PROCEEDINGS
OF THE MARINE SAFETY COUNCIL

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Have a Safe and Happy Year Ahead

U.S. Department of Transportation
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PROCEEDINGS
OF THE MARINE SAFETY COUNCIL

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THIS COPY FOR NOT LESS THAN 20 READERS— PLEASE PASS IT ALONG

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PREGNANCY DIVING DANGERS

An NOAA survey of female scuba divers has confirmed that unborn children can be harmed if their mothers do not limit the depth and duration of scuba dives during pregnancy.

The damage to unborn children appears to stem from the likelihood that a fetus has a much higher susceptibility to decompression illness than does the mother.

Richard A. Frank, Administrator of the National Oceanic and Atmospheric Administration (NOAA), said the survey supports conclusions made last year in another NOAA study concerning the hazards of women scuba diving while pregnant.

The recent survey showed that three of 24 women who had dived at depths greater than 100 feet while pregnant gave birth to malformed infants. Two other women who dived extensively during pregnancy, but not to the 100-foot depth, also bore children with serious deformities.

Last year, pressure chamber tests were conducted in which pregnant sheep were monitored for nitrogen bubbles in fetal blood flow. Under compression equal to 100 foot depths for 25 minutes, bubbles in the fetal circulation were so massive the fetuses probably would have died had they not been treated promptly.

The findings from these tests led NOAA to issue a warning that even standard, no-decompression dives to 100 feet were risky for pregnant women.

A sensible approach for pregnant scuba divers is to limit dives to 60 feet (18.3 meters); limit the duration of dives to one-half the time length recommended by U.S. Navy decompression tables; and avoid strenuous dives, underbreathing (hypoventilation) and becoming chilled.

327 AMERICAN FLAG VESSELS "ADOPTED" BY ELEMENTARY SCHOOL CLASSROOMS

"Our Adopt-A-Ship Fleet numbers over 325 United States Flag Merchant Ships! We expect this number will increase before the year is over," announced Captain William V. Figari, National President of the Propeller Club of the United States. At present, 25 steamship companies have 327 ships participating in the program.

In the Adopt-A-Ship plan, sponsored by The Propeller Club for over 40 years, American grade school students "adopt" American flagships which have been made available throught the public spirited cooperation of participating U.S. steamship companies and their ships' captains. Classes and Masters correspond during the year that each ship is "adopted." School children have an opportunity to ask many questions about the ship and crew, cargoes carried and countries visited. Ships' captains and other officers send information concerning ships, trade routes, climate, weather, geography and history, and origins of cargoes carried and their importance to industries located far from the seacoasts that use such materials in manufacture of products. Captains often visit assigned classrooms. Classes frequently have the opportunity to visit their "adopted" ships when they are in port. Grade school classes in the plan represent most of the 50 states.

American flag steamship companies and ships participating in this educational program are to be commended for their interest in the education of young students.

DANGER OF FIRE/EXPLOSION DURING CARGO TRANSFER OPERATIONS DUE TO ELECTRICAL STORMS

Two major marine casualties have recently occurred as the result of tank vessels being struck by lightning while moored at transfer facilities. Those involved in cargo operations are reminded of the cautionary requirements contained in 46 CFR 35.35-40 in regard to the non-commencement or termination of cargo operations during severe electrical storms. It is apparent that determinations as to severity of electrical storms are subjective, inasmuch as serious casualties have occurred during storms of relatively short duration and moderate magnitude. Some emphasis should be placed on the option of not commencing transfer operations where electrical storms are predicted for the transfer area.

Reprinted from the Portland, Oregon Marine Safety Office Marine Safety Newsletter.

NEW VISITORS CENTER AT SEAMEN'S CHURCH INSTITUTE

"Sailing Vessels to Superships" is the special opening exhibit of the new visitors center at the Seamen's Church Institute of New York and New Jersey, located at 14 State Street, New York City (just across from Battery Park).

The new center was officially opened December 10, 1979. Its hours are 11:00 a.m. to 3:00 p.m. Monday through Saturday; admission is free.

The current show features ship models, marine art and seamen's crafts, plus photographs, artifacts and documents from the Institute's collection that highlight both the history of the Institute and the world of merchant shipping. Of special interest are a new cutaway model of the Barber Steamship Line's new vessel the Dana Caribia, shown loaded with cargo; and a giant, scaled supergraphic illustrating the relative size of prototype merchant vessels from the 16th century to the present.

For more information on this exhibit and/or the Institute, call Carlyle Windley at (212)269-2710.

PETROLEUM CARGO TRANSFER IN ANY ~~CALM~~ WEATHER

Hydrocarbon vapors are generally heavier than air. During cargo loading, ballasting or even inerting and tank cleaning operations, particularly with gasoline, a hazard

Continued on next page.....

exists that some persons may not take into consideration. This information usually gets only one or two paragraph coverage in the various manuals on tank vessel operations, but has the potential for resulting in disastrous fire or explosion. Vapors expelled from a tank are dispersed by wind, if there is any. Where the wind velocity is low, this dispersal may not be effective and the vapors may remain on or near the deck, and may flow into any deckhouse openings. Also, they may flow over the sides of the vessel and form a layer on the water entending hundreds of feet. A source of ignition within the deckhouse, out on deck or even many yards from the ship (such as from a passing vessel) may ignite the fumes. The result can be catastrophic. This situation is not merely hypothetical, but has actually occurred. For example, from the NTSB report on the SS SANSINENA explosion in 1976, "When great quantities of cargo tank gases are expelled while loading or ballasting cargo tanks, a region of flammable gases can develop around the gas outlet vent and, under low wind speed conditions, the flammable gases can extend to the ship's main deck and topside structures where most sources of ignition are located." The Chief Mate on the SS SANSINENA estimated the winds to be 2 to 3 knots. When the M/V VENUS exploded in 1972 the wind was about 4 mph right on the bow (she was anchored). Some of her companionway doors were open during gas freeing.

In looking over various other cases to use as examples for this article it was noticed that low wind velocity very often plays a part in casualties involving fire or explosion on tank vessels. It was also noticed that the wind itself could actually be fairly high but the relative wind at the venting areas was low. For example, the measured wind near the SS SANSINENA was 8 knots but was coming from the stern and was blocked by the after structure. Another ship was underway in 10 to 15 knots of wind but, you guessed it, she was making 12 knots down wind. That is why the title of this article was changed.

Various studies have shown that the most concentrated gas emissions occur toward the end of loading or ballasting, and under certain critical conditions, flammable mixtures can exist at a considerable distance (about 100 feet) from a vent outlet. The factors most critical to the occurrence and dispersion of concentrated gas mixtures are the loading rate, gas efflux velocity, crude vapor content of efflux gas, and wind speed and direction relative to the ship. Wind speed has been found to have a significant role in the dispersion of cargo tank vapor emissions. When the wind speed is about 10 mph, vapor dispersion is rapid and flammable mixtures are limited to the immediate vicinity of the vent outlet. However, as the wind speed drops to below 10 mph, flammable mixtures can extend greater distances from the vent outlet.

Persons in charge of cargo operations should evaluate weather conditions before commencing any operation that will cause vapors to be released. Additionally, regardless of the weather, deckhouse areas are required to have all openings (doors or ports) closed during transfer, so that vapors cannot get into areas containing sources of ignition. All openings into tanks should have flame screens, so that if topside fumes are ignited the flames cannot travel back into the tank and cause an explosion.

Reprinted from the Portland, Oregon Marine Safety Office's November 1979 Marine Safety Newsletter.

Quite a few rules have been published since our last issue. One package of note would be the four rules published December 17, 1979 establishing the new visual distress signal standards (CGD 76-048A, 76-048B, 76-183 and 76-183A), which were published along with a rule eliminating Coast Guard factory inspection of lifesaving equipment (CGD 76-048). Aside from these, three other rules of interest published in December are CGD 75-075, the final rules for the carriage of benzene, CGD 79-161 relating to the shipment and discharge of seamen and CGD 79-063, which shortens the time limitation for the re-examination for licenses.

Proposed rules of interest have also been published. On November 29 the proposed rules on safety approval of cargo containers (CGD 79-027) appeared. On December 3 proposed rules entitled "Conditions for Vessel Operation and Cargo Transfer" CGD 79-026 were published, as were CGD 79-072, proposed rules for stowage of lifeboats and liferafts. On December 10 the proposed rules for hopper dredges (CGD 76-080) were published and on December 13 proposed ocean dumping regulations were published.

There are still quite a few projects calling for NPRM's or final rules in the near future. The anticipated dates for publication are listed in the synopsis provided below. These dates are, however, estimates and it is entirely possible that circumstances may be such that the dates may not be met. If the Council receives a request for a regulation which has not been published we will file your request and send a copy when published. We will also notify the individual by letter, explaining the situation, when the request is received.

The Council would be happy to answer questions on the progress of any of these rules; please don't hesitate to call or write us (address listed at the end of this column).

Parts 1-199 ($8.50) of the 1979 volume of 33 CFR and parts 1-29 ($4.25), 30-40 ($4.50) and 110-139 ($4.25) of Title 46 CFR are available from the Superintendent of Documents at this time. Copies may be obtained by writing:

SupDocs
U.S. Government Printing Office
Washington, DC 20402

Continued on next page.....

KEYNOTES.....

Titles 46 and 49 have not been received by our office but should be available shortly.

The *Proceedings* would like to receive comments/suggestions on any particular rules or areas of interest that should be included in this column.

Any questions regarding regulatory dockets or companies and individuals wishing to speak at public hearings should notify Captain P. J. Danahy **at our new address:** (G-CMC/TP24), U.S. Coast Guard Headquarters, 2100 Second St. SW, Washington, DC 20593; (202)426-1477.

* * *

QUALIFICATIONS OF THE PERSON IN CHARGE OF OIL TRANSFER OPERATIONS, TANKERMAN REQUIREMENTS
CGD 74-44, 74-44a

These regulations will redefine and establish qualifying criteria for the certifying of individuals engaged in the carriage and transfer of dangerous cargoes in bulk.

It has been found that most pollution incidents are the result of personnel error; consequently, the minimum qualifications of persons involved in handling polluting substances should be specified.

As stated in the last issue, these projects have been withdrawn (44 FR 25243). New NPRM's which were anticipated in June have been delayed and are now scheduled for publication early this year under new Coast Guard docket numbers 79-116 and 79-116a.

REVISION OF ELECTRICAL REGULATIONS
CGD 74-125

This regulation will constitute a general revision and updating of the electrical regulations to conform with latest technology. It will include steering requirements for vessels other than tank vessels.

This revision is occurring because industrial standards for electrical engineering have changed in the past few years, and the regulations must be brought up to date to reflect current industry practices.

An initial NPRM was published on June 27, 1977 (42 FR 32700). A supplemental NPRM will be issued early in 1980.

NEW TANK BARGE CONSTRUCTION
CGD 75-083
UPGRADE OF EXISTING TANK BARGE CONSTRUCTION
CGD 75-083a

This action is comprised of two regulatory projects centered on tank barge construction standards. These projects were the result of a Presidential initiative of March 17, 1977, directing a study of the tank barge pollution problem. One project will address new barge construction while the other will pertain to existing barges. Regulatory documents for both will be published at the same time and joint public hearings have been held.

In July 1977, the Coast Guard began a reexamination of the tank barge construction standards. It was determined that new construction would be treated separately from existing barges. An advanced notice of proposed rulemaking (ANPRM) was then issued to gather additional data and assess impacts related to existing barges.

The new NPRM on tank barge construction, withdrawing the prior NPRM and the ANPRM for existing tank barges, was published as part VI of the June 14, 1979 Federal Register (44 FR 34440 and 44 FR 34443, respectively).

Public hearings were held on the dockets as follows: August 2, 1979, Washington, DC; August 15, 1979, Seattle, WA; August 23, 1979, New Orleans, LA; September 5, 1979, Washington, DC; and September 7, 1979, St. Louis, MO. The comments given at the hearings have been incorporated in the docket.

On Thursday, November 8, 1979 a Federal Register notice extended the comment period on the project. This extension was based on the continued public interest and ran to December 1, 1979.

This extension has expired and no further comments will be accepted. A final rule on Tank Barge Construction (CGD 75-083) is presently anticipated in June of 1980 and an NPRM on Existing Tank Barges (CGD 75-083A) is scheduled for April of the same year.

Anyone wishing to make comments or obtain copies of the rulemaking may do so by contacting Capt. P. J. Danahy, Marine Safety Council **at our new address** (telephone number has not changed) which is given in the introduction to the Keynotes section.

POLLUTION PREVENTION, VESSELS AND OIL TRANSFER REGULATIONS
CGD 75-124a

This regulation would reduce accidental or intentional discharge of oil or oily wastes during vessel operations.

The basis of this regulation is threefold. First, there is the need to reduce the number and incidence of oil spills. Second, this regulation will help to clarify the existing rules. Finally, this regulation covers the additional requirement for oil-water separators under the 1973 International Convention for the Prevention of Pollution from Ships.

The NPRM was published on June 27, 1977 (42 FR 32670). A supplemental NPRM was published October 27, 1977 (42 FR 56625). The draft of the final rule is under review by the Marine Safety Council and should appear in January 1980.

DESIGN AND APPROVAL REQUIREMENTS FOR OIL POLLUTION PREVENTION EQUIPMENT
CGD 76-088a

These regulations set out specifications and procedures for approving oil-water separators, cargo monitors, bilge monitors and bilge alarms for use on merchant vessels. They are based upon international design and test specifications adopted by the International Maritime Consultative Organization (IMCO) as Resolution

Continued on next page.....

A-393X, and provide standards for equipment that is representative of the best technology presently available.

The final rule, published in the September 13, 1979 Federal Register (44 FR 53352), requires that performance testing of prospective equipment must be done by one of the independent testing laboratories designated by the Commandant (G-MMT). The following laboratories have received authorization to commence testing:

Underwriters Laboratories
Tampa, Florida, USA

National Sanitation Foundation
Ann Arbor, Michigan, USA

University of New Castle
New Castle Upon Tyne, UK

The following three regulations, CGD 77-057, CGD 77-058(b)(c)(d), and CGD 77-063, make up the Tanker Safety and Pollution Prevention (TSPP) Regulations. Public hearings have been held on the package, comments were requested and 541 have been received. A notice of delay in publishing the final regulations was published in the June 7, 1979 Federal Register (43 FR 32713). Final rules have been published and appeared in the November 19, 1979 Federal Register (44 FR 66500).

INERT GAS SYSTEM
CGD 77-057

This regulation would require certain oil tankers of 20,000 deadweight tons and over to be fitted with inert gas systems.

As part of the President's initiatives to reduce marine pollution, this regulation will reduce the possibility of in-tank explosions which have been the cause of some pollution incidents.

The Inflationary Impact Statement for this regulation was completed in May 1977. An NPRM was published February 12, 1979 (44 FR 8984). Hearings were held March 21, 1979 in Washington, DC and March 28, 1979 in San Francisco, CA; 136 comments were received and have been evaluated and the final rule has been published.

SEGREGATED BALLAST AND
TANK CLEANING REGULATIONS
GCD 77-058(b), (c) and (d)

This four-part regulation was initiated when President Carter directed the Secretary of Transportation to issue new rules for oil tanker standards, which were to include segregated ballast on all tankers and double bottoms on all new tankers which call at American ports. The provisions of these proposed regulations have been changed by the February 1978 Intergovernmental Maritime Consultative Organization (IMCO) Conference to include Crude Oil Washing (COW) and Clean Ballast Tanks (CBT).

The NPRM was published May 16, 1977 (42 FR 24868). As a result of the IMCO Tanker and Pollution Prevention Conference of February 1978, a new NPRM was issued on February 12, 1979 (44 FR 8984). Public hearings were then held in March in Washington, DC and San Francisco, CA; 265 comments were received on the docket, and were analyzed and the final rules were formulated. These rules appeared in the Federal Register of November 19, 1979.

STEERING GEAR DESIGN
STANDARDS TO
PROVIDE REDUNDANCY
CGD 77-063

As part of the President's initiatives to reduce pollution, this regulation is needed to help reduce the possibility of a marine collision due to a loss of steering.

An NPRM was published May 16, 1977 (42 FR 24869). As a result of the IMCO Tanker Safety and Pollution Prevention Conference of February 1978, a new NPRM was issued on February 12, 1979 (44 FR 8984). Public hearings were held on the docket and 138 comments have been received and analyzed and the final rules have been published.

CONSTRUCTION AND EQUIPMENT
EXISTING SELF-PROPELLED
VESSELS CARRYING BULK
LIQUEFIED GASES
CGD 77-069

These regulations would amend the current ones to include the substantive requirements of the "Code for Existing Ships Carrying Liquefied Gases in Bulk," adopted by the Intergovernmental Maritime Consultative Organization (IMCO). The use of liquefied gas has increased, as have the problems associated with it. Due to its unique properties and the dangers associated with them, new regulations are being drafted. The environmental impact statement and regulatory analysis were completed in February 1979 and an NPRM on these regulations is anticipated in early 1980.

LICENSING OF PILOTS
CGD 77-084

This regulation takes into account the problems caused by increased ship size and unusual maneuvering characteristics. The proposal would require recency of service for each route upon which a pilot is authorized to serve, licensing with tonnage limitations commensurate with pilot experience, and consideration of ship-handling simulator training for pilots of very large vessels. A regulatory analysis and work plan were completed in October 1978. An NPRM is expected in January 1980.

REVISION OF 46 CFR 157.20-5
DIVISION INTO THREE WATCH
REGULATION
CGD 78-037

This revision would require an adjustment in vessel manning requirements, to bring them in line with current legislation. It would change the requirements which identify personnel who must be

Continued on next page.....

used on the three watches and personnel who may be employed in a day working status. An NPRM is scheduled to be published on this docket in January 1980.

TANK VESSEL OPERATIONS
REGULATIONS, PUGET SOUND
CGD 78-041

This regulation governs the operation of tank vessels in the Puget Sound area. It was initiated to reduce the possibility of environmental harm resulting from oil spills in Puget Sound. This is to be accomplished by governing the operation of tankers and reducing the risk of collision or grounding.

Former Secretary of Transportation Brock Adams signed a 180-day Interim Rule on March 14, 1978 prohibiting entry of oil tankers in excess of 125,000 deadweight tons in Puget Sound; this appeared in the Federal Register of March 23, 1978 (43 FR 12257). An ANPRM was published March 27, 1978 (43 FR 12840). An extension of the interim rule was published in the Federal Register in order to allow the Coast Guard adequate time to complete this rulemaking.

The public hearings scheduled June 11 and 12 in Seattle, Washington, June 13 in Mt. Vernon, Washington, and June 14 in Port Angeles, Washington have been completed and all the comments received have been entered in the docket files for consideration. The extension of the interim navigation rule was published June 21, 1979 (44 FR 36174). This extension was effective July 1 and will be in effect until the Coast Guard prints notice of its cancellation. Copies of documents or the transcripts of the hearings may be obtained by writing to the Marine Safety Council. A final rule on the docket is currently expected in August 1980.

EIGHT-HOUR DAY
VOLUNTARY OVERTIME
CGD 78-146

This docket is a review of the Eight Hour Day, Voluntary Overtime regulation in 46 CFR 157.2010, which states that no licensed officer should be required to be on duty more than eight hours per day except in extraordinary circumstances. Existing regulations, however, do not address overtime or consider any possible "fatigue factor." Recent Coast Guard studies have shown that this factor has a profound effect on reaction time and judgement, therefore the regulation is currently being reviewed. An ANPRM is expected early in 1980.

PERSONNEL JOB SAFETY
REQUIREMENTS FOR FIXED
INSTALLATIONS ON THE
OUTER CONTINENTAL SHELF
CGD 79-077

This regulation is concerned with the health and safety requirements for installations and vessels engaged in oil field exploration and development. This action was mandated by pending Outer Continental Shelf legislation. It will provide more comprehensive protection for personnel employed in vessels and installations in the oil trade. the work plan received by the Marine Safety Council (MSC) in early July calls for an NPRM in January 1980.

SHIPBOARD NOISE
ABATEMENT STANDARDS
CGD 79-134

These standards will establish acceptable sound levels for each of the various vessel compartments based on the latest technology. The standards will differentiate acceptable sound levels for both existing vessels and new vessels, acceptable methods of compliance, and will establish a hearing conservation program.

During the development of these standards, the U.S. Naval Ocean Systems Center (NOSC), San Diego, California was contracted by the Coast Guard to evaluate sound levels aboard several U.S. merchant vessels, to study the data obtained, and then to define the extent of the noise problem. Based on this data and other information available, they were asked to recommend a set of noise levels to be used in the control and/or elimination of the shipboard noise problem for the proposed standards.

This study has been completed. Copies will be available through the National Technical Information Service (NTIS), Springfield, Virginia 22161 after January 1, 1980 or may be obtained by contacting Captain P. J. Danahy, Marine Safety Council (G-CMC/TP24), U.S. Coast Guard Headquarters, Washington, DC 20593.

PERSONNEL AND MANNING
STANDARDS FOR
FOREIGN VESSELS
CGD 79-081

This regulation, deemed necessary to reduce the probability of oil spills, would establish minimum manning levels for foreign tank vessels operating in U.S. navigable waters. It would also establish procedures for the verification of training, qualification and watchkeeping standards. An NPRM is expected on the docket in January of 1980.

A complete listing of all Coast Guard regulations, both "significant" and "non-significant," appeared in the Monday, August 27, 1979 Federal Register (44 FR 50140).

THE COAST GUARD HAS NO PUBLIC HEARINGS SCHEDULED FOR JANUARY.

Fifth Annual 1980
Marine Safety Poster Contest

1st Prize GOLDEN SAFETY POSTER AWARD--To be presented at the 1980 National Safety Council Congress, in Chicago, Illinois

2nd Prize SILVER SAFETY POSTER AWARD--To be awarded to employer's representative attending the above Congress for eventual presentation to the 2nd Prize Winner.

3rd Prize SPECIAL GOLDEN SAFETY AWARD--Plaque to employer of First Prize winner to be awarded to corporate representative attending the above Congress as a thank you for their cooperation and interest in furthering safety in our industry.

RULES

1. Contest open to any and all employees in the marine industry, who like to draw. All posters must be on a Marine Safety subject. Any maritime operation or situation afloat or ashore may be used.

2. Confine drawing to 7½" x 10" on standard 8½" x 11" white paper, using either **black or red ink only. Draw for vertical display only.** We print from your artwork. Bold letters and strong art counts as well as subject matter. Emphasize only one idea.

3. Sign your work. Submission automatically gives copyright to Executive Committee Marine Section, National Safety Council and entrant releases all rights thereto.

4. Employer's name and address, as well as entrant's name, address and position, must be PRINTED and submitted with each entry.

5. All entries must be post marked on or before midnight, June 30, 1980. As many entries may be submitted as desired.

6. Winners will be notified via employer as soon as possible after closing date.

7. Carefully read and comply with all the above rules, and mail your entries to:

   Chairman, Audio/Visual Aids and Posters Committee
   c/o Ships' Operational Safety, Inc.
   284 Main Street
   Port Washington Harbor, NY 11050

OFFICIAL JUDGES

Elizabeth V. Stephens, Chairman
Vice President
Ships' Operational Safety, Inc.

Capt. Robert E. Hart
President
Marine Index Bureau, Inc.

Mr. Ted Alff
Vice Chairman
Audio/Visual Aids and Posters Committee

Mr. C. Bradford Mitchell
Maritime Consultant

Second Annual 1980 Marine Safety Photography Contest

Golden Safety Photography Award will be awarded to the person who submits the winning 35mm color slide. The award will be presented at the 1980 National Safety Council Congress, in Chicago, Illinois.

Sponsor's Golden Safety Award will be presented to employer of the winner in the color category, in appreciation for their cooperation and interest in furthering marine safety.

Silver Safety Photography Award will be awarded to the person who submits the winning black and white photograph. The award will be presented at the 1980 National Safety Council Congress, in Chicago, Illinois.

Sponsor's Silver Safety Award will be presented to a representative of the employer of the winning black and white photograph entry, in appreciation for their cooperation and interest in furthering marine safety training.

RULES

1. The photography contest is open to any and all employees in the maritime industry, who are photography buffs, either amateur or professional. All photography entries must be on a Marine Safety subject. The content should show a positive or negative safety topic. Give your picture a safety title, safety slogan or state the safety topic briefly and sign your entry. Any maritime operation or situation afloat or ashore may be used.

2. Color Category: Only 35mm slides will be acceptable. Your entry will be judged for content, composition, originality, safety applicability and pertinence.

3. Black and White Category: Glossy or matt prints 8" x10" or larger will be acceptable. Your entry will be judged for contrast, content, composition, originality, safety applicability and pertinence.

4. Sign your entry. Photographs and slides will not be returned. Submission automatically gives copyrights to Executive Committee, Marine Section, National Safety Council and entrant and sponsor release all rights thereto.

5. Employer's name and address, as well as entrant's name, address and position, must be PRINTED and submitted with entry.

6. All entries must be postmarked on or before midnight, June 30, 1980. As many entries in either the color or black and white category may be submitted as desired.

7. Winners will be notified via employer as soon as possible after closing date. The winners' names and companies will be published in the NSC, Marine Section newsletter.

8. Carefully read and comply with all the above rules, and mail your entries to:

Chairman, Audio/Visual Aids and Posters Committee
c/o Ships' Operational Safety, Inc.
284 Main Street
Port Washington Harbor, NY 11050

OFFICIAL JUDGES

Elizabeth V. Stephens, Chairman
Vice President
Ships' Operational Safety, Inc.

John Faulk, Vice Chairman
Safety Director
Strachan Shipping Co.

Allan Litty
President
Flying Camera, Inc.

Bob Ahrens
President
Bob Ahrens Productions, Inc.

SHIP STRUCTURE COMMITTEE PUBLISHES 12 REPORTS IN 1979

The Ship Structure Committee, the interagency committee which sponsors research to improve the hull structures of ships and other marine structures by an extension of knowledge pertaining to design, materials and methods of construction, published 12 new reports during 1979. The committee has been in existence since 1946, when it was formed to investigate the structural failures of the Liberty ships. It has published nearly 300 technical reports on a variety of subjects since that time. The member organizations, in addition to the U.S. Coast Guard, are the U.S. Navy, the Maritime Administration, the Military Sealift Command, the American Bureau of Shipping and the U.S. Geological Survey.

The reports issued this last year are:

SSC-282 Comparison of Stresses Calculated Using the DAISY System to Those Measured on the SL-7 Containership Program by H. Y. Jan, K. T. Chang, and M. E. Wojnarowski

SSC-283 A Literature Survey on the Collision and Grounding Protection of Ships by N. Jones

SSC-284 Critical Evaluation of Low-Energy Ship Collision-Damage Theories and Design Methodologies - Volume I - Evaluation and Recommendations by P. R. Van Mater, Jr., and J. G. Gianotti

SSC-285 Critical Evaluation of Low-Energy Ship Collision-Damage Theories and Design Methodologies - Volume II - Literature Search and Review by P. R. Van Mater, Jr. and J. G. Giannotti

SSC-286 Results of the First Five "Data Years" of Extreme Stress Scratch Gauge Data Collection Aboard Sea-Land's SL-7's by R. A. Fain and E. T. Booth

SSC-287 Examination of Service and Stress Data of Three Ships for Development of Hull Girder Load Criteria by J. F. Dalzell, N. M. Maniar, and M. W. Hsu

SSC-288 The Effects of Varying Ship Hull Proportions and Hull Materials on Hull Flexibility, Bending and Vibratory Stresses by P. Y. Chang

SSC-289 A Method for Economic Trade-Offs of Alternate Ship Structural Materials by C. R. Jordan, J. B. Montgomery, R. P. Krumpen, and D. J. Woodley

SSC-290 Significance and Control of Lamellar Tearing of Steel Plate in the Shipbuilding Industry by J. Sommella

SSC-291 A Design Procedure for Minimizing Propeller-Induced Vibration in Hull Structural Elements by O. H. Burnside, D. D. Kana, and F. E. Reed

SSC-292 Report of Ship Vibration Symposium '78 by E. Scott Dillon

SSC-293 Underwater Nondestructive Testing of Ship Hull Welds by R. Youshaw and C. Dyer

For copies of these reports or an index of earlier reports, contact the Secretary, Ship Structure Committee, Office of Merchant Marine Safety (G-M/TP13), U.S. Coast Guard Headquarters, Washington, DC 20593.

MERCHANT MARINE PERSONNEL STATISTICS FY 79

Merchant Marine Officer Licenses Issued

Engineer

GRADE		ORIGINAL	RENEWAL
STEAM			
Chief Engineer:		147	1,071
Unlimited		5	72
Limited			
1st Assistant:		229	402
Unlimited		2	30
Limited			
2nd Assistant:		358	537
Unlimited		8	9
Limited			
3rd Assistant:		778	771
Unlimited		2	17
Limited			
	TOTAL	1,529	2,909
MOTOR			
Chief Engineer:			
Unlimited		126	281
Limited		41	179
1st Assistant:			
Unlimited		57	94
Limited		22	62
2nd Assistant:			
Unlimited		104	98
Limited		5	18
3rd Assistant:			
Unlimited		800	1,184
Limited		10	17
	TOTAL	1,165	1,933
Uninspected Vessels:			
Chief Engineer		261	143
Assistant		68	28
	TOTAL	329	171
	GRAND TOTAL	8,036	

Merchant Marine Officer Licenses Issued
Deck

GRADE	ORIGINAL	RENEWAL
Master:		
Ocean	277	1,138
Coastwise	26	79
Great Lakes	32	90
Bays, sounds and lakes	55	195
Rivers	23	128
Chief Mate:		
Ocean	150	263
Coastwise	4	5
Great Lakes	0	0
Bays, sounds and lakes	2	0
Rivers	3	0
2nd Mate:		
Ocean	338	289
Coastwise	1	8
3rd Mate:		
Ocean	499	373
Coastwise	8	12
Pilots:		
Great Lakes	145	152
Bays, sounds and lakes	434	441
Rivers	285	375
Master (uninspected vessels)	485	385
Mate (uninspected vessels)	207	66
Motorboat Operator	4,880	3,701
Radio Officer	83	445
TOTAL	7,937	8,145
GRAND TOTAL	16,082	

Original Certificate of Registry as Staff Officers Issued

	ATLANTIC COAST	GREAT LAKES REGION	PACIFIC COAST	GULF COAST	TOTAL
Chief Purser	4	0	7	2	13
Purser	3	0	2	2	7
Senior Assistant Purser	1	0	6	1	8
Junior Assistant Purser	22	2	27	3	54
Surgeon	0	1	15	0	16
Radio Officer	8	2	3	1	14
Professional Nurse	13	1	4	0	18
Marine Physician	0	0	0	0	0
Others	6	0	0	0	6
TOTALS	57	6	64	9	136

Original Merchant Mariners Documents Issued

	ATLANTIC COAST	GREAT LAKES REGION	PACIFIC COAST	GULF COAST	TOTAL
October - December	1,345	486	715	1,813	4,359
January - March	1,742	659	878	2,155	5,434
April - June	2,862	951	1,327	2,327	7,467
July - September	1,927	752	977	2,055	5,711
TOTALS	7,876	2,848	3,897	8,350	22,971

Original and Additional Endorsements Issued

	ATLANTIC COAST	GREAT LAKES REGION	PACIFIC COAST	GULF COAST	TOTAL
AB - any waters, unlimited	303	68	161	470	1,002
AB - any waters, 12 months	439	126	164	396	1,125
AB - Great Lakes, 18 months	19	38	98	34	189
AB - other	137	35	122	151	445
Lifeboatman	469	32	310	256	1,067
Electrician	33	9	67	23	132
Oiler	293	129	197	133	752
Fireman-Watertender	290	115	124	140	669
Other QMED ratings	564	41	533	157	1,295
Tankerman	405	852	329	834	2,420
Entry-Steward	8,699	2,261	4,617	7,013	22,590
TOTALS	11,651	3,706	6,722	9,607	31,686

Towboat Operators Licenses Issued

	CANDIDATES	PASSED
Operator	1,879	1,060
2nd Class Operator	481	352
Endorsements	284	222
TOTAL	2,644	1,634

TOTAL LICENSES INCLUDING RENEWALS: 25,752

HELICOPTER EVACUATION AT SEA

By Lieutenant Commander D. R. Robbins
U.S. Coast Guard Air Station Chicago

LCDR Robbins presented his paper to the Marine Section of the 67th Annual National Safety Congress and Exposition, held in Chicago October 15-18, 1979.

THE HISTORY OF HELO RESCUE

When Igor Sikorsky developed the first successful helicopter in the early forties, one of his visions was that his aircraft could be used to save lives and relieve suffering. The first helicopter rescue at sea took place in 1945 when a barge foundered in Long Island Sound off Bridgeport, Connecticut. A helicopter from Sikorsky's Bridgeport plant flew out and rescued the two men who were clinging to the barge by lowering a rope to them.

The Coast Guard immediately recognized the potential of the helicopter as a rescue vehicle. We started working closely with Sikorsky and, in fact, had the first military helicopter pilot training school at Floyd Bennett Field, Brooklyn.

A great many advances have been made since those early days. The helicopters flown by the Coast Guard today are powered by jet engines, equipped with hydraulic hoists and are capable of landing on the water.

Both of our helicopters, the single engine H52 and the twin engine H3, are equipped with a rescue basket, specially rigged Stokes litter, a platform which is mounted in the door for water landing pick-ups, and flares, smoke floats, trail lines and blankets. The helicopters are thus able to proceed on a rescue mission at any time.

SHIPBOARD PREPARATION FOR EVACUATION

What should you do if one of your crewmembers becomes sick or injured at sea?

First, of course, attend to his immediate needs. Provide first aid, do whatever you can to make him comfortable and remove him from immediate danger.

Second, contact the Coast Guard. Be prepared to provide the following information:

The age and sex of the patient;
His breathing rate;
His pulse and blood pressure;
The patient's temperature;
A description of the injury or symptoms of the illness;
Past medical history;
Any treatment already started;
Whether or not the patient is ambulatory;
The position, course and speed of the vessel;
The estimated time of arrival at the next port;
The on scene weather conditions (include wind direction and speed, visibility, estimated cloud levels, seas and any precipitation);
The length and draft of your vessel.

Continued on next page.....

If any of this information is not readily available, do not delay contacting the Coast Guard! You can continue to gather the necessary data after notifying us.

SPECIAL NOTICE TO MARINERS

You should also be familiar with the Special Notice to Mariners, published annually, which contains general information about helicopter evacuations. This is summarized below for those who have not seen the notice.

Utilize accurate navigational information so that a rendezvous point may be properly designated by the Rescue Coordination Center.

Provide continuous radio guard on 156.8 MHZ (CH 16) FM or some other specific voice frequency. Keep the Coast Guard informed of any change to ETA at the rendezvous point.

Recommend the most suitable hoist area. When the hoist area has been determined, secure all loose gear, awnings and antenna wires. Trice up running rigging and booms. Provide firefighting equipment as available.

The vessel's course during a helicopter evacuation will generally be with the wind on the port bow, keeping the stack gases clear of the hoist area. The helicopter pilot will provide detailed instructions on both course and speed to be maintained by the vessel.

If the hoist will be made at night, light the pickup area as well as possible. DO NOT SHINE ANY LIGHTS ON THE HELICOPTER. This will blind the pilot. If there are any obstructions in the area, put a light on them so the pilot will be aware of their presence.

There will be a high noise level under the helicopter and voice communications will be almost impossible. Arrange a set of hand signals among the crew who will assist.

If possible, move the patient to, or as close to, the hoist area as his condition permits - TIME IS IMPORTANT!

If a basket is used, ALLOW THE BASKET TO TOUCH THE DECK PRIOR TO HANDLING to avoid severe shock. Be sure that the patient is strapped in the basket face up, and that he is wearing a life jacket if his condition permits.

When the crew and patient are ready for the hoist operation, signal the helicopter with "thumbs up."

NEVER SECURE THE CABLE TO THE VESSEL OR ATTEMPT TO MOVE THE BASKET WITHOUT UNHOOKING FROM THE CABLE.

If a trail line is attached to the basket, use it to steady the basket. Keep this line clear of feet.

USE COMMON SENSE

There are some other common sense items which should be remembered for a smooth evacuation.

Put the patient's identification papers, wallet, money, toilet articles, false teeth and any other items he might need in a bag or small suitcase which can be sent up with him on the hoist. Don't use a bag so large that a second hoist for it would be required. The helo may not have the time to spare on a second hoist.

Don't plan on sending anyone with the patient. The helo normally will not be able to take the extra weight; besides, we are not authorized to carry passengers.

If possible, keep someone near the radio and assign someone to act as messenger between the radio room and the hoisting area.

Keep radio transmissions to a minimum during the hoist.

COAST GUARD PREPARATION FOR EVACUATION

When your ship notifies the Coast Guard of a possible evacuation, the unit contacted will pass the information on to the Rescue Coordinating Center (RCC) which, in turn, will alert the closest appropriate rescue unit of a pending medical evacuation. At the same time, the RCC will pass the medical information on to a U.S. Public Health Service doctor for evaluation and recommendations. The doctor will probably have more questions about the patient's condition. You can expect at least a few communications back and forth before any decisions are made. While this delay may seem unnecessary to you, it is important. The doctor may decide that time is not of the essence and the patient will be better off waiting until you make port before being transferred, or he may feel that helo evacuation would be too risky. He may want a doctor or other trained medical personnel to see the patient before any evacuation is attempted.

While the doctor is making his decision, the rescue station is preparing the helicopter. The pilots will consider the distances involved, fuel requirements, weather enroute and on scene and the availability and need for medical crewmembers. Any aircraft is weight limited, and our helicopters are no exception. Weight is particularly important in the smaller H52 because every extra person equals half an hour of fuel. Therefore, careful consideration is given to the fuel, distance, and crew needed.

Once the decision has been made to evacuate the patient, the helo will proceed to an agreed upon rendezvous point. The ship will be sent the following message:

> A COAST GUARD HELICOPTER IS ENROUTE TO YOUR POSITION. IT IS SUGGESTED THAT YOU MAKE THE FOLLOWING PREPARATIONS TO ASSIST THE HELICOPTER IN EVACUATING YOUR CREWMAN. WHEN THE HELICOPTER ARRIVES IN YOUR AREA CHANGE COURSE INTO THE WIND AND

Continued on next page.....

HELICOPTER EVACUATION.....

CONTINUE AT STANDARD SPEED. THE HELICOPTER WILL PROVIDE THE BASKET FOR USE IN HOISTING THE PATIENT. DO NOT USE YOUR EQUIPMENT. DO NOT ALLOW YOUR CREWMEMBERS TO TOUCH THE BASKET UNTIL IT HAS GROUNDED ITSELF ON YOUR VESSEL. IF THE BASKET HAS TO BE MOVED TO THE PATIENT, FIRST UNHOOK IT FROM THE HOIST CABLE. DO NOT MOVE THE BASKET FROM BENEATH THE HELICOPTER WITH THE HOIST CABLE STILL ATTACHED. UPON REMOVAL OF THE HOIST CABLE DO NOT ATTACH IT TO ANY PART OF YOUR VESSEL. A CLEAR AREA FOR HOISTING IS MANDATORY. THE AFT/-CENTER SECTION OF YOUR VESSEL WILL PROBABLY BE THE BEST POSITION TO HOIST FROM. TAKE DOWN ALL POSSIBLE ANTENNAS, BOOMS, RIGGING, FLAGSTAFFS OR ANY OTHER OBSTRUCTIONS. THE HELICOPTER'S VOICE RADIO CALL IS COAST GUARD RESCUE _____. THE HELICOPTER WILL CONTACT YOU ON FREQUENCY _____ AND PASS FURTHER INSTRUCTIONS.

SEQUENCE OF EVENTS

The sequence of events during the hoist will be as follows:

The helo will arrive on scene and the pilot will evaluate the conditions and hoisting area. If it is decided to proceed with the hoist the helo crewman will direct the pilot into position over the hoisting area.

The helo crewman will lower a weighted line to the deck. One of the ship's crew should pull in this line and tend it. When all of the line is out of the helicopter the air crewman will attach the line to the hoist hook and lower the rescue rig, basket or litter to your deck. The trail line should be used to steady the rig and pull it to the ship.

Once the rig is on deck either disconnect the litter and take it to the patient or have the patient get into the basket. When the patient is safely in the rig, signal the air crewman and he will commence the hoist. Continue tending the trail line until the helo crewman has the rescue rig inside the helicopter and has taken in all the slack. Do not throw the line toward the helo but simply let go when you reach the bitter end.

TEAMWORK SPELLS SUCCESS

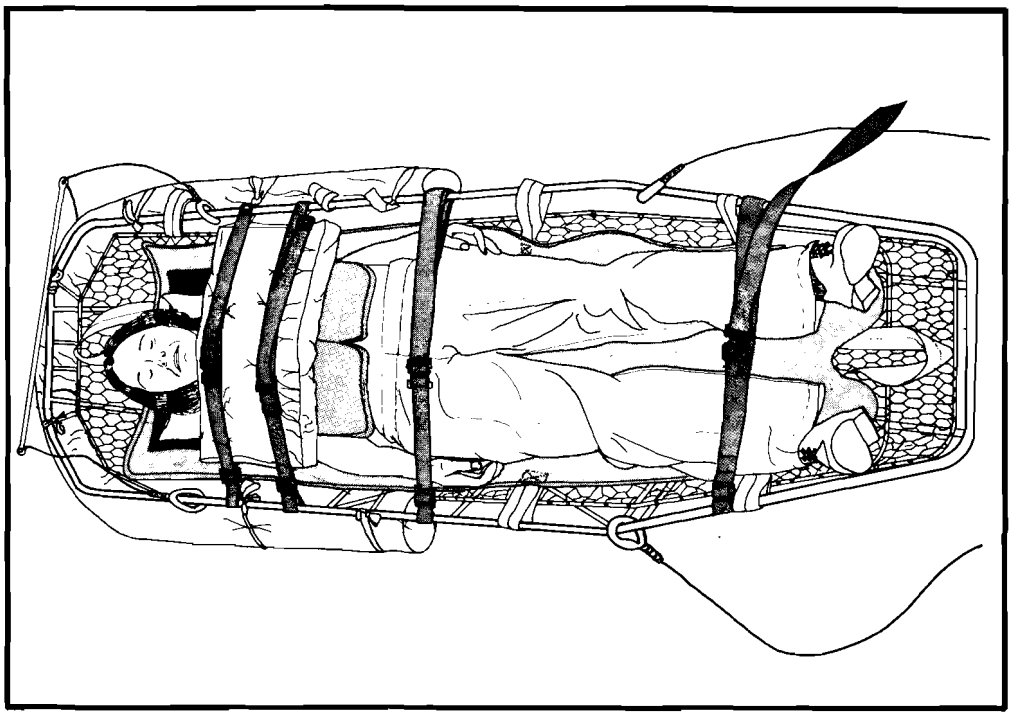
A helicopter rescue at sea can be a very difficult process, but with ship cooperation and assistance the rescue can be accomplished safely and expeditiously. Safety is the prime concern of the Coast Guard and, in particular, of the helo crew attempting the evacuation. We are no good to you or anyone else if we crash in the process. The ship's crew's assistance is essential in effecting a successful rescue.

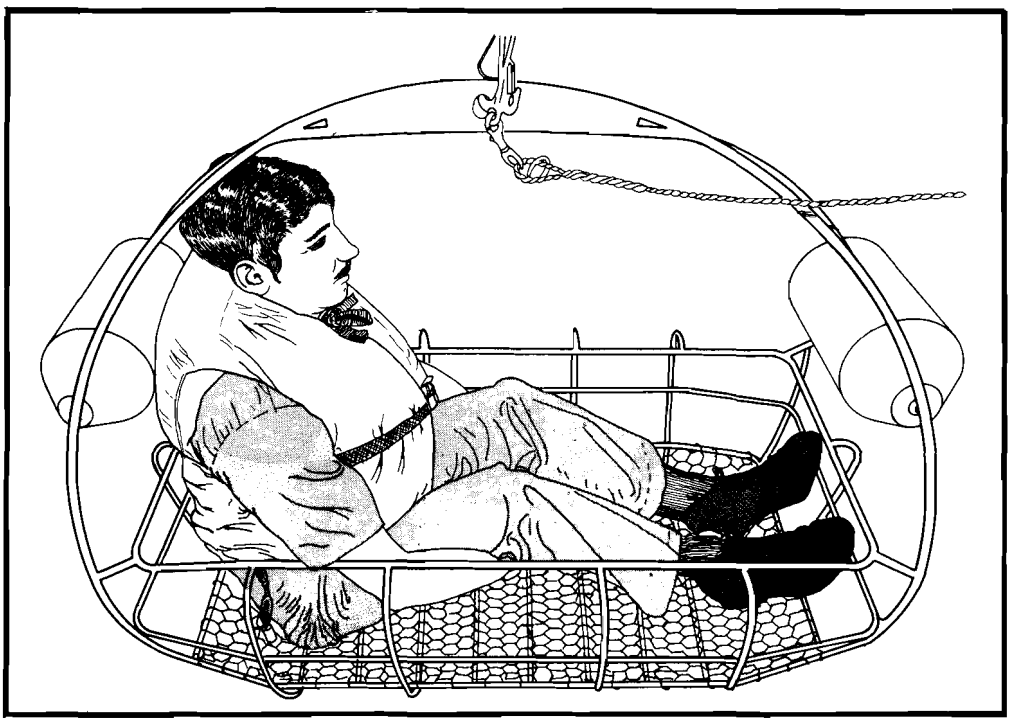
About the Author

Lieutenant Commander Dennis R. Robbins originally enlisted in the Coast Guard in March 1964. After boot camp at Cape May and seven months as a seaman on the Coast Guard Cutter COOK INLET, he was selected to be in the first class of Aviation Cadets (AVCADS). He started flight training in Pensacola, Florida in January 1965 and completed the training in June 1966. He was then assigned to Air Station Los Angeles, and has since completed tours at air stations Mobile, Brooklyn, and Puerto Rico. At present, LCDR Robbins is stationed at USCG Air Station Chicago in Glenview, Illinois.

LCDR Robbins has flown both HH52A's and HH3F's, accumulating almost 4,000 flight hours. Besides flying missions in the Pacific, Atlantic, Gulf, Caribbean and Great Lakes he has flown from icebreakers in both the Arctic and Antarctic. He has participated in numerous helicopter medical evacuations, one as far as 500 miles offshore, and has been awarded a Coast Guard Achievement Medal and a Letter of Commendation for two of these efforts.

The Lieutenant Commander holds an AA in Sociology from Inter-American University of Puerto Rico, and will soon be receiving a BA.





These illustrations are attached to the rescue equipment lowered from Coast Guard helicopters so that its proper use is obvious at a glance.

Marine Safety Manual

The Coast Guard Marine Safety Manual, the primary policy statement concerning the marine safety functions of Captains of the Port and Officers in Charge, Marine Inspection, is now available on a subscription basis from the Government Printing Office. The purpose of the manual is to document the policy and procedures concerning the entire scope of marine safety programs, including Commercial Vessel Safety, Port Safety and Security, Marine Environmental Protection, and Recreational Boating Safety. The subscription period will run for an "indefinite" period (no less than one year) during which subscribers will receive the basic manual(s) and all subsequent changes. Renewal notices will be sent to subscribers by the GPO at the end of the one year period along with any notice of price increase/decrease for the service. As an added convenience, individual volumes and/or changes may be subscribed to separately. Requests for the service should be addressed to the Superintendent of Documents, U.S.Government Printing Office, Washington, DC 20402. Subscription fees for the basic manual(s) and changes are:

SUBSCRIPTION SYMBOL	TITLE	PRICES DOMESTIC	FOREIGN
MSM 01	Volume I--Administration and Management	$11.00	$13.75
MSM 02	Volume II--Material Inspection	7.50	9.40
MSM 03	Volume III--Marine Industry Personnel	7.00	8.75
MSM 05	Volume V--Investigations	7.00	8.75
MSM 06	Volume VI--Ports and Waterways Activities	6.00	7.50
MSM 07	Volume VII--Index	7.25	9.10
	TOTAL	$45.75	$57.25

Subscription services for CHANGES ONLY (for holders of the basic volumes):

TITLE	PRICES DOMESTIC	FOREIGN
MSM 01 CHANGES	$ 9.00	$11.25
MSM 02 CHANGES	6.00	7.50
MSM 03 CHANGES	5.00	6.25
MSM 05 CHANGES	4.25	5.35
MSM 06 CHANGES	4.25	5.35
TOTAL	$28.50	$35.50

Lessons from Casualties

An 18,000 gross ton American tankship sustained a fire in the after pumproom while dischargine a cargo of heating oil, gasoline, and jet fuel. The vessel was moored at a Jacksonville, Florida terminal at the time.

During the cargo transfer, two pumps were being used to discharge regular gasoline. A third cargo pump was started soon after, which discharged jet fuel. All pumps were adjusted to maintain a discharge pressure of 70 psig. The chief mate toured the weather deck and checked all connections for leaks. At the same time the pumpman went to the lower level of the pumproom and checked the cargo pumps. An AB was maintaining a watch on the weather deck. Everything was proceeding normally.

The AB on the weatherdeck heard a sound like a "pop" which caused him to look aft. He saw heavy white smoke coming out from the pumproom exhaust at the top of the port king post. The AB ran to the ship's office and reported this to the chief mate, who called the engineroom and ordered all cargo pumps to shut down. He then went out on deck, told the terminal employee on the pier he had shut down and that the fire department should be called. He instructed the AB to close all cargo line valves. The chief mate proceeded to the pumproom door and saw heavy smoke in the lower level of the pumproom. He did not see any flames. The chief mate, pumpman, quartermaster, and the AB shut down the ventilation blowers, room doors, opened the steam smothering line, and discharged CO_2 through the fixed system to the pumproom. Meanwhile, the chief engineer had the fire and foam pumps started, put pressure on the fire and foam mains and had the engineroom fire hoses run out. He then checked the engineroom forward bulkhead, which is common with the pumproom and the ajoining settler tank bulkheads, for heat. None of the bulkheads were found to be hot.

After the fire department arrived, it was determined that the fire had been extinguished with little damage. No positive source of ignition was found, but a possible source was the failure of the flinger ring located at the after bearing on the No. 3 cargo pump. It was found to be fractured and parts were missing.

This casualty demonstrates the vital importance of ship's personnel being trained in emergency procedures on tankers. If this fire had not been handled as quickly and efficiently as in this case, a major marine catastrophe might have resulted. Adequate shipboard emergency fire procedures, especially on board tankers, cannot be stressed enough.

ENGINEROOM ABLAZE!

Oil "Burp" Ignites Aboard MV MARY TURECAMO

On August 9, 1979, during completion of fueling operations on the MV MARY TURECAMO, an overflow of fuel oil caused an engineroom fire which resulted in extensive damage. Fortunately, no one was injured.

MV MARY TURECAMO

The MARY TURECAMO was built in Cohoes, New York in 1972 and is homeported in Wilmington, Delaware. She is a towing vessel of 263 gross tons, 96.6 feet long with a breadth of 28.1 feet.

The vessel's fuel oil tanks are located in the forward part of the engineroom, integral to the hull, with a capacity of 22,000 gallons each. They are constructed from a single tank, which is divided at the vessel's center line by an oil tight bulkhead. This tank extends from the port side shell to the starboard side shell and from the bottom to a height of about 5 feet. The top of the tank is approximately 3 feet below the engineroom overhead. There are two 1½-inch fill lines, one for the port tank and one for the starboard tank, and a 4-inch vent line for each tank which terminates on the weather deck. There is also a 1½-inch sounding tube for each tank located in the engineroom at the top of the tank. The sounding tube extends approximately 8 inches above the tank and is equipped with a spring loaded gate valve.

SCENE OF THE FIRE

On August 9, the MARY TURECAMO was moored at the Exxon Terminal, Con-Hook, New Jersey, unloading Number 2 oil into its main fuel oil tanks. The fueling operation was being conducted by the vessel's Chief Engineer. The weather at the time was clear, with no appreciable winds and an air temperature of 78 degrees F.

Nearing the end of fueling operations, the Chief Engineer gauged the tank and found the fuel level to be about 8 inches from the top. He then proceeded to the main deck and gave the order to the dockman to shut down. Suddenly, he noticed smoke emerging from the engineroom! Running to the space, he saw that there were flames in the forward part of the engineroom near the fuel oil tanks.

FIGHTING THE FIRE

Firefighting efforts commenced immediately. The contents of two 15-pound CO_2 portable extinguishers were applied to the fire; an attempt to use another extinguisher revealed that it was empty with its seal intact. When it became evident that the portable extinguishers were not sufficient to control the fire, the Chief Engineer attempted to actuate the engineroom fixed CO_2 system via the remote cable pull box located on the starboard side of the deck house. However, none of the CO_2 bottles connected to this would discharge, until local control finally caused discharge of one of the pressure actuated CO_2 bottles. At this point the Chief Engineer notified the dockman to contact the local fire department.

The Bayonne, New Jersey fire department responded immediately and was on scene in an estimated five minutes. The fire was brought under control and extinguished several hours later. The vessel was towed to the Turecamo facility in Staten Island for repairs.

Subsequent examination of the firefighting equipment revealed that the fixed CO_2 system consisted of five 50-pound CO_2 bottles connected to fixed piping and designed to flood all areas of the engineroom. Three bottles were designed to be actuated by a pull cable located on the starboard side of the deckhouse, which would then actuate by pressure the remaining two bottles. These three bottles were found to be empty, and one of the two pressure actuated bottles was also empty. The valves which actuate the three CO_2 bottles by use of the pull cables were found to be in the open position. In general, the valves were not easily operated and the pressure actuated ventilation shutdown switch was frozen in the "on" position. How-

Continued on next page.....

MV MARY TURECAMO.....

ever, the quantity of the fire-fighting equipment which was in good order was sufficient to comply with the provisions of 46 CFR 25.30.

POST-CASUALTY EXAMINATION

Two 1,450 horsepower diesel engines, two ships' service diesel generators, an oil fired water heater and associated pumps and electrical motors are located in the vessel's engineroom. Four electrical motors are located on the top of the fuel oil tank, which operate pumps for the potable water, sanitary water and refrigeration/air conditioning system. Upon examination of the vessel on August 10, the sanitary water pump motor inspection plate was found to be missing, exposing the windings and brushes. The sounding tubes for the fuel oil tanks each had a sounding tape in the tube, holding the spring loaded gate valve in an open position. The level of oil in the fuel oil tanks was approximately 2 inches from the top of the tank.

The Chief Engineer stated that at the time of the casualty the main engines were secured, one ship's service generator was operating, the oil fired water heater was secured and the potable and sanitary water pumps were operating in the automatic mode. All other machinery was secured.

Damage to the vessel consisted of warped and buckled deck and side shell plating over an area of approximately 200 square feet. About 40 percent of the wiring in the engine room was destroyed, and various motors and controllers required replacement due to fire-fighting water damage.

CONCLUSIONS

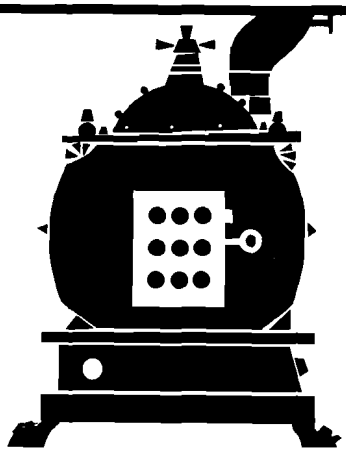
The proximate cause of the casualty was an overflow of oil from the two main fuel tanks which was subsequently ignited by an unknown source, probably one of several electrical motors in the vicinity of the overflow.

Due to the level of oil in the tank after the fire, it is concluded that the overflow from the sounding tubes was due to a "burp" of oil from the tank. This oil was ignited, and as a result heated the fuel oil tank sufficiently to produce fumes which, coupled with normal accumulation of bilge oil, continued to fuel the fire.

The fixed CO2 system was not completely operational at the time of the casualty (three of the bottles were not fully charged) which contributed to the severity of the fire.

The fact that the sounding tubes for the fuel oil tanks are located in the engine room was a contributing factor to both the cause and severity of the casualty. There is no evidence that personnel negligence or equipment failure contributed to the cause of this casualty.

This accident provides much food for thought and ideas for an evaluation of your own vessel and equipment. Will your CO_2 bottles work? Are they charged? How do you know? Can fuel overflow/leak into the engineering spaces? Are any unnecessary ignition sources present? Are spring loaded valves broken or blocked? A careful look around may reveal some potential safety oversights that are much easier to correct now than to provide for extensive repairs after the fact. This accident involved no personal injuries, but . . . .



WINTER ENERGY QUIZ

1. The easiest part of the house for do-it-yourself insulation is:
(a) interior walls; **(c) attic;**
(b) exterior walls; **(d) duct-work.**

2. Don't bother to insulate:
(a) crawl space under floors; **(c) hot water pipes;**
(b) floors over garage; **(d) cold water pipes.**

3. The easiest way to test windows and doors for air tightness is to:
(a) put your hand against the glass or wood; **(c) turn the heat off during a cold spell;**
(b) move a lighted candle around the frames and sashes; **(d) check to see if the weatherstripping is smooth.**

4. If only 1,000 homes were better insulated, caulked and weather-stripped, how many homes could be supplied with natural gas from the energy saved?
(a) 123; **(b) 368;** **(c) 539.**

ANSWERS:
(1) c, (2) d, (3) b, (4) c. (Source: Dept. of Energy.)