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.

TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. BACKGROUND..... 3

A. FISHING INDUSTRY VESSEL INSPECTION STUDY..... 3

B. UNCLASSED FISH PROCESSING VESSEL STUDY..... 8

III. COAST GUARD RECOMMENDATIONS..... 10

A. VESSEL INSPECTION PROGRAM FOR COMMERCIAL FISHING INDUSTRY VESSELS..... 10

BASIS FOR COAST GUARD RECOMMENDATIONS..... 11

B. HULL AND MACHINERY REQUIREMENTS FOR EXISTING COMMERCIAL FISHING INDUSTRY VESSELS..... 16

BASIS FOR COAST GUARD RECOMMENDATIONS..... 17

IV. LEGISLATIVE ACTIONS TO IMPLEMENT THE PLAN..... 18

V. INSPECTION PLAN ALTERNATIVES..... 19

A. SELF-EXAMINATION ALTERNATIVE..... 19

B. THIRD PARTY EXAMINATION ALTERNATIVE..... 21

C. COAST GUARD INSPECTION ALTERNATIVE..... 22

VI. ESTIMATES OF COAST GUARD RESOURCE NEEDS..... 24

VII. COST OF INSPECTION TO THE FISHING INDUSTRY..... 29

APPENDICES

A. NATIONAL ACADEMY OF ENGINEERING RECOMMENDATIONS FOR IMPROVING FISHING VESSEL SAFETY WITH ACCOMPANYING COAST GUARD COMMENTS

B. WORCESTER POLYTECHNIC INSTITUTE STUDY RECOMMENDATIONS ON UNCLASSED FISH PROCESSING VESSEL REQUIREMENTS WITH COAST GUARD COMMENTS

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% of these being total losses. There are also an average of 108 fatalities reported every year, over 80% 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% 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 the problems were basically twofold. Fatalities resulted when equipment was not available, was not used at all, was not used in time, or was not used properly. The other major problem was that 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 eighteen 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.

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.

TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. BACKGROUND..... 3

A. FISHING INDUSTRY VESSEL INSPECTION STUDY..... 3

B. UNCLASSED FISH PROCESSING VESSEL STUDY..... 8

III. COAST GUARD RECOMMENDATIONS..... 10

A. VESSEL INSPECTION PROGRAM FOR COMMERCIAL FISHING INDUSTRY VESSELS..... 10

BASIS FOR COAST GUARD RECOMMENDATIONS..... 11

B. HULL AND MACHINERY REQUIREMENTS FOR EXISTING COMMERCIAL FISHING INDUSTRY VESSELS..... 16

BASIS FOR COAST GUARD RECOMMENDATIONS..... 17

IV. LEGISLATIVE ACTIONS TO IMPLEMENT THE PLAN..... 18

V. INSPECTION PLAN ALTERNATIVES..... 19

A. SELF-EXAMINATION ALTERNATIVE..... 19

B. THIRD PARTY EXAMINATION ALTERNATIVE..... 21

C. COAST GUARD INSPECTION ALTERNATIVE..... 22

VI. ESTIMATES OF COAST GUARD RESOURCE NEEDS..... 24

VII. COST OF INSPECTION TO THE FISHING INDUSTRY..... 29

APPENDICES

A. NATIONAL ACADEMY OF ENGINEERING RECOMMENDATIONS FOR IMPROVING FISHING VESSEL SAFETY WITH ACCOMPANYING COAST GUARD COMMENTS

B. WORCESTER POLYTECHNIC INSTITUTE STUDY RECOMMENDATIONS ON UNCLASSED FISH PROCESSING VESSEL REQUIREMENTS WITH COAST GUARD COMMENTS

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.

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,

- Require load lines on all existing commercial fishing industry vessels which have a length greater than or equal to 79 feet within 10 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.

- 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 National Academy of Engineering (NAE) study and subsequently endorsed by the Commercial Fishing Industry Vessel Advisory Committee (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.)

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

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.

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 twenty 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 CG 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 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% 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. 6,800 of these vessels range from 50 to 79 feet in length and 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% 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%. Considering the current economic realities and accounting for vessels leaving or being removed from service, a lower annual net growth of 3% 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. 3% of the existing undocumented vessels would translate to an annual net increase of 2,400 vessels (0.03 x 80,000). 2,400 new undocumented vessels plus 906 new documented vessels under 79

feet in length 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% 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.