Industry Vessel Safety Act of 1988 (the Act). The Act required that the Coast Guard develop regulations for commercial fishing industry vessels which varied based on the area of operation, the number of individuals on board, the date of construction or major conversion, and the type of fishing vessel. A new set of regulations in Title 46 Code of Federal Regulations (CFR) Part 28 addressed requirements for the commercial fishing industry fleet and became effective on September 15, 1991.

The Act also mandated that two studies be conducted by the Secretary of Transportation. The Coast Guard utilized the National Academy of Engineering (NAE) in consultation with the Commercial Fishing Industry Vessel Advisory Committee (CFIVAC), the National Transportation Safety Board, and the fishing industry to conduct a study of safety problems on fishing industry vessels. This study was to be used by the Coast Guard to develop recommendations to Congress on an inspection program after identifying and characterizing the safety problems.

The second study was to be conducted of fish processing vessels that are not surveyed and classed by an organization approved by the Secretary. The Coast Guard utilized the Worcester

Polytechnic Institute in consultation with the CFIVAC and representatives of persons operating fish processing vessels to conduct this study. The Coast Guard used the study to make recommendations regarding what hull and machinery requirements should apply to these vessels to ensure they are operated and maintained in a safe and seaworthy condition.

These studies, as others in the past, have found that the commercial fishing industry was one of the Nation's most hazardous occupations. While statistics can be misleading, they can also be quite informative. Those that follow, which are taken from the NAE study, are in the latter category. The annual fatality rate showed that fishermen perished at a rate *four times* greater than that of workers in all other US industries combined. This rate jumped to *seven times* the national average if only workers aboard documented fishing vessels were considered. It was also determined that the annual fatality rate increased dramatically with increased vessel length.

To summarize, Congress required the Coast Guard to take the step from providing voluntary guidance to providing regulations for the commercial fishing industry fleet. Studies were also mandated to assist the Coast Guard to investigate and recommend whether further regulatory actions were appropriate for the fishing industry overall and for unclassed fish processors in particular. Recommendations regarding a mandatory inspection program for all commercial fishing industry vessels and additional standards for unclassed fish processing vessels are closely related. These recommendations are presented together in a comprehensive program based on vessel length, which is an indicator of increased risk to personnel and property. The purpose of this report is to forward the Coast Guard's recommendations along with the completed studies.

## II. BACKGROUND

It is generally acknowledged that commercial fishermen are engaged in one of the most hazardous of all occupations in the United States. Casualty statistics for documented and undocumented fishing vessels show that there is an average of 1,100 vessel casualties reported every year, with 20 percent of these being total losses. There are also an average of 108 fatalities reported every year, over 80 percent of which are on documented fishing vessels. The Commercial Fishing Industry Vessel Safety Act of 1988, the recently released regulations, and these studies are parts of the most recent effort to improve this very poor safety record.

### A. FISHING INDUSTRY VESSEL INSPECTION STUDY

As mandated by Section 5(a) of the Commercial Fishing Industry Vessel Safety Act of 1988 (the Act), a study was conducted of the safety problems on fishing industry vessels. The study was conducted by the National Academy of Engineering (NAE), in consultation with the Commercial Fishing Industry Vessel Advisory Committee (CFIVAC), the National Transportation Safety Board and the fishing industry. This study is being used by the Coast Guard to develop recommendations to Congress on an inspection program after identifying and characterizing the safety problems of commercial fishing industry vessels.

The first step of the study identified the problem. To do so, it was necessary to gain an understanding of the extent of the safety problems and the perceived safety inadequacies. Three types of factors affecting fishing vessel safety were investigated. In the broadest sense, these factors were related to the vessel, the fishermen, and external forces.

These factors interact with each other in a complex fashion. Factors pertaining to the vessel included construction; design; outfitting; navigational and operating equipment; fishing gear type; and emergency, safety, and survival equipment. The second type of factor involved the fishermen themselves with respect to professional competency (training and skills) and behavior (risk-taking attitude and responsibility for safety). The last factor summed up the external forces and included fisheries management, economics, and weather and sea conditions.

To investigate the perceived safety inadequacies, it was necessary to take an unbiased look at the issues. Part of the problem appeared to be the lack of an effective system to monitor, promote, or require accountability of those

responsible for the operational and occupational safety at sea. There also appeared to be a lack of a standard throughout the industry for safe operation. This pertained to workplace procedures, safety meetings, training programs, and emergency response procedures.

The methodology of analyzing the problem and addressing the possible remedies was developed at the early stages. It was determined that individual safety alternatives could be identified as the study progressed. These elements could address smaller aspects of the overall safety problem and could be combined to form recommendations for an integrated safety structure.

Equally important to defining the problem was identifying the population affected, the fishing industry, for this is the context in which safety is considered. This task was difficult because the industry is quite regional in nature and this information is normally neither captured nor maintained by any one state or Federal agency. Data combined from multiple sources for this study provided the best description of the fishing industry to date. It indicated there existed approximately 31,000 federally documented fishing industry vessels and about 80,000 smaller fishing industry vessels bearing state numbers (vessels of five registered net tons or more must be documented, while those less than five net tons may be registered with the state). In both cases the vessels are endorsed for the fisheries trade, but this does not guarantee it is a fishing vessel.

To estimate the number of individuals who commercially fish was even more difficult than estimating the number of vessels because data of this sort was totally lacking. General assumptions were made and there were assumed to be approximately 230,000 persons involved in the commercial fisheries. The breakdown of the commercial fishing industry by length of vessel was estimated as:

| LENGTH (L) | UNDOC. VESSELS | DOC. VESSELS | TOTAL POSITIONS |
|---|---|---|---|
| L < 50' | 80,000 | 23,400 | 191,000 |
| L ≥ 50' & < 79' | | 6,800 | 31,000 |
| L ≥ 79' | | 800 | 8,000 |
| TOTALS | 80,000 | 31,000 | 230,000 |

As well as looking at the numbers, it was important to examine the regional variation of the factors. The fishermen, their vessels and the fisheries they were involved in, as well as the economics and fishery management practices, varied widely across the country. One factor

shared nationwide was that the environment in which the fishermen operated was both ever-changing and at times, hostile.

Many shortcomings regarding casualty data were identified, but analysis of the available data illustrated the best picture of the industry yet portrayed. The NAE analyzed the data from different aspects, each shedding distinct light on the safety problem. This helped them to describe the safety problem in fundamentally simpler terms.

The commercial industry vessel safety record was examined. The general categories identified were the number of casualties, the number of vessel total losses, the vessel casualty related fatalities, and the vessel damage. The nature and regional distribution of the vessel casualties were examined as was the relationship of vessel casualty to vessel length, type, and usage. The causes of the vessel casualties were examined and broken down into four broad groups: human, vessel, environmental, and unknown causes. The purpose was to identify relationships between the variables and note significant trends.

Fatalities and personnel injuries were examined with respect to region, nature, and relationship to vessel length. Most noteworthy was the direct comparison of fatality rate with vessel length. This highlighted the conclusion from the NAE study that *the fatality rate increased dramatically with increasing vessel length and that fishermen are more likely to die on the job than are workers in most other U.S. industries*.

No single cause was found to be predominant for either the vessel or personnel casualties. What became evident was that the safety problem resembled a complex weave of factors including the vessel, its equipment, the fishermen, the environment, and other external factors. It was also clear that regardless of the length of the vessel, the weather conditions, or where they operated, fishermen were continually exposed to vessel and life-threatening situations.

The vessel is a complex system, serving as transportation, living quarters, workplace, and product storehouse. Vessel casualty data were examined to assess the inadequacies in, or failures of, components of the systems. It was found that one of the basic problems was that no one was held strictly accountable for vessel fitness prior to operations. The investigation revealed that material condition of the vessel and equipment was a direct cause for over 85 percent of the known vessel-related casualties. Human factors often played a key secondary role in these casualties (e.g., lack of maintenance or cleanliness).

With regard to the human element, quantitative data alone was not conclusive, nor did it provide sufficient insight into human factors. Human causes of accidents included improper procedures, inexperience, judgemental errors, inattention, navigation error, stress, and fatigue. In general, fishermen agreed to these findings. It was found that even if these were not the direct causes, human factors were contributing elements in accidents and complicated implementation of safety improvement alternatives.

Upon examining the issues regarding the use of survival gear, it was found that fatalities resulted when equipment was not available, was not used at all, was not used in time, was not used properly, or when the survival gear failed to perform as intended.

The external influences on safety included fisheries management practices, insurance, and environmental conditions. The nature and scope of fishery management practices and weather conditions as causative factors in casualties were difficult to quantify. Fishery management decisions at times created a highly competitive operating environment. Competition increased as returns decreased, as fishing season lengths decreased, and as more fishermen competed for fewer fish. This, coupled with the entrenched attitudes in the industry, such as "fishing is the last frontier" and "it's me against the sea" drove fishermen to take unnecessary risks to maintain their livelihood, i.e., getting underway in foul weather, loading excessively, staying out too long. Instead of the responsibility for safety, fishermen often accepted the extremely high risks as inherent in their occupation. Insurance did not reduce or eliminate losses, but only reduced the associated financial risk. Premiums took into account redistribution of losses, administrative overhead expenses, profit element, and competition in the insurance market. Weather was not implicated often in the casualty data because many times it was an ancillary cause.

Working to address the many factors identified during the study, the NAE considered a number of safety improvement alternatives which were aimed at areas where improvement efforts would have the greatest effect. The options followed the subject matter as broken down in the previous paragraphs and were carefully considered to strive for improvement in the near term, midterm and long term. There were 30 alternatives in all, resulting in a total of 18 recommendations. One of these recommendations addressed a tiered approach to a self-inspection program and specified some of the elements to be:

- a methodology through which owners and operators of uninspected fishing industry vessels would conduct a self-examination of their vessels using a prescribed checklist or other inspection guide;

- an audit process to validate/confirm self-inspection;

- provisions for accepting more thorough examinations in lieu of self-examination,

- provisions for imposing more stringent inspections or sanctions on a vessel-by-vessel basis; and

- provisions for advancing to more stringent inspection alternatives for some or all vessels if self-inspection proves unsatisfactory or ineffective in improving safety.

All the recommendations are provided in Appendix A, along with the Coast Guard's reply to each.

B. UNCLASSED FISH PROCESSING VESSEL STUDY

As mandated by Section 5 (b) of the Act, a study was conducted of fish processing vessels that are not surveyed and classed by an organization approved by the Secretary, utilizing Worcester Polytechnic Institute (WPI). The Commercial Fishing Industry Vessel Advisory Committee as well as representatives of persons operating fish processing vessels were consulted.

A fish processing vessel is defined in Title 46 U.S. Code, Section 2101(11b) as a vessel that commercially prepares fish or fish products other than by gutting, decapitating, gilling, skinning, shucking, icing, freezing or brine chilling. These operations were considered necessary to preserve the catch and would not, by themselves, constitute processing.

Due to their size and number of persons on board, fish processing vessels add another dimension to the risks inherent in working in the fishing industry. These vessels employ additional workers to monitor and operate the sophisticated equipment used to process the product on board, while the vessels are at sea, often in foul weather. The increased number of personnel and the complexity of operations not only raise the potential for the risk of injury, but also increase the severity of a vessel-related casualty.

Currently, uninspected fish processing vessels are subject to the requirements of Title 46 Code of Federal Regulations (CFR) Part 28 Subpart F. Processors that are either new or undergo a major conversion completed after July 27, 1990, are required to be classed and surveyed by the American Bureau of Shipping (ABS) or a similarly qualified organization. The WPI study examined the vessels that do not fit into this category (existing, unclassed) to determine what hull and machinery requirements should apply to them to ensure they are operated and maintained in a safe and seaworthy condition.

The first stage of this study was to review documents relevant to unclassed fish processing vessels. The purpose was to gain a historical perspective of the problems facing the industry and to gain an understanding of the current requirements for fish processing vessels. Documents reviewed included the Act and the legislative efforts that led up to its passage, casualty studies, fishing industry profiles, congressional reports, classification society rules, and insurance information pertaining to cost and availability.

Additional input was obtained from interviews with a cross section of individuals involved with the fish processing industry, including representatives from classification

societies, insurance companies, the Coast Guard, and fish processing vessel owners organizations. This was done to obtain an understanding of the factors affecting the decision making process that have an impact on the overall safety of the vessel or the individuals on board. These factors would include the practical limitations of the vessel as well as the economic issues such as profits and fisheries management.

The collected information, written and oral, was analyzed. Specific attention was given to identifying the factors affecting safety on these vessels and the possible benefits classification would bring. Possible solutions that were identified throughout the course of the information gathering process were also evaluated.

Lastly, a casualty study was performed. Forty-five casualties involving fish processors, both classed and unclassed, were identified and examined with a view towards determining whether or not classification would or could have prevented the casualty. Given the amount and quality of data, assumptions had to be made to break the stated cause of the casualty into elements suitable for comparison with the classification requirements. The classification process, initial survey and subsequent yearly surveys, were examined to evaluate the likelihood of the elements of the cause being avoided or eliminated.

The casualties were defined as being one of two types: vessel/equipment related or personnel related. The three main causes of the casualties were determined to be: human factors, vessel and equipment deficiencies, and adverse weather conditions.

The study concluded that classification would have a positive effect on safety. However, it would have its limitations. Classification would address the standards of construction and material, but it would not address human factors elements which were found to be an underlying cause of the majority of the casualties studied. The study further concluded that classification could be an effective part of an integrated program to address safety aboard fish processing vessels.

The report's conclusions and the Coast Guard's reply to each is provided in Appendix B.

## III. COAST GUARD RECOMMENDATIONS

### A. VESSEL INSPECTION PROGRAM FOR THE COMMERCIAL FISHING INDUSTRY

The following are recommendations regarding an inspection program that would apply to all commercial fishing industry vessels. This program is comprehensive and based on recommendations contained in the NAE and WPI studies. The inspection plan "levels the playing field" by grouping fishing industry vessels based on one criterion--vessel length. This inspection plan would be applicable to all new and existing United States flag vessels not inspected under Title 46 CFR that are commercial fishing, fish processing, or fish tender vessels. This includes vessels documented under the provisions of subchapter G of this chapter and vessels numbered by a State or the Coast Guard under the provisions of Title 33 CFR Subchapter S. A description of the plan and its basis will help illustrate how this is accomplished. The recommended inspection program is based on the vessel length. As defined in Title 46 CFR 28.40, this is the length listed on the vessel's Certificate of Documentation or Certificate of Number.

- For all vessels less than 50 feet in length, an annual self-examination would be required to show compliance with Title 46 CFR 28, the commercial fishing industry vessel safety regulations. A standardized check list would be provided to owners to complete and forward to the Coast Guard. An audit process would be administered by the Coast Guard for verification purposes. This part of the program would affect approximately 80,000 undocumented and 23,400 documented commercial fishing industry vessels.

- For all vessels greater than or equal to 50 feet but less than 79 feet in length, an annual third-party examination would be required to show compliance with Title 46 CFR 28. Third parties such as the American Bureau of Shipping (ABS), similarly qualified organizations, and other accepted organizations would conduct these examinations. An audit process would be administered by the Coast Guard for verification purposes. This would affect nearly 6,800 documented commercial fishing industry vessels.

- For all vessels greater than or equal to 79 feet in length, an annual Coast Guard inspection would be required. Current regulations in Title 46 CFR 28 would be applicable as well as additional requirements as deemed necessary by the Coast Guard. All new vessels would be required to be designed and constructed to class standards, while existing vessels would be required to meet a general Coast Guard standard to eliminate hazardous conditions. This would affect approximately 800 documented commercial fishing industry vessels.

- New fishing industry vessels 79 feet or greater in length would be required to obtain and maintain a load line. Existing vessels 79 feet or greater in length would be required to obtain and maintain a load line within a ten-year grace period.

BASIS FOR COAST GUARD RECOMMENDATIONS

As described in the introduction, the NAE recommended a tiered approach to implement a mandatory inspection program. The concept was to start with a program that would be the least onerous to the owners and operators. Casualty data would be collected and analyzed to monitor the improvement of safety within the industry. If insufficient progress was noted, more thorough examinations or more stringent requirements would be targeted for that portion of the industry where the less onerous requirements were not sufficient. This process would be repeated to achieve the desired increase in safety in the industry.

The Coast Guard's position is that the concept of developing a tiered set of requirements is appropriate, but that available casualty data suggests the "tiers" already exist in the fishing industry. The Coast Guard believes that more thorough examinations or more stringent requirements should be applied to vessels at the onset of the inspection program as warranted due to the existing risk to personnel and property. In general, this occurs with increasing vessel length since larger vessels tend to have more individuals on board, tend to have the additional mechanical processing capability, and tend to work greater distances from shore.

The inspection program proposed puts vessels of similar size on an equal basis, in effect, "leveling the playing field." The requirements for a vessel will be set regardless of the type of fishery the vessel is engaged in or the extent of processing that is done on board. This means that the owner/operator as well as the examiner/inspector will be able to discern the requirements applicable to the vessel solely by establishing its length. A corollary is that all fishing industry vessels of the same length will be subject to the same regulations.

Currently, the fishing vessel safety regulations in Title 46 CFR 28 are based upon build and conversion dates, number of individuals on board, and the vessel operations including the type of processing done on board. This creates complications when operators of a vessel change fisheries or include another type of on board processing. This flexibility is desirable, and economically necessary, through the life of the vessel and often through the year.

The difficulties associated with fish processing vessels are basically twofold. First, the definition of a fish

processing vessel is based on a limited list of processes which establishes the extent a vessel can process fish or fish products without being classed a fish processing vessel. Numerous interpretative gray areas have arisen from this definition. The other problem is that once classed as a fish processing vessel, the vessel is required to obtain a load line and to submit to biennial examination, both of which place a unique burden on the owners, distinct from other classes of fishing industry vessels.

Under the proposed system, the requirements applicable to the vessel would not change with processing operations as long as the vessel did not undergo a major conversion. The persons responsible for the vessel would be certain which regulations apply.

The concept of leveling the playing field is supported by the Commercial Fishing Industry Vessel Advisory Committee (CFIVAC). The basis for this support is concern for the individuals employed on a vessel. These persons should be afforded the appropriate level of protection based on the risk inherent in working aboard that vessel. The CFIVAC recommended the "number of persons on board" be the criteria to view the "field;" however, the Coast Guard feels it more appropriate to reference the vessel length. Length is an indicator of both number of persons on board and distance from shore the vessel tends to work, both are factors associated with increasing risk.

The link between vessel length and risk was highlighted in the NAE study. Using data from the study, the table below illustrates that the fatality rate increases dramatically with increasing vessel length. It also provides the basis of the selected break points used to structure the inspection program for the commercial fishing industry.

ESTIMATED COMMERCIAL FISHING FATALITY RATES

| VESSEL CATEGORY | ANNUAL FATALITY RATE PER 100,000 WORKERS |
|---|---|
| FISHING INDUSTRY AVERAGE | 47 |
| UNDOCUMENTED & DOC. with L < 50' | 30 |
| DOCUMENTED with L ≥ 50' & < 79' | 105 |
| DOCUMENTED with L ≥ 79' | 244 |

It shows that the fatality rate increased to over twice the fishing industry average for workers aboard documented vessels of 50 feet or more in length but less than 79 feet. This rate jumped further to more than five times the industry average for workers aboard documented vessels of 79 feet or more in length.

SELF EXAMINATION

The first part of the inspection plan addresses the largest portion of vessels in the fleet, those that are less than 50 feet in length. Over 93 percent of the commercial fishing industry vessels are in this category and they employ approximately 85 percent of the fishermen. As compared to the other classes of fishing vessels, the annual fatality rate for this class is relatively low, especially considering the total number of workers on the vessels.

This class would be required to perform self-examinations to show compliance with the commercial fishing industry vessel regulations in Title 46 CFR Part 28. This level of inspection concurs with the NAE study which was endorsed by the CFIVAC. A standardized check list would be provided to owners to complete, a copy of which would be forwarded to the Coast Guard.

Quality assurance is an essential part of this plan. Technical audits and records reviews will be instituted. On-site technical audits will be conducted through random dockside examinations by vessel inspectors from the local marine safety office (MSO). These will be used to validate the self-examination and verify the reported vessel and equipment condition. Records reviews will be performed at the local MSO's by the additional resources identified in Section VI of this report. These will include checking the completeness of the examination forms received to ensure the vessels complied with the appropriate safety requirements. It will be essential to identify the fishing industry fleet in the respective district's area of responsibility to verify complete participation.

Initially, the goal for the annual frequency of audits and reviews will be set at 25 percent of the vessel population. This close level of supervision is essential due to the newness of the regulations, their complexity, the evolution of policy, and the anticipated normal start up problems. This degree of oversight will assure the integrity of the self-examination program. In future years, as the degree of compliance with the regulations increases and the safety record of the industry improves, this level should diminish.

The next class of vessels, the portion of the fleet with a vessel length 50 feet or greater and less than 79 feet, would have an increased level of inspection. While the 6,800 vessels in this range make up only 6 percent of the commercial fishing industry fleet, they employ over 13 percent of the fishermen. They are also responsible for almost 30 percent of the annual fatalities in the fleet.

Accepted third parties would perform the annual examinations to ensure compliance with the applicable fishing vessel safety regulations in Title 46 CFR 28. Qualifications and descriptions of an accepted organization and a similarly

qualified organization are provided in the fishing vessel regulations. Surveyors in these organizations would be experienced with the industry, vessel construction, and maintenance, as well as the regulations. They would be able to assist the owners and operators in their understanding of the requirements and the need for compliance.

A review/audit process would be established for this class of fishing industry vessel as well. It would be administered by the Coast Guard at the District and MSO level and would be similar to that of the smaller fishing industry vessels. The Coast Guard would also oversee the performance and provide feedback to the third parties administering examinations.

The smallest fraction of the fleet, vessels of length equal to 79 feet or greater, would be subject to the highest level of inspection and would be performed annually by the Coast Guard. The estimated 800 vessels in this class make up less than one percent of the fleet and employ about three percent of the total workers. It is significant, though, to note that almost 20 percent of the annual fatalities occur on the vessels in this class.

The requirements for existing vessels 79 feet or greater in length would go beyond those already contained in Title 46 CFR 28. They may include requirements from Title 46 CFR 28 Subpart D, which is currently applicable only to new fishing industry vessels, as well as other requirements deemed necessary by the Coast Guard to eliminate hazardous conditions. New vessels in this class would be required to be designed and constructed to class standards (further discussion is contained in Section III B). This class represents the highest risk category since the vessels tend to carry the greatest number of individuals on board, tend to be the most mechanized with regard to processing product and tend to work the greatest distance from shore for longer periods of time.

The Omnibus Budget Reconciliation Act of 1990 (P.L. 101-964) required the Coast Guard to establish user fees for services provided under Subtitle II of Title 46 United States Code. Based upon fees established in the commercial vessel inspection Notice of Proposed Rulemaking and the services provided, the owner or operator would be subject to these additional costs. Similar fees are proposed for all vessels inspected by the Coast Guard. A more detailed discussion of costs to the industry is included in Section VII.

This inspection program is consistent with the NAE study recommendations. While the study envisioned starting the industry at the same level of examination, it made provisions to institute higher levels of examination and more stringent regulation when the review of casualty data so warranted. The NAE study stated that self-inspection would be all that

some operators needed to ensure their compliance, however, it also recognized there would be a smaller population of vessels that would require additional motivation. In time this process would create a tiered inspection program. The NAE also recognized the possibility that some vessels would not conform regardless of the level of inspection. For these "unfit" vessels, the study, as accepted by the CFIVAC, envisioned removal from service.

It is the Coast Guard's position that casualty data currently available support starting an inspection program in a staggered fashion. To start the industry at the same level for the purposes of collecting data would be inviting more casualties and fatalities. The higher level of attention is already warranted. Also recognized is the industry's general inability to regulate itself and the demonstrated lack of acceptance of the voluntary program that has been in existence for the last six years.

In addition to the inspection recommendations discussed above, classification and load line standards are being introduced. Classification would no longer be required for new fish processing vessels 79 feet or more in length. However, all new fishing industry vessels of this size would be required to be designed and constructed to class standards. In addition, they would be required to obtain and maintain a load line certificate. This design and construction standard is consistent with other large vessels inspected by the Coast Guard. Large new vessels are typically required to be designed and constructed to class standards but not required by regulation to obtain classification certificates.

Existing vessels 79 feet or greater in length would also be required to obtain a load line, and meet additional standards discussed in Section III B. The load line requirement ensures that each vessel meets minimum standards of hull construction, stability and watertight integrity, and the associated surveys ensure these standards are properly maintained. They would, however, be granted a ten-year period in which to meet the load line standard. This grace period is consistent with that granted certain existing fish tender vessels operating under the Aleutian Trade Act (P.L. 101-595). This allowance for existing vessels recognizes time in service as an indicator of their integrity and serviceability.

This program would remove the existing classification requirement for fish processing vessels 50 feet or more in length but less than 79 feet. All fishing industry vessels in this class would be held to the same standards, i.e., Title 46 CFR 28. While dropping classification, vessels would be inspected annually by third parties with audits and reviews conducted by the Coast Guard. Classification and the associated surveys would continue to be encouraged.

B. HULL AND MACHINERY REQUIREMENTS FOR EXISTING COMMERCIAL FISHING INDUSTRY VESSELS

Currently, existing fish processing vessels must be examined at least once every two years for compliance with the safety equipment requirements of Title 46 CFR 28 Subparts A, B and C. These examinations are conducted by the ABS, a "similarly qualified organization," or a surveyor of an "accepted organization." These subparts do not specify standards for hull or machinery. As a result of the study conducted by the Worcester Polytechnic Institute discussed previously, the Coast Guard recommends:

- additional requirements be implemented providing both hull and machinery standards for existing fish processing vessels whose length equals or exceeds 79 feet. These requirements would go beyond those already contained in Title 46 CFR 28 for existing vessels. They would include load lines and additional machinery requirements from Title 46 CFR 28 Subpart D, currently applicable only to new fishing industry vessels, as well as other machinery requirements deemed necessary by the Coast Guard. These requirements were previously discussed in Section III A.

As stated earlier, we recommend keeping the playing field level. This sentiment was echoed by the CFIV Advisory Committee. Therefore, the Coast Guard further recommends:

- all existing commercial fishing industry vessels greater than or equal to 79 feet in length be required to meet the additional hull and machinery standards.

The machinery standards would be general in nature and similar in scope and intent to those developed for existing mobile offshore drilling units and offshore supply vessels when they first came under inspection. These standards would seek to eliminate unsafe conditions without placing an unnecessary burden on the owners and operators. The standards would consider proven service and provide allowances for generally accepted good marine practice. The vessel being inspected would not be strictly subject to new vessel rules, regulations or standards for major equipment requirements unless compliance is necessary to remove especially hazardous conditions.

Contrary to the machinery standards, the hull standards already exist. As discussed in the recommendations for inspection, the Coast Guard recommends all fishing industry vessels 79 feet or greater in length obtain a load line. Load line regulations address stability, strength, and structure, as well as watertight integrity.

## BASIS FOR COAST GUARD RECOMMENDATIONS

Imposing design and construction standards on existing vessels is difficult at best and often impossible to accomplish. This proposal would provide flexibility and recognize proven service and generally accepted good marine practice, while at the same time achieve a higher level of safety.

The condition of a vessel would be ascertained by inspection and upgraded, if necessary, to ensure the design, construction and arrangement of the hull, machinery and electrical systems do not create manifestly unsafe conditions. The inspection would include checking for excessive deterioration of the hull structure or equipment foundations and general safety issues such as fire and electrical shock hazards.

## IV. LEGISLATIVE ACTIONS TO IMPLEMENT THE PLAN

The Coast Guard will seek legislative authority to establish and implement an inspection program for commercial fishing industry vessels. A review/audit program would be included under this authority as it would be an integral part of the inspection program. Additional legislative authority, outlined below, is necessary to implement an inspection program. A separate legislative proposal will be submitted in the near future to identify and address these changes.

The necessary legislative changes are:

- Provide for annual inspection of all commercial fishing industry vessels as follows:

| | |
|---|---|
| Length < 50' | Self-Inspection with Audit |
| Length ≥ 50' & < 79' | 3rd Party Inspection with Audit |
| Length ≥ 79' | CG Inspection & Load Line |

- Require load lines on all new commercial fishing industry vessels which have a length of 79 feet or more, and

- Require load lines on all existing commercial fishing industry vessels which have a length greater than or equal to 79 feet within ten years, and

- Remove from Title 46 USC §4503(a)(1) the requirement for classification for new fish processing vessels and require that all new fishing industry vessels greater than or equal to 79 feet be designed and built to class standards, and

- Provide authority for the Coast Guard to impose additional hull and machinery standards on all existing fishing industry vessels greater than or equal to 79 feet.

Should the necessary legislation be enacted by Congress, the Coast Guard will propose rules and solicit public comment to implement the legislation.

The Coast Guard will also request, through the annual appropriations process, the additional resources necessary to implement the plan, as described in Section VI.

## V. INSPECTION PLAN ALTERNATIVES

The alternatives which follow are but three of the multitude of options available. These bracket the primary inspection plan with respect to the level of Coast Guard involvement in the effort to improve safety in this industry. The first alternative calls for all documented and undocumented commercial fishing industry vessels to undergo self-examination to show compliance with the requirements of Title 46 CFR Part 28. The second and third alternatives address third-party examination and Coast Guard inspection of the entire fishing industry fleet to ensure compliance with the regulations.

### A. SELF-EXAMINATION ALTERNATIVE

A self-examination program for all vessels was recommended by the NAE study and subsequently endorsed by the CFIVAC. It would be conducted annually utilizing a simplified check list or other guide to determine if a vessel is fit for service in accordance with the current regulations in Title 46 CFR 28. This plan would provide for an audit process, such as dockside or underway boardings or possibly a reporting regime, through which verification and compliance could be monitored. The plan would allow for more thorough examinations for certain vessels or the entire industry if the safety record showed insufficient improvement. On a case-by-case basis, the plan would allow for more stringent inspections or sanctions by the Coast Guard.

This plan has the least initial impact on the commercial fishing industry. Through self-examination, the owner or operator would use a type of simplified check list to assist in the survey of the vessel and its equipment. The check list would remain on board and a copy would be forwarded to the Coast Guard. The only added expense to the operators would be the time necessary to complete the examination. It could, however, be carried out while the vessel is operating, thus eliminating any lost time.

This option places the responsibility of meeting the regulatory requirements solely with the owners or operators. Some of these owners/operators have failed over the last six years to accept the voluntary standards for commercial fishing vessels established by the Coast Guard, such as those published in the NVIC 5-86. While self-examination is considered a viable option for smaller fishing industry vessels, larger vessels are more complex, subject to greater requirements, and must be scrutinized more closely.

The simplified nature of the check list would provide a good tool to ensure the vessel is properly equipped, but it would not address areas that require vessel inspection experience such as hull maintenance, watertight integrity or equipment serviceability.

Another concern is that this type of examination could lead to a "check list" mentality in which only those items on the list would be examined and no others. This type of examination would tend to overlook those items that would be marginal or unsafe to an unbiased examiner, but may be acceptable to the owner or operator.

Implementing this option would appear to have the least impact on Coast Guard resources, since we would be overseeing the program and providing administrative support. However, the propensity of the owner or operator to overlook or underplay items could lead the Coast Guard to strongly consider an aggressive oversight program to validate the examinations.

Under this option, data would be collected to measure the effectiveness of the self-examination program towards improving the safety record of the commercial fishing industry. The provisions for more stringent examinations would be implemented if the data warranted it. The data analysis would be necessary to support any effort to increase the standards applied to any portion of the industry. This puts a heavy emphasis on the quality and quantity of casualty data available, which has been lacking on both counts in the past. The NAE, in their study, recognized this and recommended the Coast Guard upgrade the safety data to provide the information needed to administer an integrated safety system. In part, it was recommended that*:

> The Coast Guard expand and integrate data acquisition and utilization capabilities of these data bases in order to gather, standardize, evaluate, and disseminate fishing vessel safety data. (The NAE was referring to the main casualty, search and rescue, and summary enforcement event report data bases.)

Only with improvement in this area, would the information be available to make the necessary assessments regarding the effectiveness of the self-examination program.

With this option and the other two that follow, the potential would exist for vessels of similar size to be subjected to different inspection standards. It is possible that, based on casualty data available, a segment of the industry could be identified as requiring more stringent examinations through increased regulatory requirements. This could cause inequity within broader segments of the fishing industry.

* For the complete recommendation and the Coast Guard reply, see recommendation 4 in Appendix (A).

Regarding this and the following two alternatives, standards for hull and machinery are not established for existing unclassed fish processing vessels. This would be contrary to the conclusions of the WPI study, and would give the existing processing vessels an economic advantage over the new vessels which currently are required to be designed, constructed, and surveyed in accordance with classification standards. It could also be said that due to the lack of additional standards, the safety of the individuals on board existing vessels would be at increased risk.

This alternative alone does not resolve the definition-based problems associated with fish processing vessels. Since the fisheries are a dynamic industry, vessels are constantly evolving and should not be encumbered by regulations linked to processing operations conducted onboard. The problem described not only leads to confusion for the fishing vessel owner/operator, but also for the Coast Guard, in enforcing regulations.

A side effect of having various standards for vessels depending upon the fisheries they are involved in (thus possibly changing their definition) is the creation of immobility within the industry. Given the current state of economics and fishery management practices, it has been necessary for fishermen to work in different fisheries for part of the year or to perform different "processing" functions to maintain an income. If this change of employment places the vessel in a higher standards bracket (fish processing vessel) and the vessel is unable to meet the standards, it would be prohibited from engaging in this fishery.

## B. THIRD-PARTY EXAMINATION ALTERNATIVE

This alternative is a step up from self-examination in that an unbiased third-party would perform the examination. It would be accomplished by the American Bureau of Shipping (ABS), a similarly qualified organization, or a surveyor of an accepted organization to the requirements of Title 46 CFR 28. They would be tasked with performing the annual examinations, maintaining records, and submitting reports to the Coast Guard. These examinations would be conducted dockside on a scheduled basis.

This alternative would have financial impact on the commercial fishing industry. Fees, as set by the third parties, would be paid by all owners or operators regardless of vessel length. This alternative imposes costs to portions of the industry not affected in the recommended program or the self-examination alternative. Further discussion of the cost to industry is contained in Section VII.

An initial delay in implementation would be expected as third parties hire and train additional personnel necessary to perform and document annual examinations for more than 111,000 commercial fishing industry vessels. As with Coast Guard inspection, there may be time lost for follow-up examinations for vessels that do not meet the appropriate requirements at the initial visit.

As mentioned in the discussion of the self-examination alternative, the potential would exist for vessels of similar size to be subjected to different inspection standards. It is possible that, based on casualty data available, a segment of the industry could be identified as requiring more stringent examinations through increased regulatory requirements. This could cause inequity within broader segments of the fishing industry.

This plan also does not eliminate the problems encountered with the definition of fish processing vessel as discussed in Alternative A. The disincentive of varying regulations related to the processes undertaken on board the vessel would remain, even for similar-sized vessels. As mentioned, this would hinder the mobility of the vessels to participate in different fisheries or to perform different functions throughout the year. Given the current economic situation and the trend of fishery management decisions, this mobility is more necessary than desirable.

Considerable resources have been expended by the Coast Guard over the last 20 years in cooperating with the industry to improve the poor safety record. Inserting third-party organizations in the inspection process, across the board, would serve to distance the Coast Guard from the fishing industry and put this relationship at risk.

## C. COAST GUARD INSPECTION ALTERNATIVE

Another alternative is to go to the opposite end of the spectrum from self-examination and mandate Coast Guard inspection to Title 46 CFR 28 for the entire commercial fishing industry fleet. This goes beyond the recommendations of the NAE study that were endorsed by the CFIVAC. Of the alternatives discussed, this would be the most onerous on the fishing industry and the most resource intensive to the Coast Guard.

The increased burden to the industry, as compared to the self-examination option, would be experienced through the lost time for scheduling and conducting the inspections and the additional expense incurred as a result of Coast Guard user fees. Besides the problems associated with gearing up to handle a tremendous increase of vessel inspections, delays

in the completion of the inspection could also be encountered due to follow up visits which may be required when the condition of the vessel warrants.

Currently the Coast Guard inspects approximately 12,000 commercial vessels, ranging from small passenger vessels to large tank vessels. Selecting this option would require considerable additional Coast Guard resources since it would increase the number of inspected vessels tenfold to approximately 123,000. Not only would the number of inspectors have to increase dramatically, but the overhead costs associated with inspecting these vessels would be significant.

Considering solely the Coast Guard inspection alternative does not eliminate the problems encountered with the definition of fish processing vessel as previously described. The disincentive of varying regulations related to the processes undertaken on board the vessel would remain, even for similar sized vessels. As mentioned, this would hinder the mobility of the vessels to participate in different fisheries or to perform different functions through the year. Given the current economic situation and the trend of fishery management decisions, this mobility is more necessary than desirable.

Since inspections would be performed by the Coast Guard, the fishing industry would benefit directly from the Coast Guard expertise in the safety arena. It would also ensure a higher level of compliance with the regulations.

## VI. ESTIMATES OF COAST GUARD RESOURCE NEEDS TO IMPLEMENT THE RECOMMENDED INSPECTION PLAN

The recommended inspection program for commercial fishing industry vessels includes the following:

- Coast Guard review/audit of self-examinations of vessels less than 50 feet in length,
- Coast Guard review/audit of third-party examinations of vessels from 50 to 79 feet in length, and
- Coast Guard inspection of commercial fishing industry vessels 79 feet or more in length.

In order to implement an inspection and records review program for commercial fishing industry vessels, the Coast Guard estimates a cost of approximately $1,387,000 and requires 27 additional billets or positions. Explanations of how these costs were calculated are included below. Estimates were made of the expected changes in workload in the local Marine Safety Office inspection departments and in the supporting staff.

In fiscal year 1992, 45 commercial fishing vessel safety examiner billets were funded on a recurring basis to implement a voluntary dockside commercial fishing vessel safety examination program. These billets would be reinvested to conduct the on-site technical audits of the vessels subject to third-party and self-examinations under this mandatory inspection program. They would not be available for the Coast Guard inspections required of vessels 79 feet or more in length nor would they be available to conduct records reviews of self-examination and third-party examinations. While the total number of Coast Guard personnel required to implement this plan is 72, 45 are already funded.

### A. ASSUMPTIONS

1. Coast Guard inspectors are available 1,760 hours per year or, 220 days per year.

2. The estimated average annual cost to the Federal Government for each Coast Guard inspector is $50,500.

3. The number of inspections for all existing inspection programs will remain constant.

4. The inspection and drydock examination time for each fishing vessel 79 feet or more in length had to be estimated. The scope and level of effort required to perform the inspection and drydock of a small passenger vessel with an ocean route, limited to carrying 12 passengers, best approximates that assumed for these fishing vessels. Data from the Marine Safety Information System (MSIS) shows the average time to perform the

inspection for certification to be 9.5 hours per vessel. The average time required to perform the drydock examination is 10 hours per vessel. This time includes travel to and from the inspection site, actual inspection time and administration time (e.g., computer entry, inspection package review, resolving discrepancies, Certificate of Inspection (COI) generation and mailing). Plan review is a one-time process for newly constructed or inspected vessels that is conducted by the local Marine Safety Office or the Marine Safety Center. The average plan review time for a vessel of this size and nature is 19.8 hours.

5. Each year the Coast Guard anticipates reviewing records of 25 percent of all annual third-party and self-examinations to ensure compliance. It is estimated each records review would take approximately one hour. This would include reviewing the examination, making necessary computer entries, filing and preparing any necessary correspondence. On-site technical audits would consist of abbreviated on-site examinations and are estimated to take 2.75 hours.

B. FISHING VESSEL POPULATION 111,000 Vessels

A comparison of National Marine Fisheries Service (NMFS) data and Coast Guard MSIS vessel documentation data indicates a total population of federally documented commercial fishing vessels to be approximately 31,000 (1987 estimate). The remainder are registered by individual states. This is the basis for the number of vessels currently in service.

Fish processing vessels of more than 5,000 gross tons and fish tender vessels of more than 500 gross tons are presently subject to formal inspection (Title 46 USC §3301). Only one fish processing vessel, a converted container ship, has been identified by the Coast Guard as subject to inspection. For simplicity and clarity of calculations, this one vessel was not deducted from the total.

Of the 31,000 documented vessels, it is estimated that approximately 800 vessels (2.6%) are 79 feet or more in length. These would require inspection and the issuance of a COI.

Subtracting these 800 vessels from the total population leaves 110,200 vessels. Of the vessels ranging from 50 to 79 feet in length, 6,800 would require third-party examination. The remaining 103,400 vessels are less than 50 feet in length and would be self-examined.

C. ANNUAL COI INSPECTIONS AND RECORDS REVIEWS

23 Inspectors @ $1,161,500

Each annual inspection takes approximately 9.5 hours. Each drydock takes approximately 10 hours. The drydock time has been doubled since two are required every five years and divided by five to spread it out in annual numbers (10 x 2 / 5). Annual records reviews, which are described in Section III A of this report, are identical from year to year. The number of vessels assumed is the base figure with one year of 3 percent annual growth added. This provides one year to reach stabilization.

For vessels 79 feet or more in length:
((800 + 24) vessels) x
(9.5 hours per inspection + 4 hours per year for drydock) +
(8 hours per day)
= 1,390.5 days.

(1,390.5 days) + (220 days per Inspector per year)
= 6.32 Inspectors.

For vessels less than 79 feet in length:
((110,200 + 3,306) vessels) x (25% annual records reviews) x
(1 hour per review) + (8 hours per day)
= 3,572.06 days to conduct reviews.

(3,547.06 days) + (220 days per inspector per year)
= 16.12 Inspectors.

(6.32 + 16.12) = 22.44 Inspectors - Round to 23 Inspectors
23 Inspectors x $50,500
= $1,161,500 per annum.

D. ANNUAL GROWTH

1 Inspector @ $50,500

The resources necessary to accommodate newly constructed vessels must be considered with the resource requirements for existing vessels (111,000). Based on NMFS data over the period 1987 to 1988, the most recent information available, the number of federally documented vessels engaged in commercial fishing increased an estimated 2,700, or 8.7 percent. Considering the current economic realities and accounting for vessels leaving or being removed from service, a lower annual net growth of 3 percent was used to compute the number of inspectors in this section. At this rate, the number of new vessels 79 feet or more in length constructed annually would be 24. There would be 930 new documented vessels (0.03 x 31,000), 906 of which would be less than 79 feet in length. In regards to the new undocumented vessels, a 3 percent increase would translate into an annual net increase of 2,400 vessels (0.03 x 80,000). New undocumented

vessels (2400) plus new documented vessels under 79 feet in length (906) combine for a total net annual growth of 3,306 vessels.

(800 x 3%) = 24 vessels, 79 feet or more in length.

(24 vessels) + (8 hours per day) x
(9.5 hours per inspection + 19.8 hours per plan review)
= 87.9 days.

(87.9 days) + (220 days per inspector)
= 0.40 inspectors.

(3,306 vessels less than 79 feet in length) x
(25% annual records reviews) x (1 hour per review) + (8 hours per day)
= 103.3 days to conduct reviews.

(103.3 days) + (220 days per inspector)
= 0.47 inspectors.

(0.40 + .47) = .87 inspectors - Round up to 1 inspector
1 inspector x $50,500
= $50,500 per annum.

E. ANNUAL ON-SITE TECHNICAL AUDITS

45 Inspectors @ $2,272,500

In FY 92, the Coast Guard was funded for 45 billets to conduct a voluntary dockside commercial fishing vessel examination program. If this inspection program is adopted, these 45 billets will be reinvested to conduct the on-site technical audits described in Section III A of this report. Through these audits, the Coast Guard will validate the third-party and self-examination programs for vessels under 79 feet in length. On-site technical audits will be conducted annually on 25 percent on the commercial fishing vessel fleet under 79 feet in length.

(2.75 hours per on-site technical audit) x
(113,506 vessels) x (25% annual technical audits)
= 78,035.4 total hours per year

(78,035.4 hours for annual on-site technical audits) +
(1,760 hours available per year per inspector)
= 44.34 inspectors - Round up to 45 inspectors

45 inspectors x $50,500
=$2,272,500 per annum.

F. SUMMARY

Presently there are 266 authorized billets at the 43 Marine Safety Offices and three Marine Inspection Offices conducting inspections of vessels required by Title 46 USC §3301. It is estimated that the addition of the above workload requirements would have the following effects;

- In order to conduct all required COI inspections, drydock examinations, and records reviews, it would require 23 additional inspectors exclusively dedicated to the commercial fishing industry vessel inspection program. An additional inspector would be required to account for annual growth in the industry in the year following implementation. This brings the total to 24 inspectors at a recurring annual cost of $1,212,000.

- Added to this recurring cost would be three program administrators at Coast Guard Headquarters at an annual recurring cost of $175,000. They will augment existing staff to perform the duties and responsibilities as program manager for fishing vessel safety. This would include developing policy and guidance for the units performing the audits, reviews, and inspections of over 111,000 commercial fishing industry vessels. This would bring the total recurring cost to 27 billets and $1,387,000.

As stated in the beginning of this section, 45 billets were funded in fiscal year 1992 to implement a voluntary dockside safety examination program. These inspectors would be reinvested under this program to conduct on-site technical audits of vessels less than 79 feet in length which would require third-party or self-examination.

It is expected that the resources required to meet the initial implementation workload at the MSOs would be higher than that previously identified in this section. Estimates showed that 33 inspectors would be required to perform the initial inspections and examinations. Existing data indicate it takes twice as much time to complete the initial inspection for certification than it does for the recurring annual inspection. A portion of the 45 billets identified in the previous paragraph would be redirected to meet these requirements. Over this period of time, a reduced level of on-site technical audits would result. The combined resources identified in this section, along with the 45 billets funded in fiscal year 1992, are necessary to implement the mandatory inspection program recommended in this report.

## VII. COST OF INSPECTION TO THE COMMERCIAL FISHING INDUSTRY

The cost incurred by the commercial fishing industry for the required inspection plan will vary, depending on the length of the vessel. There are several assumptions made, including:

1. There is no lost opportunity cost. That is, the examination is assumed not to interfere with the vessel's normal participation in any fishery.

2. There is no additional payroll cost. This means that no additional personnel are required to complete the examinations.

3. The examinations result in no vessel downtime beyond that which the vessel would have normally incurred.

4. There is administrative time associated with the completion and submission of necessary paperwork for the self-examination. Except for the self-examination category, this time is rolled into the time estimated to complete the examination. Due to their unfamiliarity with this type of tasking, fishermen are allotted two hours to meet the requirements.

5. The estimated examination completion time is the same regardless of whether the Coast Guard or a third-party performs the task. The examination of a commercial fishing industry vessel no more than 50 feet in length will take 2.5 hours. The examination of a commercial fishing industry vessel at least 50 feet but not more than 79 feet in length will take 5 hours. The examination of a commercial fishing industry vessel at least 79 feet in length will take 9.5 hours.

6. For comparison purposes, the approximate average hourly rate for a third-party examination is $95 and for a Coast Guard examination is $87. The estimated hourly rate for the fishermen to complete the administrative tasks is $20.

7. The costs shown do not include the cost to upgrade existing equipment or add additional equipment. It is the cost to show compliance only.

8. Optional costs are not considered. These could include costs associated with the use of third parties to perform the self-examination or the associated administrative tasks.

Self-examination will result in a nominal charge to fishermen corresponding to the cost of his/her time to fulfill the administrative requirements of reporting to the Coast Guard. The examination itself will be completed at a time when it does not interfere with the vessel's normal operation. Operators perform the examination at the time of their choosing and submit a simple report to the Coast Guard.

Based upon the number of fishing vessels in each category and the assumed rates given above, the approximated yearly costs of the inspection program to industry are as follows.

ANNUAL COST IN DOLLARS

| LENGTH (L) | REC. PLAN | ALT A | ALT B | ALT C |
|---|---|---|---|---|
| L < 50' | 4.1M | 4.1M | 24.6M | 22.5M |
| L ≥ 50' & < 79' | 3.2M | 0.3M | 3.2M | 2.8M |
| L ≥ 79' | 0.7M | 0.1M | 0.8M | 0.7M |
| TOTALS | 8.0M | 4.5M | 28.6M | 26.0M |

The possibility does exist that the owners and operators may lack the expertise to conduct the self-examination or to meet the reporting requirements. Consideration of the cost incurred to employ a third-party for this purpose is beyond the scope of this report.

## VIII. COST/BENEFIT OF THE COAST GUARD PLAN FOR THE INSPECTION OF COMMERCIAL FISHING INDUSTRY VESSELS

### A. COSTS

The estimated monetary costs of the proposed inspection plan for the commercial fishing industry is eight million dollars annually. This cost breaks down by vessel category as follows.

Vessels less than 50 ft. (self-inspection) = $4.1m

Vessels equal to or greater than 50 ft. but less than 79 ft. (third-party examination) = $3.2m

Vessels equal to or greater than 79 ft. (CG inspection) = $.7m

### B. BENEFITS

During fiscal year 1989, the Coast Guard responded to more than 4,100 search and rescue cases involving commercial fishing industry vessels. These cases resulted in the saving of 588 lives and over $73 million in property. Coast Guard search and rescue (SAR) data for FY 89 indicates that 8 percent of the total work load and 15 percent of the total sortie time was spent responding to commercial fishing vessel cases. These figures reflect the fact that fishing vessel SAR cases tend to be more serious in nature, require more resources, and require nearly twice the time to resolve than any other type. For these reasons, commercial fishing vessel SAR cases represent a significant portion of the operating cost of the Coast Guard's SAR program.

The Coast Guard believes that, by requiring a program of self-examination, third-party examination, and Coast Guard inspection for all commercial fishing industry vessels, increase compliance with mandated safety standards can be achieved. This increased compliance will result in fewer vessel and personnel losses and a reduced SAR load for the Coast Guard. It is difficult to precisely quantify the impact of the inspection plan and predict the number of casualties which might be reduced. However, even a 10 percent reduction in property losses would result in savings to the industry of more than six million dollars and six lives.

Will have A great impact

**Coast Guard Comments on**

**National Academy of Engineering**

**Recommendations for Improving Fishing Vessel Safety**

The following is a list of the recommendations from the National Academy of Engineering study. There are a total of 18, but some have multiple parts which are listed separately. In some cases, we address each part of the recommendation, while in others, we only address the recommendation as a whole.

**RECOMMENDATION 1**

*Establish Federal Leadership. The Department of Transportation, acting through the Coast Guard, should lead a coordinated national effort to improve safety within the commercial fishing industry. The National Oceanic and Atmospheric Administration (NOAA), Occupational Safety and Health Administration (OSHA), international and national fisheries commissions, states, and the fishing and insurance industries, marine educators, and other interested or affected parties should, within their areas of responsibility or service, cooperate fully with the Coast Guard in establishing the national, regional and local leadership and resources necessary to improve safety in the fishing industry.*

**REPLY**

Concur. A nationally coordinated effort among all interested parties is necessary to heighten the level of concern for safety in the commercial fishing industry, as the NAE recommends. A federal agency is seen as the most effective organization to oversee this effort so that local competitive concerns do not overshadow safety concerns. The Coast Guard is recognized nationally and internationally for its expertise and proactive efforts to promote maritime safety and is the best choice for a Federal agency to promote and coordinate safety in the commercial fishing industry.

The Coast Guard began to carry out just such a role for commercial fishing industry vessels with establishment of the Fishing Vessel Safety Task Force which in turn led to the voluntary safety program formalized in 1984. In 1985, Navigation and Vessel Inspection Circulars (NVICs) 5-85, 6-85, 7-85, 8-85, and 9-85 were published. These were later revised based upon comments from the industry and combined to form NVIC 5-86, "Voluntary Standards for U.S. Uninspected Commercial Fishing Vessels." Commandant Instruction (COMDTINST) 16711.10, Commercial Fishing Vessel Safety Project, was published in November 1987. *Implementation of the Commercial Fishing Industry*

Vessel Safety Act of 1988 only places more emphasis on the Coast Guard's leadership role in commercial fishing vessel safety.

Recent efforts include publishing COMDTINST 16711.13, addressing the implementation of the commercial fishing industry vessel regulations; NVIC 12-91, addressing termination of unsafe operations aboard commercial fishing industry vessels; and NVIC 13-91 which addresses fishing industry vessel third-party examinations and procedures for designation of "accepted organizations" and "similarly qualified organizations." A pamphlet has been developed for general distribution to the commercial fishing industry and the program administrators. It is designed to make the application of the regulations a less painful ordeal.

The Coast Guard is currently working with other Federal agencies, national organizations and councils, educators, safety advocates, etc., in its efforts to improve safety in the commercial fishing industry. As implementation progresses, the Coast Guard will continue to expand its influence and raise the level of concern for safety in the commercial fishing industry. Future resources will be directed at coordinated work with the fishing industry at local levels.

**RECOMMENDATION 2**

*Implement an Integrated Safety Strategy by Stages. The Coast Guard should implement a comprehensive safety program which addresses, in stages, the full range of safety problems. Initial program elements should impose the least onerous burden on the fishing industry--insofar as possible--maximizing use of relatively low cost, least intrusive measures that can be implemented quickly using existing resources. The effectiveness of the measures taken should be evaluated as data is developed. If unsatisfactory or ineffective for some or all categories and sizes of vessels, more stringent measures should be considered and introduced in stages where needed until desired safety performance objectives are achieved.*

**REPLY**

**Partially Concur.** The concept of a stepped program has merit from both the industry's and the Coast Guard's standpoint. A stepped program would allow industry to become accustomed to safety regulations at a more comfortable rate. This would also ease the economic burden to the industry. With a stepped program, the Coast Guard would be able to fully implement programs developed as a result of the Commercial Fishing Industry Vessel Safety Act of 1988 and realign resources.

**Coast Guard Comments on**

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**Recommendations for Improving Fishing Vessel Safety**

This study recommends that the current regulations, with mandatory self-inspection, should be given a chance to work followed by an evaluation of the safety improvements. The Coast Guard's position is that more needs to be done now.

A stepped program is the standard approach used by the Coast Guard. This recognizes that for a given type of vessel, there are different levels of risk. These risk levels can be addressed by raising standards as the level of risk increases.

The difference in this case is the starting position. For inspected vessels the status quo consists of detailed regulatory requirements that increase in scope based upon the size and type of vessel and the number and type of persons on board. The starting position for commercial fishing industry vessels, self-inspection, is by comparison at an elementary level.

However, each change made in a major safety program, such as fishing vessel safety, requires years. Delays such as this permit continuation of the unacceptably high casualty rate. Estimates of the effectiveness of regulations implemented under the Commercial Fishing Industry Vessel Safety Act of 1988 are that the casualty rate will decrease, at best, only 30 percent. While this is a substantial improvement, the casualty rate for this industry should approach that of the remainder of the commercial marine industry.

An industry-wide stepped approach to improving safety, starting with mandatory self-inspection, would require accepting a high casualty rate in the commercial fishing industry. As safety awareness in the commercial fishing industry increases and more attention is drawn to the dismal safety record in the industry, this seems less likely. The commercial fishing industry has already shown that without regulations there will be little change in safety. Additional Coast Guard authority is needed to bring the casualty rate in the commercial fishing industry in line with the remainder of the maritime industry.

**RECOMMENDATION 3**

*A. Upgrade Safety Administration. The Coast Guard should upgrade the capability to administer an integrated safety program.*

**REPLY**

Concur. The Coast Guard previously submitted a proposal requesting additional billets for dockside fishing vessel examiners. The proposal was accepted and 45 billets were

appropriated for this purpose for fiscal yea: 1992. These examiners will form the backbone of the Coast Guard's enforcement program. This will significantly enhance the ability of the Coast Guard to interface on a nationwide basis.

**RECOMMENDATION**

*B. The Coast Guard should identify, catalog, and establish communication with pertinent agencies, associations, groups, and individuals, both in Government and industry, at Federal, regional, state, and local levels in order to determine their respective current capabilities and future potential to function as part of a nationwide safety infrastructure network to assist in the development and conduct of the program;*

**REPLY**

Concur. Communication with others involved in safety in the commercial fishing industry began with implementation of the Fishing Vessel Safety Task Force and is continuing at an increasing pace with the Fishing Vessel Safety Section. This is a newly-created section in the Division of Merchant Vessel Inspection and Documentation at Coast Guard Headquarters. As additional personnel are put in place and the implementation of the Act continues, the Coast Guard will be able to refine its working relationships with others in the commercial fishing industry.

**RECOMMENDATION**

*C. The Coast Guard should evaluate its maritime law enforcement program, including boardings and other compliance activities, to determine whether, to what extent, and how most effectively this program might be employed in implementing a fishing industry vessel safety program to motivate as much as to demand compliance with safety regulations;*

**REPLY**

Concur. Inasmuch as maritime law enforcement is a broad responsibility which crosses several program lines, differing facets of the Coast Guard have been involved in development of the implementation plan. This plan involves Coast Guard boarding officers, small boat station personnel, reserve personnel, auxiliary personnel, and marine safety personnel, as well as third-parties. The Coast Guard's safety improvement strategies include education, motivation, and enforcement activities.

**Coast Guard Comments on**

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**Recommendations for Improving Fishing Vessel Safety**

**RECOMMENDATION**

*D. The Coast Guard should consider, as part of initial goal setting, each proposed safety improvement alternative in terms of required manpower, costs (including to whom), anticipated effectiveness, and implementation timing.*

**REPLY**

Concur. Resource requirements, anticipated effectiveness, and implementation timing are included in the standard decision process used by the Coast Guard. See Sections VI and VII.

**RECOMMENDATION 4**

*A. Upgrade Safety Data. The Coast Guard should upgrade safety data to provide the information needed to administer an integrated safety system.*

*The Coast Guard should assess fishing industry vessel safety data requirements, including data on fishing fleets and fishermen;*

*The Coast Guard should consolidate, correlate, or otherwise provide compatibility between existing Coast Guard data bases and information systems, including the agency's main casualty (CASMAIN), search and rescue (SAR), and Summary Enforcement Event Report (SEER) data bases on the Marine Safety Information System (MSIS); and*

*The Coast Guard should expand and integrate data acquisition and utilization capabilities of these data bases in order to gather, standardize, evaluate, and disseminate fishing vessel safety data. The Coast Guard's Marine Accident Report Form, CG-2692, should be modified to include information on the fishery and activity within the fishery in which a commercial fishing industry vessel was engaged.*

**REPLY**

Concur. Based upon acknowledged shortcomings, the Office of Marine Safety, Security and Environmental Protection initiated a strategy to improve marine safety data in 1988. Revised R&D strategy, Marine Investigation Module development in the Marine Safety Information System (MSIS), reorganization of the Marine Investigation Division at Coast Guard Headquarters, and development of the Marine Safety Network (MSN) are the most significant among long term initiatives impacting improvement of fishing vessel safety data. These initiatives focused on total marine safety data in which fishing vessels were considered explicitly.

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## Recommendations for Improving Fishing Vessel Safety

The Coast Guard Research and Development (R&D) project on Operations Research/Analysis master plan specifically addresses fishing vessel safety data, but falls short of satisfying the broad recommendations of this study. The R&D plan calls for improvement of fishing vessel safety data through requirements analyses, evaluation of external sources of fishing vessel data (both in Coast Guard programs other than marine safety and outside organizations), and developing concepts and methods for use of fishing vessel data. Implementation of R&D results has not yet begun.

The Marine Safety Network (MSN) project is a long-term information system development effort. Its purpose is to provide a single data base with common terminology, definitions, and data compatibility across all significant Coast Guard data bases. Once developed, it will enable personnel to access data originating from various sources. One of the main goals of the MSN is to facilitate usage of information in the system by both field and program management personnel.

The Commercial Fishing Industry Supplemental Boarding Report, form CG-4100F, has been developed for use by individuals examining commercial fishing industry vessels. The form will give the boarding officers a tool to conduct a meaningful and correct boarding, help standardize the information gathered from Coast Guard sources and significantly increase the data now available in MSIS.

Modification of the Coast Guard Marine Casualty Report Form, CG-2692, is possible. However, training investigations personnel to gather the necessary information for fishing vessel casualties is more appropriate. Information concerning the fishery in which the vessel is engaged and the vessel activity may be captured on MSIS and is additionally included in the new Marine Investigation Module (MIN).

### RECOMMENDATION

*B. The Coast Guard should coordinate with OSHA, NOAA, state offices maintaining vital statistics and casualty data, and the commercial fishing and marine insurance industries, within their functional areas of responsibilities, to further develop and integrate data on commercial fishing industry vessel casualties, fatalities and injuries.*

### REPLY

Do not concur. Coordination with other Federal and state offices collecting fishing vessel statistics and casualty data is

unlikely to result in an improved Coast Guard data base. Previous efforts have revealed a wide variety of inconsistent information which would be extremely difficult to integrate. Coordination efforts would be most beneficial as a means to disseminate fishing vessel safety information resulting from data collection and analyses. Noteworthy trends relating to safety issues could be identified as well as areas in which progress is made towards increasing safety in the fishing industry. Methods to adequately estimate numbers of fishermen and their exposure are anticipated results of R&D described above.

**RECOMMENDATION**

*C. The Coast Guard should upgrade existing Federal and state vessel registration programs to develop a comprehensive national data base encompassing all commercial fishing industry vessels for regulatory tracking purposes and to improve future analytic capabilities. The data should provide a basic record of vessel usage, details of the vessel's physical characteristics, and the nature of its employment.*

**REPLY**

Concur. The Vessel Identification and Documentation System (VIDS) is a long-term project consisting of two subsystems, the Vessel Identification System (VIS) and the Vessel Documentation System (VDS). VIS will result in a national data base of all state registered and/or titled vessels. VIS will capture vessel specific data and law enforcement information. The system will be designed to allow access by other parties and/or computer systems and provide links to other systems which may have further information on that vessel. An obstacle which may partially hinder the effectiveness of VIS is that state participation is optional. Currently, about 50 percent of the states and territories have expressed an interest in participation in VIS and significant efforts are being made to show the advantages of participation to the others in an effort to gain their support.

Another alternative which the Coast Guard is exploring is the integration of fisheries management data from states where this information is presently collected. The Western states of California, Oregon, and Washington currently collect state and Federal vessel data each time fish are landed.

**RECOMMENDATION**

*D. The Coast Guard should coordinate with NOAA and state agencies maintaining fishery license or permit data to develop a comprehensive national data base encompassing all fishermen to*

*provide a basic record of the population at risk and for the purpose of improving analytical capabilities. The Coast Guard should establish a mandatory professional registration requirement, if necessary, to derive this information.*

**REPLY**

**Partially concur.** In order to manage a safety program, the population at risk must be identified as accurately as possible. Some states require fisherman registration; however, there is no universal requirement. The Coast Guard is developing a new module for MSIS that will maintain information regarding licensed and documented individuals. This would only affect a small segment of the commercial fishing industry that is required to obtain a merchant mariner's license or document. To direct Coast Guard resources to establish and maintain an information gathering project of this large scale, involving professional registration requirements to identify the entire population at risk, may not be the best use of resources. If available, they could be more effectively utilized in a proactive program with industry to inform, educate and motivate people in the fishing industry. Methods to adequately estimate numbers of fishermen and their exposure are anticipated results of R&D described the reply to Recommendation 4A.

**RECOMMENDATION**

*E. The Coast Guard should publish an annual report on fishing industry vessel safety, including information on vessel loss, fatality, and injury rates by region and fishery. This annual report should include occupational safety data for the commercial fishing industry harvest sector comparable with that available for other industries. The report should provide the data necessary for evaluating the effectiveness of national fishing vessel safety efforts.*

**REPLY**

**Partially concur.** Fishing vessel casualty statistics are currently a subset of annual statistics of marine casualties. An annual report on fishing industry vessel safety is not congruent with our approach to safety of other marine industries. Accurate information on fishing vessel casualties would be necessary to compile such an annual report. If results of the current efforts meet expectations, information regarding the effectiveness of the national fishing vessel safety efforts could be assembled. Additional analyses focused specifically on fishing vessels would require additional resources.

**Coast Guard Comments on**

**National Academy of Engineering**

**Recommendations for Improving Fishing Vessel Safety**

**RECOMMENDATION 5**

*Establish Vessel and Equipment Standards. The Coast Guard should establish or expand carriage and maintenance requirements for navigation, communication, firefighting, and lifesaving equipment. These requirements should be correlated with vessel physical characteristics and usage and operating areas. The standards should be consistent with existing voluntary guidelines which demonstrably improve safety and made mandatory for all new construction and conversions.*

**REPLY**

Concur. The recently published Commercial Fishing Industry Vessel Regulations (Title 46 CFR 28) satisfy this recommendation to a large extent with the exception of the ability to monitor maintenance. A significant number of casualties are related to materiel failure due to lack of proper maintenance. The underlying cause of the poor maintenance could be related to lack of experience by vessel personnel, inappropriate material selection by builders, economic pressures to reduce operating costs, or a combination of these and others. The most effective way of combating materiel failures related to improper maintenance is by mandatory, regular examination of vessels by competent individuals. The authority to require such examinations is lacking with exception of fish processing vessels and vessels in the Aleutian Trade. This is addressed further in the discussion of these recommendations. See Section III.

**RECOMMENDATION 6**

*Utilize Regulatory Enforcement Activities. The Coast Guard should continue compliance examinations at an appropriate level to motivate adherence with safety regulations, modifying the scope and level of enforcement in consultation with the fishing industry as other alternatives are applied to safety problems.*

**REPLY**

Concur. The Coast Guard expects increased compliance boardings as a result of instituting the voluntary dockside boarding program. The plan calls for additional voluntary dockside examinations by marine inspectors, auxiliarists and reservists. Further, 45 new dockside examiners will be on board in the summer of fiscal year 92. Once these examiners are in place, the rate of boardings of commercial fishing industry vessels should increase from the current 2 percent of the population annually, to 25 percent annually. At-sea boardings of commercial fishing industry vessels are expected to remain at current levels; checks for compliance with safety items in the first year will emphasize

critical survival and communications equipment which can be reasonably checked with a minimum of inconvenience to the fisherman and his operation.

RECOMMENDATION 7

*Require Inspection. The Coast Guard should establish and administer regulations requiring a compulsory self-inspection program to improve vessel fitness for intended service.*

*A. The program should contain a methodology through which owners and operators of fishing industry vessels, not subject to more stringent inspection measures by other regulations, would conduct a self-inspection of their vessels in advance of a fishing season or extended voyage utilizing a prescribed check list or other inspection guide to determine that the vessel is fit for service in accordance with standards and equipment regulations.*

REPLY

Partially Concur. Self-inspection has a place in the overall strategy for improving safety in the commercial fishing industry on some vessels, but not in every instance. Currently, mandatory examinations of fish processing vessels by third parties are required in the Title 46 CFR Part 28. Additional Coast Guard authority is required to implement regulations requiring mandatory examinations of vessels other than fish processing vessels and vessels in the Aleutian Trade. Examinations should be performed by the Coast Guard, the American Bureau of Shipping (ABS), "similarly qualified organizations", or "accepted organizations", as defined in the recently published regulations, Title 46 CFR Part 28. As part of the strategy for implementing the Commercial Fishing Industry Vessel Safety Act of 1988, educating the industry concerning the regulatory requirements and proper self-inspection techniques plays a prominent role. However, even now, many operators have not chosen to subject their vessels to self-inspection. Appropriate standards for such a program are offered and compliance recommended in the NVIC 5-86, "Voluntary Standards for U.S. Uninspected Commercial Fishing Vessels," but casualty investigations continue to show that these standards have not received widespread adoption in the industry.

As economic pressures of operation build, many marginal operators must chose between operating under unfavorable conditions or going out of business. These unfavorable conditions often include vessels which have not been properly maintained. With these difficult decisions becoming even more routine for much of the industry, a self-inspection program is felt to be of little

value in improving safety. The "Honor System" doesn't work when economic survival is at stake.

An additional consideration in a self-inspection program is the ability of many operators to carry out a credible inspection. The simple requirement that an owner report the vessel's condition to the Coast Guard may address the black and white issues (whether or not required equipment is onboard, for example) but in many cases, it will not address the gray issues such as materiel condition. As part of the education portion of the implementation process, the Coast Guard is developing a pamphlet explaining the regulations. This pamphlet could provide the mechanism to help raise the confidence and expertise of owners in performing self-inspection functions. Even if the regulations are very detailed and pamphlets and other educational information are provided, many operators will still not have the experience or expertise to conduct an adequate self-inspection. Examples of this are recognized problem areas and include poor watertight integrity and improper maintenance.

The Coast Guard's position is that a self-inspection program will not have a significant beneficial impact upon safety within the commercial fishing industry. To effect significant safety improvements, more stringent requirements should be levied as the risk to personnel and property increases.

Coast Guard inspections are necessary when the vessel poses a substantial risk as indicated by vessel size or number of individuals on board. At an intermediate level of risk, third-party examinations should be required. At low risk levels, third-party examinations at less frequent intervals or possibly self-examination should be required. This concept will be further addressed in the accompanying Coast Guard recommendations.

**RECOMMENDATION**

*B. The program should contain an audit process, such as dockside or underway boardings, other form of compliance examinations, or reporting regime through which self-inspection can be validated and confirmed.*

**REPLY**

Concur. As part of the implementation plan, compliance with the recently issued regulations (Title 46 CFR Part 28) will be checked during routine underway boardings. However, the majority of compliance checks will be performed during dockside boardings.

Depending upon resources, up to 25 percent of the commercial fishing industry vessels will be boarded annually.

**RECOMMENDATION**

*C. The program should contain provisions for accepting more thorough examinations, such as marine survey by a qualified third-party, vessel classification, or maintenance in class in lieu of self-inspection.*

**REPLY**

Concur. Third-party examinations and classification society surveys play a prominent role in the Coast Guard's long range strategies to improve safety in the commercial fishing industry. These will be addressed in the recommendations accompanying this document.

**RECOMMENDATION**

*D. The program should contain provisions for imposing more stringent inspections or sanctions on a vessel-by-vessel basis by the auditing agency or its representative on a finding of excessive or unresolved discrepancies or other determination that a vessel is not being fully or properly maintained.*

**REPLY**

Partially concur. Current authority already exists for vessel-by-vessel sanctions. These include authority to revoke licenses of those required to be licensed by the Officer's Competency Convention and termination of unsafe voyages. However, additional authority must be provided if more stringent inspections are implemented.

**RECOMMENDATION**

*E. The program should contain provisions for advancing to more stringent inspection alternatives for some or all vessels if self-inspection proves unsatisfactory or ineffective in improving safety.*

**REPLY**

Partially concur. As previously discussed, the level of risk increases with increasing vessel length and with increasing number of persons on board. The Coast Guard's position is that more stringent inspection alternatives should be enacted now. These are addressed in the Coast Guard recommendations for improving fishing vessel safety included with this assessment.

**RECOMMENDATION 8**

*Remove Unfit Vessels from Service. The Coast Guard, in consultation with the National Marine Fisheries Service (NMFS), should research the merit of safety and economic programs for permanently removing vessels no longer fit for service from the U.S. fishing fleet.*

**REPLY**

Concur. The Act provides authority for the Coast Guard to terminate unsafe operations aboard commercial fishing industry vessels. The Coast Guard recently published Navigation and Vessel Inspection Circular (NVIC) 12-91 which addresses these issues. It includes discussion of the appropriate actions that can be taken when the Coast Guard enforcement official observes the vessel being operated in an unsafe condition. Termination of the vessel's voyage is one of the options. Also, vessels found to be unfit by the Coast Guard are not permitted to operate.

The Coast Guard and the NMFS have cooperated in efforts through the years to improve safety in the fishing industry. While the NMFS direct efforts key into fishery management issues, they have also been a source of funding for several projects, including the cooperative efforts with the Coast Guard and the fishing industry to develop up-to-date safety manuals for the North Pacific, Gulf, and Atlantic coasts. The Coast Guard supports any effort by the NMFS to promote safety in the commercial fishing industry.

**RECOMMENDATION 9**

*Improve Safety in the Work Place. The Coast Guard, in concert with OSHA, should research ways in which occupational safety in the marine environment could be improved for activities of an industrial nature aboard fishing industry vessels.*

**REPLY**

Concur. The Coast Guard has a history of working with the Occupational Safety and Health Administration (OSHA) to improve workplace safety throughout the maritime community. There are currently five Memoranda of Understanding (MOU) between the Coast Guard and OSHA laying out the guidelines of cooperation. We are currently developing an MOU which will address cooperative efforts for uninspected commercial fishing industry vessels. This MOU will serve to bring together the expertise of OSHA on safety in large factory areas with the Coast Guard's traditional maritime expertise. This MOU will highlight our joint interest and cooperative efforts to improve workplace safety, especially on fish processing vessels.

**RECOMMENDATION 10**

*Expand Safety Awareness. The Coast Guard, in conjunction with the fishing industry, Maritime Administration (MARAD), NOAA, and OSHA should organize and lead an intensive, broad-based risk communication effort to improve safety awareness among members of the fishing industry. The program should be aimed at informing, educating, and motivating fishermen on matters of safety and its impact on their lives and livelihood.*

**REPLY**

CONCUR. This philosophy is the cornerstone of the Coast Guard's national effort to help the commercial fishing industry help itself. This effort toward working with all parties to produce attitudinal changes in the commercial fishing industry will extend from national organizations to the grassroots level with knowledgeable Coast Guard marine safety personnel and district fishing vessel safety coordinators working with local organizations. It is felt that this strategy should produce the most efficient and significant improvements in safety.

The thrust to promote the regulatory effort for the Coast Guard is indeed awareness. By informing and educating the commercial fishermen to the safety regulations and their intent, the Coast Guard believes the commercial fishermen will be motivated to work towards compliance.

The Coast Guard has initiated discussions with OSHA that include this topic. We foresee similar efforts being made with NOAA to enhance working with NMFS.

**RECOMMENDATION 11**

*Improve Emergency Preparedness. The Coast Guard should immediately establish regulations requiring basic emergency preparations by all personnel aboard fishing industry vessels. The regulations should mandate onboard safety orientation, instructions, and emergency drills. The Coast Guard should, in consultation with NOAA and the fishing industry, develop user friendly materials and methodologies to facilitate compliance.*

**REPLY**

CONCUR. The commercial fishing industry regulations (Title 46 CFR 28) contain requirements for providing instructions and conducting drills for all personnel aboard the vessels. The regulations also provide for a safety orientation for crew

members if the vessel gets underway before they have received the benefit of the drills and training. The training program will be industry based with a minimum of Federal involvement, due to the limited authority for training provided by the CFIVSA of 1988. Additional legislative authority would be required prior to development and administration of a program with more detailed requirements and a higher level of Federal involvement. This is one option to consider after the effectiveness of the current regulations can be evaluated.

Lack of proper emergency preparedness and training is seen as a very important area and one in which improvements directly result in decreased fatality rates. There are currently many different training aids and courses of instruction available to allow individuals in the fishing industry to easily obtain credible and appropriate training in emergency preparedness. The training infrastructure should improve with mandatory requirements for training, even at the minimal level required by the regulations in Title 46 CFR 28.

**RECOMMENDATION 12**

*Establish Basic Professional Qualification Standards. The Coast Guard, in conjunction with the fishing industry, should identify minimum basic qualification levels needed for all persons engaged in commercial fishing and standard operating procedures that should be employed. The Coast Guard should publish and encourage use of standard operating procedures (including manning and watchkeeping guidance), insofar as practical, in the fishing fleet.*

**REPLY**

CONCUR. The licensing plan, submitted by the Coast Guard as required by the CFIVSA, deals with operators of documented fishing industry vessels. There is currently no legislative authority to require licensing of operators for fishing vessels of less than 200 gross tons, which comprises over 99 percent of the fleet. The Coast Guard will be submitting a legislative package for such a licensing plan. The Coast Guard has cooperated with the fishing industry, however, to identify standards for professional qualification for commercial fishing industry personnel as well as standard vessel operating procedures. The Coast Guard will continue to promote the industry efforts to enhance and develop additional voluntary standards for the commercial fishermen.

RECOMMENDATION 13

*Enhance the Education and Training Infrastructure. The Coast Guard, in conjunction with MARAD and NOAA, should enhance the existing education and training infrastructure, including development of accreditation standards and establishment of sufficient national, regional, and local resource base, to ensure the means through which fishermen can obtain basic knowledge and practical skills as crewmen, watchkeepers, and operators. The Coast Guard, NOAA, and fishing industry leaders should encourage use of existing training opportunities to acquire basic knowledge and skills.*

REPLY

CONCUR: The Coast Guard has and will continue to cooperate with and promote the efforts of the existing industry-based infrastructure for education and training. This effort will include interaction with outside agencies such as MARAD and NOAA. If there is sufficient demand from the industry, MARAD has training facilities that could be utilized to develop curriculum and provide the training. Resources, such as information and funding, could be available through NOAA to augment the effort to enhance training and education. As previously mentioned, the Coast Guard will remain the lead agency in these matters.

RECOMMENDATION 14

*Require Professional Competency: The Coast Guard should establish and administer regulations requiring that each fisherman, vessel operator, or individual in charge acquire fundamental skills associated with their roles aboard fishing vessels, as follows:*

*-- The Coast Guard should establish a certification program to provide a means for each fisherman to establish his or her basic qualifications for employment in the industry by meeting criteria tailored for the industry, such as time in service, attendance at educational or training courses, or demonstrations of competence.*

*-- The Coast Guard should establish a licensing requirement applicable to each operator or individual in charge of a fishing industry vessel. Implementation of the license requirement should emphasize development of practical skills needed to operate different categories of fishing industry vessels while also providing the means for holding operators accountable for safety. The operator license should be issued upon presentation of a certificate of competency acceptable to the Coast Guard attesting to satisfactory completion of required courses*

*pertaining to vessel operation and safety, except where the existing license for master or mate of uninspected fishing industry vessel is required or held.*

*-- The Coast Guard should establish an audit process such as verification through boardings or a professional registration program, employing automated data bases for effective information management, to ensure that fisherman certification and operator licensing requirements are met.*

*-- If performance objectives are not met through measures intended to facilitate skill development at the local level, the Coast Guard should establish provisions for advancing to more stringent licensing measures for fishermen and vessel operators, such as requiring formal examinations, and mandating manning and watchkeeping requirements.*

**REPLY**

CONCUR: The Coast Guard has submitted a licensing plan to Congress, as mandated by the Act, which deals with the operators of documented fishing industry vessels. Coast Guard licensing procedures are designed to measure a person's practical abilities as relates to professional competence. Certification of basic qualifications provides the basis for meeting the requirements for obtaining a license. The fisherman's eligibility would be based on meeting minimum requirements as verified by the Coast Guard and possibly third parties.

Compliance with the licensing requirements would be verified during the vessel boardings, whether at sea or dockside, as well as during inspections or examinations conducted by Coast Guard or third parties.

While the Coast Guard is responsible to uphold professional seamanship qualifications and performance standards, the responsibility for obtaining the training lies with the fishing industry. The Coast Guard's position is that additional legislative authority would be needed to require and oversee mandatory training for <u>all</u> individuals on commercial fishing industry vessels. If mandated, this training would be graduated depending upon the position an individual held on the vessel and his/her time in the industry. While a "license" would not be necessary, mandatory competency, as demonstrated by third-party evaluation to Coast Guard developed criteria, would be required. This is one option that may be considered after the effectiveness of the current safety training requirements can be evaluated.

RECOMMENDATION 15

*Improve Use and Maintenance Instructions for Survival Equipment. The Coast Guard should require that each item of Coast Guard approved, special purpose survival equipment be accompanied by adequate instructional material, including audiovisual aids, demonstrating correct use and maintenance, to assist fishermen in improving the readiness of survival equipment and their ability to effectively employ this equipment in survival settings.*

REPLY

**CONCUR:** The Coast Guard recognizes the need for appropriate instructional materials for survival equipment. Requirements for EPIRBs, immersion suits, and inflatable liferafts already specify certain instructional and maintenance information. As equipment regulations are revised to comply with the 1983 amendments to the Safety of Life at Sea Convention, more complete requirements are being developed for manufacturers to provide this information. For example, immersion suits are required to have donning instructions comprised of figures and not more than a total of 50 words. This material is provided on each suit, and is made available by manufacturers in the form of a poster. Likewise, manufacturers of inflatable liferafts are required to make available a poster of launching instructions. All approved personal flotation devices sold in the retail market include an illustrated "Think Safe" pamphlet which describes the device and gives its intended uses, advantages, and disadvantages.

The need or purpose to design additional informational or training material specifically for fishermen has not been identified in the study. It does point out that some fishermen are unfamiliar with the equipment, and have apparently not availed themselves of the instructional information provided. Instructional videotapes could be part of the answer and some manufacturers already make these available. Other excellent instructional videotapes have been prepared under various Sea Grant programs.

RECOMMENDATION 16

*Improve Special-Purpose Survival Equipment. The Coast Guard should, in consultation with the commercial fishing industry, identify special purpose equipment specifically designed for use aboard fishing vessels that is needed to increase the likelihood that fishermen will survive falls overboard or sudden loss of their vessel, develop standards for this equipment, and develop prototype equipment if necessary to bring this equipment to market. The Coast Guard should consider the merit of requiring the carriage of such equipment after a thorough field evaluation.*

**REPLY**

**CONCUR:** There is a need for more wearable working flotation equipment for fishermen working on open decks. Except for pure inflatables, Coast Guard regulations and Underwriters Laboratory standards are already flexible enough to accommodate approval of appropriate devices developed by manufacturers. For instance, several work suits and "float coats" have been approved which are appropriate working garments for cold weather fisheries. Coast Guard regulations also provide for the approval of commercial "hybrid" personal flotation devices which combine a limited amount of inherently buoyant material with a supplementary inflatable. No manufacturers have chosen to produce such a device to date.

Unapproved inflatable personal flotation devices have become popular in certain fisheries. One design incorporates a foul weather jacket with an inflatable flotation device inside. The Coast Guard has been and continues to be concerned about the reliability of these devices. Periodic inspection and proper maintenance of inflatables are particularly important no matter what type of equipment is used. In its discussion, the Board cites problems with maintenance of survival equipment on some fishing vessels. Through its boating safety grant program, the Coast Guard is funding a field study of inflatable personal flotation devices, which is being conducted by the U.S. Boat Owner's Association. The study includes several devices which could be appropriate for the commercial fishing industry.

The Coast Guard does not agree with the concept of a Government-designed prototype. The manufacturers have the expertise in equipment design. Government efforts should be directed toward the development of appropriate performance standards. The Board notes that a fisherman's suit has been developed in Canada. North American manufacturers often offer the same or similar devices in both U.S. and Canadian markets. If the Canadian design is commercially viable, it may eventually be available to U.S. fishermen, possibly as an approved device.

The Coast Guard recognizes the need to have approved equipment appropriate for use on fishing vessels. Under the commercial fishing industry vessel regulations, certain minimum Coast Guard approved equipment will be required in order to meet regulations. The regulations do not address, however, equipment for working on deck. This continues to be optional. A requirement for Coast Guard approved equipment would limit options in this area. Coast Guard approved equipment will meet certain standards for performance and reliability. For these reasons, the Coast Guard has not yet approved pure inflatables suitable as working

garments on fishing vessels. This may occur as soon as all of the primary questions on performance and reliability of these devices have been suitably addressed. In the meantime, some fishermen have been purchasing unapproved inflatables. For them the choice is between an unapproved inflatable or nothing. If they were limited to approved equipment, the choice would have to be nothing. The Coast Guard does not believe it is appropriate to prohibit the use of these devices on an optional basis, since even if they turn out to be of limited performance, they are still better than nothing. The Coast Guard also does not believe that its standards for approved equipment should be compromised to allow approval of low-performance equipment.

As experience grows with inflatables and other equipment specifically intended for the fishing industry, we may be able to evolve to a position where all emergency equipment must be approved. It is not appropriate at the present time.

**RECOMMENDATION 17**

*Increase Attention to Safety as an Element of Fisheries Management. The Secretary of Transportation and the Under Secretary of Commerce for Oceans and Atmosphere, should petition Congress to establish a Coast Guard flag officer as a voting member on each of the Fishery Management Councils and to add safety considerations to national standards stated in the Magnuson Fisheries Conservation and Management Act for the expressed purpose of establishing safety as an equal consideration with other factors in fisheries management decision making.*

**REPLY**

DO NOT CONCUR: The right to vote on the Fisheries Management Councils could enhance the importance of safety in management practices. However, given the close balance of some councils, such a vote would draw the Coast Guard into controversial fishery allocation decisions.

We concur with the concept that management councils increase attention to safety as an element of fisheries management. We do not concur that the best way to achieve this is by obtaining a voting seat for the Coast Guard on the councils. Also, we do not concur that safety should be an equal consideration with other factors in fisheries management decisions. The Coast Guard sits as a nonvoting member on management councils to advise on the enforceability of proposed regulations and to advise the councils on safety related matters. Fisheries management is a complex, emotional business, involving compromises between commercial

users, recreational users, conservation groups and resource managers. It has long been Coast Guard policy to remain neutral in this allocation process. Although safety is important to the commercial industry, it is a small facet of fisheries management. The Coast Guard believes an adequate conduit exists within the present system to have safety issues considered by the councils in their management decisions. We expect that as public consciousness continues to be raised on the safety issue, council members will reflect that awareness and grow in their sensitivity to the need to consider the safety impacts of their management decisions.

**RECOMMENDATION 18**

*Improve Weather Services. The National Weather Service should research fishing industry weather advisory needs to determine if additional coverage is needed for fishing grounds and ports and, if needed, take action necessary to provide such services.*

**REPLY**

CONCUR: The Coast Guard will forward this recommendation to the National Weather Service. The Commercial Fishing Industry Vessel Advisory Committee recently provided additional input into the value of weather data buoys. Fishermen on the Pacific coast rely on the information available for the fishing grounds since, due to the weather patterns, conditions there can differ significantly from those in port. This can be the basis for staying in port and not putting the crew and vessel in a potentially hazardous situation. The Coast Guard supports any effort that will improve safety in the commercial fishing industry.

fishing vessel should be specified in the investigation. The personnel investigating fishing vessel casualties can be educated to the importance of obtaining information concerning the vessel's fishery and its activity at the time of the casualty. This data can in turn be captured on the current Marine Safety Information System. This item has been addressed in the latest software development for the Marine Safety Information System (MSIS) module involving casualty reporting. It would not be prudent to invest the time and effort necessary to correct/amend past records and investigations to reflect the fishing vessel types involved in casualties. The regulations in Title 46 CFR 28.80 address when casualties have to be reported and the type of information that must be collected as well as the parties responsible for collecting and maintaining the information.

**RECOMMENDATION 3**

*Increased Number of Casualties Considered. The Coast Guard should examine a larger selection of casualties to gain a better understanding of the effects of classification on the safety of processing vessels.*

**REPLY**

CONCUR: As the authors explained in their report, the relatively small number of casualties available for their analysis limited the scope of their analysis and the weight of their conclusions and recommendations. Increasing the number of casualties considered would enhance the cross-section of vessels and the range of examined variables. As a result of the casualty reporting requirements in Title 46 CFR 28.80, additional and more accurate data will be available for analysis at the currently staffed level.

**RECOMMENDATION 4**

*Regulate the Processing Line. OSHA and CG should develop regulations for the manufacturing process; including equipment layout and cargo hold insulation materials and refrigeration systems.*

**REPLY**

Partially Concur. The Coast Guard agrees with the importance of ensuring worker safety on the processing line. OSHA is the recognized expert in the area of manufacturing processes and has regulations governing safety in the workplace. The Coast Guard is directing efforts to develop a MOU with OSHA which will address cooperative efforts for uninspected commercial fishing

**Coast Guard Comments on**

**Worcester Polytechnic Institute**

**Unclassed Fish Processing Vessel Study**

The following is a list of the recommendations from the Worcester Polytechnic Institute study on unclassed fish processing vessels.

**RECOMMENDATION 1**

*Definition of Fish Processing Vessel. The Coast Guard should develop one universally accepted definition for a fish processing vessel.*

**REPLY**

**Partially Concur.** We agree that the multiplicity of definitions for a fish processing vessel leads to confusion. The agencies involved (CG, NMFS and OSHA) are branches of different departments of Government and regulate the industry under different authorities. The Coast Guard, under the Department of Transportation, is concerned with commercial vessel safety. National Marine Fisheries Service (NMFS), under the Department of Commerce, is concerned with the resource management of fisheries. The Occupational Safety and Health Administration (OSHA), under the Department of Labor, approaches the issue from the aspect of safety in the work area. Variations in the definition of fish processing vessel are understandable when considering how each agency regulates the same industry. The effort necessary to develop a single definition would be intensive and the value added by the process would be questionable. The Coast Guard believes that more important than clearing up the ambiguity in the definition is to require vessels of similar size and route to the same standards. This would remove the impetus from the operations the vessel is performing and place it on less subjective characteristics of the vessel.

**RECOMMENDATION 2**

*Casualty Report Modification. The Coast Guard should modify the casualty report form to include fish processing as a vessel type and include this category in the Coast Guard casualty database.*

**REPLY**

**Concur.** We agree that the Coast Guard needs to have accurate data reflecting fishing vessel casualties and that the type of