

DEPARTMENT OF TRANSPORTATION
U.S. COAST GUARD
STATEMENT OF REAR ADMIRAL A. E. HENN
ON THE TANKER NAVIGATION SAFETY STANDARDS STUDY
BEFORE THE SUBCOMMITTEE ON COAST GUARD AND NAVIGATION
COMMITTEE ON MERCHANT MARINE AND FISHERIES
HOUSE OF REPRESENTATIVES
FEBRUARY 17, 1993

Good morning, Mr. Chairman and distinguished members of the Subcommittee. I am Rear Admiral Gene Henn, Chief of the Coast Guard's Office of Marine Safety, Security and Environmental Protection. I appreciate this opportunity to bring you up to date on our efforts to implement certain sections of the Oil Pollution Act of 1990 (OPA 90). The Coast Guard has been involved in a multifaceted effort to respond to the mandates of OPA 90. One of the major tasks assigned to the Coast Guard by OPA 90 is the completion of certain studies. These studies are crucial to a rational implementation of the Act.

The regulations stemming from OPA 90 will have a substantial impact on the cost of doing business in the maritime industry and on the quality of the environment. In order to hold the costs of the implementing regulations as low as possible, while still meeting the full objectives of the Act, it is necessary to understand the full implications of each regulatory approach and the available alternatives. Only through well-designed and executed studies is it possible to craft a balanced and effective regulation. One of the most complex and comprehensive studies

being conducted in response to OPA 90 is the Tanker Navigation Safety Standards Study.

REQUIREMENTS OF THE STUDY

Section 4111 of the Oil Pollution Act of 1990 directs the Secretary of Transportation to initiate a study to determine whether existing laws and regulations are adequate to ensure the safe navigation of vessels transporting oil or hazardous substances in bulk on the navigable waters of the United States and the waters of the exclusive economic zone. Section 4111 also requires that the Secretary transmit to the Congress a report on the results of the study, including recommendations for implementing the results of that study. Responsibility for conducting the study and preparing the report has been delegated to the U.S. Coast Guard.

Section 4111 required that the study be initiated not later than one year after the Act. This section also required that the report with recommendations for implementing the results of the study be submitted not later than two years after the Act, or August 18, 1992. Due to the extreme complexity of the various study efforts that make up the Tanker Navigation Safety Standards Study, it was not possible to deliver a finished product by the deadline. However, we provided an interim report that explained the study methodology, gave a snapshot of the study's status at that point, and proposed a fiscal year 1995 submission date for the complete report. Since the submission of the interim report,

significant progress has been and continues to be made towards the successful completion of the study. My testimony today will highlight the progress made to date.

STUDY METHODOLOGY

Before I delve into the details of each of the section 4111 subsections, I believe it's important to first explain the study methodology. We developed this methodology based upon the direction contained in subsection 4111(b)(9) which requires us to review and incorporate the results of past studies, including studies conducted by the Coast Guard and the Office of Technology Assessment (OTA). In August 1991, the Tanker Navigation Safety Research Baseline was delivered by the consulting firm Booz, Allen, and Hamilton. The Research Baseline report listed 460 different reports, books, and studies whose titles related in some way to the Tanker Navigation Safety Standards Study. We augmented the Baseline Research report, by reviewing report listings provided by the OTA, the Coast Guard Research and Development Center, the Maritime Administration (MARAD), the National Research Council (NRC), the Computer Aided Operations Research Facility (CAORF), the Maritime Technical Information Facility (MTIF), and the Volpe National Transportation Systems Center (VNTSC). We obtained copies of the studies identified. The result is a library that is specifically dedicated to previously-conducted research material that will be used for background data when composing the various reports of the section 4111 subsections.

Our desire to keep study costs at a reasonable level, while compiling as comprehensive a data base as possible, led us to exceed the requirement in the Act and identify ongoing research initiatives, as well as past ones, that pertain to the section 4111 study. The Coast Guard is tracking many of the research initiatives identified for eventual inclusion in the study.

In spite of the amount of material uncovered in this literature search, the Coast Guard discovered that several subsections of the study still had no significant supporting data. As a result, we have commissioned several major supporting studies specifically dedicated to "fill the gaps" where no previous or ongoing research was identified.

STATUS OF THE STUDY

The diversity of issues contained in section 4111 makes completing a comprehensive study a formidable undertaking. Each of 12 subsections in itself could be considered a major study. For purposes of discussion, I have grouped the study requirements into four broad categories. As shown in Diagram One (attached), the four natural groupings are Personnel and Training, Navigation, Inspection, and Research/Background. These groupings are discussed individually below.

SUBSECTIONS THAT ADDRESS PERSONNEL AND TRAINING ISSUES

Subsection b(1), in order to evaluate the adequacy of existing statutes and regulations to ensure safe navigation of tankers, requires us to determine the appropriate crew size on tankers. This requirement is being addressed through three primary supporting studies. These studies are: The National Research Council's (NRC) study on Crew Size and Maritime Safety, an internal Coast Guard analysis of crew sizes on seagoing tankers, and a Maritime Administration study on crew fatigue and reduced manning.

The NRC's Study on Crew Size and Maritime Safety, which was released soon after OPA 90 was enacted, has provided an excellent starting point for this study requirement. In 1991, acting on a recommendation from the NRC Study, the Coast Guard contracted with Battelle Corporation to conduct a review of existing manning models to determine their potential use for setting manning standards on commercial vessels. Battelle's review identified limitations with existing models. In order to develop a modern, functional-based manning model which reflected up-to-date human factors information, the Coast Guard has embarked on a comprehensive research and development effort. This effort will produce a shipboard database and analysis tools that can assist us in setting more effective manning requirements for commercial vessels, including tankers. Information will be collected this fiscal year that will aid the Coast Guard in assessing manning and qualification requirements for bridge operations. In fiscal

year 1994, a similar analysis will be conducted for cargo operations. Although development of the components of a complete manning model will be accomplished in stages spanning a number of years, the associated data collection efforts will be reflected in the conclusions and recommendations of the Tanker Navigation Safety Standards Study.

Section b(2) requires us to evaluate the adequacy of qualifications and training of crew members on tankers. The Coast Guard, working through the VNTSC, has undertaken a major new study specifically commissioned to address this subsection. The study will analyze tasks performed by both licensed deck and engineering officers aboard U.S. flagged tankers. The study will also include recommendations concerning requirements for specific tankship endorsements, the need for specialized training, and the need for refresher training. The scheduled completion date is August 1993. Additionally, the Coast Guard has initiated a long term ('92-'96) research and development effort to determine the skills required to operate automated ships and to recommend training procedures. In fiscal year 1993 and 1994, this effort will collect data on automated bridge equipment and determine the training requirements for bridge tasks under various levels of automation. This information will be incorporated into the Tanker Navigation Study as appropriate. The NRC Assessment of Shiphandling Simulation Training scheduled for completion in late fiscal year 1994 will also have a significant impact on this subsection. I will discuss this particular NRC study in greater detail later in my testimony.

Subsection b(3) requires an evaluation of the ability of crewmembers to take emergency actions to prevent or remove a discharge of oil. The proper role of the crew in responding to a spill has been exhaustively explored during the Equipment Carriage and Vessel Response Plan rulemakings required by the FWPCA as amended by section 4202 of OPA 90. The Vessel Response Plan regulations, which were published on February 5, 1993, include a detailed section on the responsibilities of the crew and the procedures they will follow to mitigate or prevent a discharge of oil. In addition to public comments and input from the Oil Spill Response Plan Negotiated Rulemaking Committee, the Coast Guard Research and Development Center sponsored a study entitled "Investigation of Self-Help Oil Spill Response Techniques." With the proper role of the crew determined, the ongoing Crew Qualifications and Training Study discussed above will evaluate the necessary training requirements.

Subsection (b)(10) requires the Coast Guard to evaluate the use of computer simulator courses for training bridge officers and pilots. The key supporting study for this subsection is the National Response Center (NRC) Assessment of Shiphandling Simulation Training. This NRC study will assess marine simulation's potential to contribute to the professional knowledge and skill development of deck officers. It will also discuss the level of simulator realism needed to satisfy training objectives. Additionally, the study will develop performance and

accreditation standards for marine simulation training. The committee selected to perform this study is scheduled to commence work in mid-March 1993. The expected completion date is late fiscal year 1994. The Crew Training and Qualifications study I discussed in subsection (b)(2) will also impact on this subsection.

Subsection (b)(12) requires that we evaluate and test a program of remote alcohol testing for masters and pilots aboard tankers. We have explored a number of high-tech and low-tech program options, but have not yet initiated a remote alcohol testing program on which to base an evaluation. On the high-tech end of the spectrum, we have investigated the applicability of a "shipboard/shore monitored remote alcohol testing system" and determined that the effectiveness of such a system is questionable due to the ability of the individual being tested to circumvent the system.

On the low end of the technological spectrum are the Coast Guard's current regulations for alcohol testing contained in 33 CFR part 95 and 46 CFR part 4.

Current Coast Guard regulations concerning alcohol testing (contained in 33 CFR part 95) authorize testing for reasonable cause. These regulations give law enforcement officers and the marine employer (which includes the master) authority to test any member of the crew (including the pilot) if that individual

appears to be intoxicated. A marine casualty is also considered reasonable cause for this testing. Also, we have mandatory provisions for post-accident testing (contained in 46 CFR part 4) which require the marine employer to test all individuals directly involved in the incident for evidence of alcohol or drug use. The current Coast Guard regulations cover the testing of the pilot.

Along those same lines, we have recently published a Notice Of Proposed Rule Making (NPRM) that proposes to amend Coast Guard regulations for chemical drug and alcohol testing of commercial vessel personnel to include information collection requirements regarding marine industry drug and alcohol testing programs. This NPRM was published in the Federal Register on December 15, 1992. Information collected as a result of this rulemaking will provide us with data to determine the prevalence of maritime industry drug and alcohol usage and to determine the effectiveness, over time, of the industry drug and alcohol testing rules.

SUBSECTIONS THAT ADDRESS NAVIGATION ISSUES.

Subsections b(4) and b(6) require an evaluation of the adequacy of navigation equipment and navigation procedures. These issues are being evaluated in the NRC study on "Advances in Navigation and Piloting", which is scheduled to be completed in August 1993. The Coast Guard is also pursuing a number of high priority projects related to navigation systems. These include the development and deployment of a Differential Global Positioning System (DGPS) by 1996 and an Integrated Navigation Systems Test and Evaluation Project. The test and evaluation project is evaluating the capability and effectiveness of current and prototype Integrated Navigation Systems and an Electronic Chart Display Information System (ECDIS). A status report on the U.S. ECDIS test and evaluation program including recommendations regarding the adequacy of proposed International Maritime Organization (IMO) standards will be submitted by the Coast Guard at the September 1993 IMO Safety of Navigation Subcommittee meeting. We are very excited about this technology, and believe that it is the wave of the future.

Subsection (b)(5) requires that we test and evaluate an electronic means of position reporting for tankers. The Coast Guard and MARAD jointly sponsored a study and demonstration of this technology. The Coast Guard will have further opportunity to evaluate this technology when the use of Automated Dependent Surveillance (ADS) Shipborne Equipment becomes mandatory for certain tank vessels operating in Prince William Sound, Alaska.

Also, section 7001(c)(2)(J) of OPA 90 requires the Coast Guard to conduct a demonstration of a satellite-based, dependent surveillance vessel traffic service in Narragansett Bay, Rhode Island. The demonstration is scheduled for fiscal year 1994.

Subsection(b)(7) requires the Coast Guard to review areas of the navigable waters and the exclusive economic zone to determine if tanker traffic should be limited or restricted. In the legislative history of the Act, Congress expressed a specific interest in areas under moratorium from oil and gas drilling, as well as Montauk Point, New York and Santa Barbara Channel, California. These areas, which encompass the entire West Coast, a major portion of the East Coast, and the Eastern Gulf of Mexico, became our study areas.

The Coast Guard has been working diligently to identify sensitive environments and determine the traffic patterns and number of tankers that transit these areas. This has proven to be a major undertaking as the information is not readily available. The Minerals Management Service (MMS) has been most helpful in providing offshore oil-spill trajectory analysis support which includes 220 environmental resource locations and the modeling of over three million oil spill simulations. In addition, the MMS Worldwide Tanker Oil Spill Database was provided to assist the Coast Guard in estimating tanker oil spill occurrence.

We plan to report to you on the West Coast section, including the Santa Barbara Channel, by the end of 1993. The East Coast, including Montauk Point, and Eastern Gulf of Mexico sections will be submitted as they are completed, but no later than 1995.

INSPECTION STANDARDS

Subsection (b)(8) specifically addresses issues related to inspection standards. This requirement will be addressed primarily through a combination of studies that have been undertaken since the EXXON VALDEZ oil spill. The Report of the Tanker Safety Study Group examined, among other things, how Coast Guard inspection policies, practices and legal authorities might be modified to better provide for tankship safety. The Report on the Trans-Alaska Pipeline Service (TAPS) Tanker Structural Failure Study and subsequent follow-up report developed short and long-term solutions to structural failures, and also investigated matters related to inspection efficiency and the methods used to conduct inspections of large tanks vessels. Finally, the General Accounting Office (GAO) prepared a report on the effectiveness of the Coast Guard inspection program for vessels carrying oil and other hazardous cargo. There are also two research projects underway at the Coast Guard Research and Development Center that pertain to inspection procedures. These projects are being monitored and their findings will be incorporated into the section 4111 study.

SUBSECTIONS CLASSIFIED AS RESEARCH/BACKGROUND.

Subsection (b)(9) requires us to review and incorporate the results of past Coast Guard and OTA studies. We have completed the review and are in the process of incorporating these previous studies into the section 4111 study.

Subsection (b)(11) requires us to evaluate the size, cargo capacity, and flag nation as well as risks associated with the increase in size of tankers over the past 20 years. We are addressing this subsection through a 20-year tanker trend analysis specifically commissioned for the Tanker Navigation Safety Standards Study. We are working through the VNTSC on this project. A statement of work has been prepared and preliminary data collection has commenced. Although we are experiencing difficulty in the identification and collection of 20 years of consistent data, we still expect completion of the analysis in October 1993.

In addition to the work being done on the Tanker Navigation Safety Standards Study, there are other Coast Guard initiatives that will address parallel issues such as manning, vessel inspections, and human factors issues. First, the Coast Guard has been working on a number of administrative reforms that were included in former Secretary of Transportation Card's Maritime Reform Initiatives. A Coast Guard staff has recently been formed for this effort. This staff is focusing on ten issues in order to reduce regulatory burdens and improve the competitiveness of

the U.S. maritime industry. Five of these issues concern ship design standards, enforcement and port state control. The other five issues concern vessel manning requirements. The findings of this staff will be monitored and incorporated into the Tanker Navigation Safety Standards Study as they develop. Second, the Coast Guard Research and Development Center is currently examining issues pertaining to human factors in merchant shipping. Although the human factors research is not scheduled to be completed before 1997, developments on this front are being monitored and will be incorporated into the Tanker Navigation Safety Standards Study, where applicable.

STUDY SUBMISSION

The Tanker Navigation Safety Standards Study is a lengthy and complicated project. As reflected in Diagram Two, the complexities of the study are exacerbated by the fact that almost every subsection impacts other subsections. For example, the adequacy of qualifications and training impacts directly on the issue of appropriate crew size. Likewise, the issue of navigation equipment is directly linked to navigation procedures, and the use of computer simulators is linked to training. Also, supporting studies that impact on more than one subsection strengthen the links between the subsections. Diagram Three shows how several major supporting studies will impact more than one subsection.

The question has been posed, "can the Coast Guard submit reports and recommendations on any of the 12 subsections before the proposed submission date in fiscal year 1995?" The answer is yes, subsections can be submitted in a piecemeal fashion. However, because of the interdependence of many section 4111 subsections and the time lag between completion of related portions, the study would lose much of its effectiveness if submitted in parts. In light of this, I am recommending that the entire study, with the exception of section (b)(7), the Tanker Exclusion Zone Study, be submitted only after all subsections have been completed. I expect a fiscal year 1995 submission of the Tanker Navigation Safety Standards Study. The Tanker Exclusion Zone Study is an independent subsection of the study and will be submitted when completed, as discussed earlier.

SECTION 4114(a)

The Committee has also expressed interest in the progress the Coast Guard has made implementing Section 4114(a) of the Act (Waters where tankers must navigate under stricter rules than are now required). The final rule which implements the three tanker navigation safety provisions is nearing completion. This rule combines the OPA 90 sections on unattended machinery spaces, auto pilot, and second officer on the bridge.

Section 4114(a) of OPA 90 requires the Coast Guard to determine where tank vessels may use an autopilot and operate with an

unattended engine room. The Coast Guard published a Notice of Proposed Rulemaking that proposed to allow highly automated tankers to operate with unattended machinery spaces when in U.S. waters. U.S. waters include navigable waters of the U.S. out to three nautical miles from the territorial sea baseline. After reviewing the comments that were received, the Coast Guard revised that proposal. A Supplemental Notice of Proposed Rulemaking was issued that proposed to require a licensed engineer in the machinery spaces of tankers whenever in U.S. waters.

Published along with the auto pilot and unattended engine room proposals was a proposed requirement for a second officer on the bridge. This Coast Guard proposal requires all tankers over 1,600 gross tons to have at least two licensed officers on the bridge when in internal waters. The final rule for this proposal is expected to be published within the next two months.

MANNING REQUIREMENTS

Finally, the Committee has asked for a report on what the Coast Guard is doing to implement sections 4114(b) through (e) on manning requirements.

The Coast Guard is meeting all the mandates of OPA 90 subsections 4114(b) through (e) with ongoing projects. None of these projects require rulemaking. The particulars for each subsection are discussed below.

4114(b) Watches 46 U.S.C. 8104(n) states, "On a tanker, a licensed individual or seaman may not be permitted to work more than 15 hours in any 24-hour period, or more than 36 hours in any 72-hour period, except in an emergency or a drill. In this subsection, 'work' includes any administrative duties associated with the vessel whether performed on board the vessel or onshore."

To meet the requirements of OPA section 4114(b), the Coast Guard recently directed Officers In Charge of Marine Inspection (OCMI's) to carefully evaluate proposed manning for tankers to ascertain whether the required crew will have the ability to comply with work hour limitations imposed by OPA 90. By letter to our field commands in June 1992, we advised that boarding officers and marine inspection personnel should conduct a review of vessel work logs, maintenance records, and interview crewmembers as necessary at inspections and re-inspections, to validate the adequacy of required manning to maintain the vessel in safe operating condition.

4114(c) Manning Requirements: Section 4114(c) adds a provision to 46 U.S.C. 8101(a) requiring the Secretary to consider navigation, cargo handling, and maintenance functions in determining a ship's complement. The Coast Guard has always considered these factors in establishing manning levels for all vessel types; however, the Marine Safety Manual is being revised to emphasize the need to consider the additional workload demand of cargo-handling and

maintenance functions in determining the appropriate manning level for U.S. tank vessels.

4114(d) Standards: Amended section 9102(a) of 46 U.S.C. now directs the Coast Guard to include instructions on vessel maintenance functions as part of the standards for duties, qualifications, and training of tank vessel crews. The United States does not issue licenses or documents that limit service exclusively on tank vessels. Therefore, vessel maintenance functions must be contained in the examinations for all licenses and document endorsements that would allow service on tank vessels. The Coast Guard has determined that, although there is no specific "vessel maintenance functions" listing in the License Examination Subjects in 46 CFR 10, the current examination question bank for licenses and merchant mariner's document endorsements already contains sufficient questions on tank vessel cargo handling equipment and general shipboard maintenance. This question bank is in a state of constant review and revision to remain current with industry standards and practices, technological evolution, and marine safety concerns.

4114(e) Records: Amended section 7502 of 46 U.S.C. now states that the Secretary shall "maintain computerized records on issuances, denials, suspensions, and revocations of licenses, certificates of registry, and merchant mariners' documents and endorsements." The Coast Guard began computerizing merchant mariners' licenses and documents in 1990 and has backloaded

personnel information on 1.9 million existing merchant mariner licenses, certificates, and documents into the database, in addition to approximately 10,000 new merchant mariner credentials per year. The Coast Guard is also studying the feasibility of using a renewable merchant mariners digitized identification card to simplify recordkeeping and the processing of shipment and discharge information, as well as expediting personnel transactions such as document renewals or endorsements.

This concludes my testimony. Thank you for the opportunity to address the Committee. I would be happy to answer any questions you may have.

CERTAIN SYNERGIES AND INTERDEPENDENCIES EXIST AMONG THE PERSONNEL-ORIENTED TASKS AND BETWEEN THE EQUIPMENT ISSUES, IMPLYING THERE IS AN ADVANTAGE TO COUPLING THE STUDY APPROACHES IN THESE AREAS

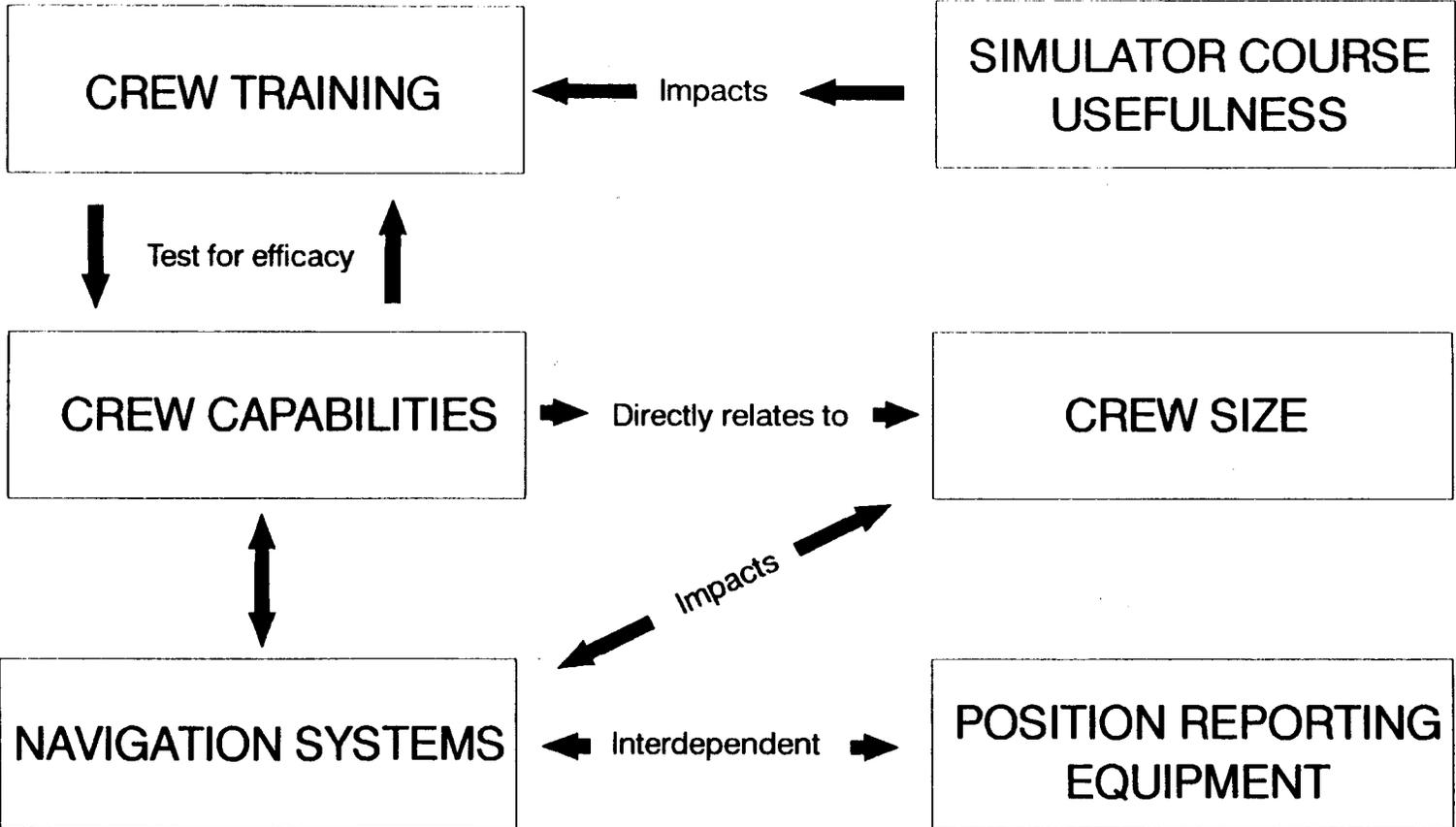


diagram 2