



DEPARTMENT OF TRANSPORTATION UNITED STATES COAST GUARD

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Increased Safety Through Vessel Traffic Sys-

tems . . .

Modernization of the International Rules of the Road (fourth installment) . . .

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#### COVERS

FRONT COVER: The old year passes out and the new year begins on a note of optimism for the United States Merchant Fleet with new and safer ships being built. Shown here is the newly christened SS Overseas Juneau, a 120,000-deadweight-ton tanker. The 883-foot ship features the latest safety, navigational, communications and antipollution equipment available. Photo courtesy Bethlehem Steel.

BACK COVER: Holiday safety is the message in this poster, courtesy of the National Safety Council. Have a safe holiday and an accident-free new year!

# Season's Greetings At this time of celebration and new beginnings 1 offer to each of our readers, at sea or ashore, my best wishes for a joyous holiday

of our readers, at sea or ashore, my best wishes for a joyous holiday season and a happy New Year. May the spirit of this season bring to all joy, hope, and peace.

> C. R. BENDER, Admiral, U.S. Coast Guard,

Commandant.

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#### OF THE

#### MARINE SAFETY COUNCIL

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Admiral C. R. Bender, USCG Commandant

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Lieutentant (jg) A. W. Vander Meer, Jr., Editor

# INCREASED SAFETY THROUGH VESSEL TRAFFIC SYSTEMS

By Capt. R. C. Hill, USCG 1

#### INTRODUCTION

ON 10 JULY 1972 a notable piece of new legislation was signed into law by the President. The purpose of the legislation, known as the Ports and Waterways Safety Act of 1972, is to promote the safety of ports, harbors, waterfront areas, and navigable waters of the United States; and to protect the resources therein from environmental harm. Title I contains very specific provisions for the Coast Guard to establish, operate, and maintain vessel traffic services and systems for ports, harbors, and other waters subject to congested vessel traffic. The purpose of this paper is to discuss the action that has been taken by the Coast Guard to promote marine safety through vessel traffic system design, development, and implementation.

A vessel traffic system (VTS) is defined as an integrated system encompassing the variety of technologies, equipment, and people employed to coordinate vessel movements in or approaching a port or waterway. It may be simply a regulated navigation area using stop and go traffic lights; or it might incorporate positive control features with high-resolution, automated surveillance equipment. Either way the objective of such systems is to reduce the probability of ship collisions or grounding, and the resulting damage to the environment. This will be accomplished by providing the mariner with more accurate, and timely, information to aid him in navigating his vessel; and by coordinating traffic movements to minimize potential accident situations.

Harbor radar services go back more than 20 years, but the United States has been quite conservative in approaching systems intended to provide some form of marine traffic control. The first shore-based harbor radar service in the Western Hemisphere was established in 1949 by Jacobsen Pilot Service, Inc., in Long Beach, Calif.; and has been operated continuously by them ever since. This was just 1 year after the first foreign radar

<sup>1</sup>Chief, Vessel Traffic Systems Branch, U.S. Coast Guard Headquarters, Washington, D.C.

installation in the port of Liverpool, England. The pilots employed by the city of Los Angeles followed suit with their own harbor radar in 1951. The radars in Long Beach and Los Angeles are installed in the pilot dispatch offices and are used by the pilots for their own purposes. They are not continuously manned.

In 1951 a harbor radar demonstration, patterned after the systems in Liverpool and Long Beach, was conducted in New York Harbor. This was initiated and funded by the Port of New York Authority. The potential benefit of providing more extensive harbor radar services was demonstrated, but funding, management, and legal problems for a permanent system were not resolved. The demonstration was terminated in 1952.

From 1962 to 1965 a second demonstration project was conducted in New York by the U.S. Coast Guard. This project, known as RATAN (radio and television aid to navigation), featured a television picture of a standard radar PPI scope. Technical problems, led to a termination of this demonstration, although the concept is still in line for future research and development.

#### SAN FRANCISCO VESSEL TRAFFIC SYSTEM

In November 1968, the Coast Guard began formulating plans for a more extensive, experimental, harbor advisory radar project this time in San Francisco Harbor. San Francisco was selected as the best site for several reasons:

a. The bay had an established voluntary vessel movement reporting system and an existing, well-developed, communications system, both of which would provide natural access to shipping.

b. The relatively high occurrence of fog would permit a more complete evaluation of the worth of the system in facilitating vessel movement in periods of low visibility.

c. Traffic density was not so high that the experiment would be unduly complex in data collection and analysis.

d. The bay complex presented several traffic patterns,

which would allow the experience gained to be extrapolated to other ports.

The Coast Guard began operating the San Francisco Harbor Advisory Radar (HAR) project on an experimental basis in January 1970. Our original concept was to proceed rather deliberately with the HAR experiment before trying to develop any fully operational systems. The collision between two tankers beneath the Golden Gate Bridge on 18 January 1971, with the resultant discharge of 800,000 gallons of oil into San Francisco Bay, greatly accelerated our plans. On 22 August 1972 the San Francisco Vessel Traffic System assumed operational status. On 15 March 1973 a voluntary traffic separation scheme became effective and in May 1973 the traffic center was moved from its temporary location on pier 45 to a newly constructed building atop Yerba Buena Island. At that time new, and much improved, radar and communications equipment were placed in operation. The system is now expanded to include communication coverage of the delta region up to Sacramento and Stockton. Regulations are under development which include provisions for mandatory participation.

The research and development efforts in San Francisco are continuing side by side with the operational system on a not to interfere basis. In July 1973 testing began on experimental synthetic displays, utilizing computerized processing of the video information. Through synthetic display of the radar information on a TV-type screen the operator will have faster, more complete data retrieval, and much more flexibility in manipulating data. Provisions are included for target capture and identification, automatic tracking, and automatic collision and grounding alerts.

#### PUGET SOUND VESSEL TRAFFIC SYSTEM

The tanker collision in San Francisco Harbor also provided the impetus for development of a Puget Sound Vessel Traffic System. Congress, in July 1971, appropriated \$1 million to start a VTS in the sound. This may also be considered a test site, although it was planned from the beginning as an operational system. Equipment and methods were developed for an area with geographical problems considerably different than those in San Francisco Harbor.

The Puget Sound Vessel Traffic System was commissioned on 25 September 1972. The major components of the system are a Traffic Separation Scheme (TSS), a Vessel Movement Reporting System (VMRS) and a continuously manned Vessel Traffic Center (VTC). Traffic lanes, marked by 17 midchannel buoys, separate vessels traveling in opposite directions. Masters report their movement and other navigational safety information to the VTC, via VHF-FM radio on channel 13, the vessel bridge-to-bridge radiotelephone frequency. They in turn receive pertinent vessel movement and other navigational safety information from the center. Limited radar surveillance of the more congested traffic areas in the Puget Sound system is presently planned for 1974. Regulations to require participation will become effective in the near future. These were the subject of a public hearing on 30 August 1973 in Seattle, Wash.

#### OTHER DEVELOPMENTS

The Houston Ship Channel is the site for the Coast Guard's next major vessel traffic system. Planning for the Houston/Galveston system is complete and construction has begun. Plans call for development in two phases. Phase I, with an operational date of November 1974, includes a VMRS from the entrance at Galveston to the Houston turning basin; a complete communications net; low light level, closed-circuit TV; and a manned center in Houston. Phase II will add radar surveillance of the seaward approach to Galveston, Bolivar Roads, and the lower Galveston Bay.

Two other major systems are in advanced stages of planning. One is for New York Harbor and approaches, including Long Island Sound. The other is for the lower Mississippi River, including both New Orleans and Baton Rouge. The Coast Guard has also completed preliminary planning for a system in Valdez, Alaska, including the upper Prince William Sound. The plans for Valdez will be activated when construction of the pipeline from the Prudhoe Bay oil discovery to Valdez is approved.

In addition to these major system developments, since passage of the Ports and Waterways Safety Act of of 1972 the Coast Guard has implemented less extensive systems on the Ohio River near Louisville, Ky., and the Atchafalaya River near Morgan City, La. We are also considering a system for the St. Clair River between Lake St. Clair and Lake Huron in Michigan.

#### NEED FOR VTS

The San Francisco VTS began as a research and development effort, but was rapidly changed to an operational system in response to a major collision. All three of the minor systems mentioned above were in response to recent major casualties, two of which involved loaded chlorine barges. There is an urgent need to do more than sit back and wait for the next serious marine casualty before acting.

No other nation in the world has the proliferation of ports and waterways that exist in the United States. These ports and waterways see almost every size and type of vessel currently in use in the world; vessels which transport thousands of different types of cargo, many of which are in the category of hazardous polluting substances.

U.S. Coast Guard marine casualty statistics show that the number of collisions, rammings, and groundings (C/R/G) in U.S. waters rose from 1,342 cases in fiscal year 1968 to 1,460 in fiscal year 1971, with the average annual reported losses to vessels, cargo, and property from these casualties in excess of \$40 million. A recent study of the Coast Guard marine casualty reports indicates that due to unreported casualties and underestimates of the dollar losses for those casualties that are reported, the actual annual dollar losses from C/R/G's are probably in excess of five times that amount or \$200 million per year. In addition, the number of persons killed annually in these accidents averaged 56 with an additional 52 persons injured. Also, in calendar year 1971, the first full year in which complete data were available, there were 116 polluting incidents caused by collisions or groundings, which spilled 2.35 million gallons of pollutants into U.S. waters.

Beyond the demonstration of a present-day need for greater safety through improved marine traffic management, and the recognition of this need that is evident by the passage of the Ports and Waterways Safety Act of 1972, planning for vessel traffic systems must consider future needs. All statistical indications are that waterborne commerce in the United States will increase insubstantially between now and 1980, and the carriage of hazardous and potentially polluting cargo will grow at an even higher rate. The increase in waterborne commerce will undoubtedly lead to increased congestion and a greater potential risk of traffic accidents unless countermeasures are taken. Further, the increased activity in, and proliferation of, hazardous polluting substances will greatly increase the potential for a large-scale marine disaster. Thus both, historical casualty data and the future outlook for waterborne commerce indicate a need for improved marine traffic safety. As will be seen vessel traffic management systems can make significant contributions to this effort.

#### CONCEPTUAL FRAMEWORK

Decisions made today will determine the direction of the VTS program for many years in the future. The immediate actions taken in response to major casualties in a particular geographic area must be augmented with concentrated efforts to identify the mechanisms of collision avoidance and the underlying causes of marine accidents. The first step in these long-range efforts was to develop a sound conceptual framework for vessel traffic management systems. This should help avoid the adverse consequences of planning in response to symptoms, rather than causes.

The objective of vessel traffic systems is to reduce the probability of vessel collisions, rammings, and groundings while facilitating the orderly movement of vessels within or through navigable waters.

Theoretically, the ideal VTS would be one in which every vessel is protected against collision, ramming, or grounding at all times and is permitted complete freedom in the use of the navigable waters at all times. Further, the ideal VTS from the user viewpoint would be a system which would permit him to depart at a time and place of his choice, move to destination, or conduct a mission utilizing routes, courses, and speeds of his choice with no delay or interference from other vessels, with minimal special operational or equipment requirements.

In practical application absolutely free transit of the port or waterway is not possible due to conflicting demands. The VTS will function as an arbiter by making a decision when more than one user wants to utilize a given portion of the waterway at the same time. Further, in order to accomplish its objective, the VTS must of necessity impose certain operational and equipment requirements on all users. It will also require adherence to certain rules and regulations designed to minimize the probability of accidents.

These operational and equipment requirements will undergo continuous scrutiny to insure they are reasonable and justified. Three basic principles will be utilized in this review process:

• The VTS must permit free transit of the navigable waters of the United States whenever possible. Restrictions will be imposed only when essential to the public interest.

• The adverse economic and operational impact on the user because of restrictions imposed, must be compared with the benefit to the user.

• The total cost of procuring and operating the VTS must be consistent with the value of the system to the national welfare.

#### PRACTICAL FRAMEWORK

Having established a conceptual framework, the next step was to describe a practical means to achieve specific program goals. This task required the intermeshing of of present-day technology with the established program direction. The approach taken was to define a workable number of finite components, hereafter referred to as elements, that could be used as the building blocks of a VTS. These elements, ranging from simple to very sophisticated in terms of the operational hardware, can be combined to form subsystems of the total VTS which are designed to best satisfy the needs of a specific geographic sector of a port or waterway. Once the configuration of the subsystems has been deterimned, effective interfaces can be developed to integrate the subsystems into a coherent whole based upon the degree of traffic management necessary and the extent of participation required. The sophistication of this integrated network of elements, traffic management, and participation determines the level of VTS for a given port or waterway.

Traffic management can be simply defined as follows: • Passive Management. Coordinating vessel traffic through indirect control of vessel movements by means of traffic separation schemes or other regulated navigation areas. This type of management does not include manned traffic centers.

· Advisory Management. Coordinating vessel traffic

by disseminating advice in the form of navigational, weather, and vessel movement information. This type of management requires manned traffic centers and includes necessary regulations.

• Active Management. Coordinating vessel traffic through direct or positive control of vessel movements from a vessel traffic center.

System elements are defined as follows:

• Regulations. This element is intended to cover all regulated navigation areas other than traffic separation schemes. Management is passive. Participation for certain classes of vessels will be mandatory. It includes such things as one way traffic lanes, speed limitations, security calls on channel 13, and tug horsepower requirements versus size or number of vessels being towed.

• Traffic Separation Scheme (TSS). A traffic separation scheme has passive management capability only. The aids to navigation system, traffic lanes, and separation lines or zones can only provide guidance to the master in navigating his vessel. Mandatory participation for certain vessels in U.S. waters may be required by Federal regulation, but the effectiveness of such regulations will be limited without provisions for enforcement. Even with enforcement, a TSS could be both voluntary and mandatory as it is not envisioned that all boats and vessels will be required to use it. However, once a vessel chooses to use the TSS, it will be mandatory to comply with the established guidelines. For port or waterway approach areas in international waters, IMCO standards will be used.

• Vessel Movement Reporting System (VMRS). A VMRS has advisory management capabilities. Vessels will report their position and other pertinent data to the vessel traffic center (VTC) where it will be recorded and made available to other participants and users. The vessel will identify itself and advise the VTS concerning intended movements. The type of information to be given the VTC will be specified in the operating procedures for the system. Participation will be mandatory for certain classes of vessels. Vessels not included in this category may participate on a voluntary basis.

• Basic Surveillance. The addition of off-the-shelf marine radar or other basic electronic surveillance equipment provides the VTS with limited capabilities to exercise active management. Advisory management will normally be used to relay information received from vessels to other vessels or interested participants. However, the system will use active management techniques when a dangerous situation appears to be developing. The VTC may then control channel entrance and exit, and port anchorage areas. This increased control may be necessary because of adverse weather conditions, congestion, routing of dangerous cargo or as otherwise necessary to reduce risk. Participation associated with this element will logically be the same as that for the VMRS since communications are necessary to utilize system capabilities. • Advanced Surveillance. This element consists of a combination of a more advanced radar system, TV-monitoring systems and/or other advanced electronic surveillance equipment. It will enable the VTC to identify vessels and more accurately fix their positions, thereby, providing for active management of vessel movements. Management may initially be advisory with a shift to active management when dangerous situations appear to be developing. With increased sophistication using advanced surveillance techniques, the VTC will have additional capabilities of managing lane assignments and fore-aft separation.

• Automated Advanced Surveillance. This elements consists of advanced surveillance with a high degree of automation. It adds the capability for rapid position fixing, vessel identification and more accurate traffic management. It implies active management, and can handle a larger number and wider scope of vessels under mandatory participation. It also allows reduced manning as a trade-off for higher initial cost.

· Summary of Elements and Management Capability

Element	Manag	em	ent
Regulations Traffic Separation Scheme (TSS) Vessel Movement Reporting System (VMRS) Basic Surveillance Advanced Surveillance Automated Advanced Surveillance	Passive Passive Advisory Advisory Advisory Active	or	active active

COSTS

In figure 1 the general trend of the cost of VTS versus the level of sophistication is presented. The levels shown relate directly to the VTS elements just defined. It must be understood that in practice there will be a mix of elements to form subsystems which would in turn translate more directly into levels. Also the cost will most certainly vary with the size of each system. So the term level is used in a very general sense. Also note that bridge-tobridge radiotelephone has been added as a base level. This will be discussed later on in the paper. The graph, however, is quite interesting. As can be seen, the cost jumps dramatically at level L2, Vessel Movement Reporting System. This is the first level that requires a manned vessel traffic center. The present cost of operating the Puget Sound System without radar surveillance, is \$350,-000 annually. The San Francisco system is about twice that of Puget Sound. Because of these high annual operating costs manned vessel traffic centers with a sole function of coordinating marine traffic movements, can only be justified on a strict benefit/cost basis in a very limited number of ports and waterways. The Coast Guard will however, continue the evaluation of less costly means to improve traffic management short of establishing manned centers. These include:

a. An expanded program to increase industry awareness of specific hazards in specified navigation areas.

b. Improvements in aids to navigation including in

particular the development of a precision navigation system for the river and harbor areas.

c. The establishment of regulated navigation zones that deal with specific problems. An example concerns the Southern Pacific RR Bridge, which crosses Berwick Bay in Morgan City, La. This bridge regularly suffers very serious damage caused by vessels or barges hitting the span supports.

d. Limited implementation of the principles of vessel traffic systems involving a modest expansion of existing Coast Guard facilities and personnel, by combining vessel traffic services with other ongoing functions.

#### ANALYSIS OF PORT NEEDS

An analysis of port needs for vessel traffic services and systems has recently been completed by the Coast Guard.

#### Figure 1 General Trend of Annual Costs Versus VTS Level<sup>1</sup>

Graph assumes hypothetical VTS in which all VTS levels can be used.



<sup>1</sup>Definition of Levels and Legend of costs

L Vesse	1 Bridge to Brid	ge Radio	telej	phor	le	•	• •	
L <sub>1</sub> - Traff	ic Separation Sch	heme .	• •		•	• •		
12- Vesse	1 Movement Repor	ting Sys	tem	• •	•	• •	• •	
L <sub>3</sub> - Basic	Surveillance .		• •		•	•		0113
L <sub>4</sub> - Advan	ced.Surveillance		• •	• •	•	• •	• •	1.11
L5- Autom	ated Advanced Su	rveillar	ce.					N/A

<sup>2</sup> Annual cost is defined as the construction cost amortized over 20 years plus the annual operating costs. Costs are based on actual costs for Puget Sound (phase I) and San Francisco, and on estimated costs for Houston/Galveston and New Orleans (phase I).

This effort involved a preliminary examination of 52 ports and waterways, and a detailed analysis of the 22 showing the most need for better traffic management. The five ports for which systems are already in either operation or being planned were included. Valdez was not included since it is a special case.

The ports were selected for analysis on the basis of tonnage of cargo handled, number of vessel transits, and number of vessels involved in collisions, rammings, and groundings (C/R/G) over a 4-year period, fiscal years 1969–72. The output of the analysis is a listing of ports and waterways in the order in which their needs for VTS will be addressed in the future.

In establishing this relative ranking 1,827 C/R/G cases involving 3,921 vessels were analyzed. The circumstances of each casualty were examined to determine which accidents could have been prevented by VTS and by what level of VTS. Estimates of expected future damages caused by C/R/G's were tabulated and estimates of damage reductions were calculated. Each of the 22 ports or waterways was then rated on 6 factors:

a. Estimated annual dollar losses due to damages.

- b. Estimated annual number of pollution incidents.
- c. Estimated annual number of deaths and injuries.

d. Estimated annual reduction in dollar damage by the selected level of VTS.

e. Estimated annual reduction in pollution incidents due to the selected level of VTS.

f. Estimated annual reduction in deaths and injuries due to the selected level of VTS.

The data base for the analysis covered a period prior to implementation of the vessel bridge-to-bridge radiotelephone regulations (B to B) on 1 January 1973. This required that an adjustment be made to take into account the expected effectiveness of those regulations. This was done by considering B to B as the base level of VTS.

There were limitations on the analysis due to time constraints and lack of data. In addition some benefits could not be readily quantified. These included the value of lost revenue due to down time to repair damaged vessels, the facilitation of traffic movements during periods of reduced visibility, and the reduced probability of a marine disaster. These benefits will be evaluated further as each port is analyzed in more detail during subsequent phases of planning. This follow-on study analyzing port needs is still undergoing final review within the Department so the complete results have not been released. It can be reported, though, that New York, New Orleans, and Houston are clearly the three ports with the greatest need for a VTS. System planning for other ports and waterways will continue, but for the immediate future the manpower available to the VTS program will concentrate on enhancing the Puget Sound and San Francisco systems; completing the Houston/Galveston system; and developing phase I of the New York and New Orleans

systems, as well as continuing with phase II planning of the latter two systems. Detailing planning and development of the Valdez system is also in the offing.

#### BRIDGE-TO-BRIDGE RADIOTELEPHONE

As shown in figure 1 bridge-to-bridge radiotelephone (B to B) was used as the first level of VTS. It is also

the most cost effective level. The costs are low, and are shared equally by the users. Shipboard radiotelephone equipment has been used on a voluntary basis in most major ports and waterways to varying degrees for many years. The new law requiring the installation of standard equipment, and a continuous guard on a dedicated frequency, will make it much more effective. How much



Figure 2

- L-Advanced Surveillance L<sub>5</sub>—Automated Advanced Surveillance

<sup>2</sup> Total number of vessels involved in Type 1 accidents: 1344. Total number of vessels involved in all accidents: 3921. The percent reduction in accidents is computed using the total number of vessels in accident. An accident is defined as any collision, ramming, or grounding incident. Type 1 accident is a collision between two or more vessels in meeting, crossing, or overtaking situations.

more? Our careful examination of over 1,800 cases indicates it should eliminate about 22 percent of the collisions between two moving vessels in meeting, crossing, or overtaking situations. This is most important because this type caualty generally causes the most damage and loss of life. Overall B to B will reduce C/R/G's by about 9 percent. The vessel bridge-to-bridge radiotelephone regulations should prove to be one of the greatest single advances in the history of marine safety, but their primary effectiveness is in preventing collisions between two moving vessels where maneuvering room is available.

#### ESTIMATED REDUCTION IN VESSEL CASUALTIES DUE TO VTS

The results of the analysis of port needs are shown in figure 2. The percent reduction in accidents due to level  $L_0$ , bridge-to-bridge radiotelephone, must be subtracted from the other levels to get an appraisal of the additional effect of VTS. In general, after deducting for B to B, vessel traffic systems can be expected to result in a 40 percent decrease in accidents between two moving vessels (type 1) and a 25 percent decrease in all collisions, rammings, and groundings. Arriving at these percentages involved a good deal of subjective judgment. The criteria used underwent much critical review. Suffice it to say here that stress was placed on defining criteria such that:

• Reasonably consistent results could be obtained by different people evaluating a single port, and

• Valid comparisons between different ports could be obtained when the criteria was applied to many ports in a consistent manner.

#### SUMMARY

This paper has presented a thumbnail sketch of an exciting, new program devoted to improving marine safety, the vessel traffic system program. The Coast Guard took the initiative in developing a national plan for vessel traffic systems. An extensive research and development project has been underway in San Francisco since 1969, and two systems are now operational with four more planned. There are many questions yet to be answered and many problems yet to be solved, but the program is moving ahead rapidly.

Safety in marine transportation has been a longstanding goal of the Coast Guard. This year the Secretary of the Department of Transportation established, as one of the 12 major department goals, a long-term objective to reduce the incidence of collisions and groundings in U.S. waters by 40 percent by the year 1990. This goal can be achieved through better marine traffic management and especially through implementation of vessel traffic services and systems where our experience and studies indicate a need.  $\ddagger$ 

ED NOTE: This article is adapted from a speech delivered before the Marine Section, National Safety Congress in October 1973.

## Wild Cargo

We have recently learned of two instances in which semi-boxed heavy duty caterpillar type diesel tractors have started up while being hauled into and out of stowage. Apparently the units involved were in gear and as they were pulled out of stow, the turning treads cranked over and started the engine. In one case, the dozer went down the partially open 'tween deck hatch, landing on the tank tops. Both ship and cargo sustained serious damages as a consequence. In another instance on the main deck, the machine tried to climb a bulkhead of the house.

We investigated the matter and found that such starting was entirely

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possible as the diesel is a compression ignition internal combustion engine. We have been assured that if the throttle of such diesel unit is fully closed, no fuel would be available in the cylinders for combustion. However, examination of the throttle position and gear lever is often impossible due to the box protecting the controls.

We suggest that the above case be brought to the attention of your stevedore, requesting that due care be given to assure that the throttles on these diesel units are fully closed prior to loading. Additionally, we recommend that every precaution be taken to prevent accidental starting of these machines during cargo operations.

While writing the foregoing, information was received of another incident of similar nature; and we quote the minutes reporting the occurrence for your consideration.

"Battery Connections on Cargo Vehicles: The Chief Mate reported an incident which occurred in Lome during cargo discharge operations. He stated that while snaking out a heavy lift, which was a four wheeled twelve (12) ton tractor, the engine started and the tractor proceeded across the hatch under its own power, finally stopping when the engine stalled. He further stated that it was very fortunate that no one was injured during the incident and suggested that the pier personnel should make a more thorough inspection of all vehicles and tractors to ensure that the batteries are disconnected prior to being loaded."

-Courtesy National Safety Council

# MAN OVERBOARD-AND SAVED!

It was a fine, warm day in the subtropics—blue sky, light breeze, slight sea, and a long, low swell from the northwest. Our VLCC, the SS. D.L. Bower, was rolling gently to the swell headed for Freeport to discharge its cargo. A maintenance gang had worked on the main deck during the morning, and the weather was so fair that not a drop of spray came aboard.

In the afternoon, the machinist and an oiler went on deck and repaired a fitting near the centerline in the vicinity of number 5 tank. When they finished their job, they walked toward the starboard side to return to the engine room. This was the "weather" side. Halfway across they were swamped by a boarding sea. The machinist held to the breakwater; the oiler was swept overboard.

The machinist managed to shout the man-overboard alarm almost immediately. This was taken up by crewmen who were working aft. They alerted the bridge. The watch officer swung the stern away from the oiler, placed the engines on standby, and called the master. Meanwhile, the chief officer heard the alarm, ran to the boatswain's storeroom, picked up three life rings and threw them overboard. Soon the oiler was out of sight.

The Master made a modified Williamson turn, posted a lookout atop the radar mast, and after the vessel had turned, reduced speed. Number 2 lifeboat and several rafts were made ready. After an anxious search the life rings were spotted, and then the oiler. Number 2 boat was launched, and the man was rescued. After a good night's rest, he was ready for duty the next day—a happy ending to an accident that only too often ends in tragedy.



But despite its happy outcome, this accident holds an old lesson for every man in the fleet.

When on the main deck of a loaded tanker, be constantly alerted for a boarding sea, regardless of the calmness of the sea. Oceanographers tell us that for every several thousand waves of a given height on the open sea, there will always be one wave that is two to five times higher than the average. This helps to explain the "freak" sea that we hear about so often. Such a wave probably struck the Bower. The men were vulnerable because they made three mistakes: They were not alert to the possibility of a boarding sea; they were not walking on the lee side; and they were unnecessarily outboard.

Experienced seamen, when out on the main deck of a loaded ship, always make it a habit to look around to "smell" how the sea is acting. They move along as close to the centerline of the ship as they can, but always on the lee side, and they try to stay in reach of protection.

The men, and the lifesaving gear on the *Bower*, responded efficiently to this sudden emergency. But, a major omission did occur. A full 2 minutes went by before anyone, including the bridge watch, threw a life ring overboard. Yet, many men knew about the accident almost immediately. When the cry "man overboard" is heard, your automatic reaction should be to run to the life ring nearest and get it over the side.

The odds against a successful rescue of men lost overboard is around 20 to 1. Daylight, flat sea conditions and a lot of luck were riding with the oiler.

-Courtesy Chevron Safety Bulletin

# MODERNIZATION OF THE INTERNATIONAL RULES OF THE ROAD

By Capt. W. W. Barrow and Cdr. J. M. Duke, USCG

ED. NOTE: This is the fourth of a series of installments on the modernization of the International Rules of the Road. The article will be continued in subsequent issues of the Proceedings. The views expressed are those of the authors and do not necessarily reflect those of the Commandant or of the Coast Guard as a whole.

#### PART C-LIGHTS AND SHAPES

#### RULE 20

#### APPLICATION

(a) Rules in this Part shall be complied with in all weathers.

(b) The Rules concerning lights shall be complied with from sunset to sunrise, and during such times no other lights shall be exhibited, except such lights as cannot be mistaken for the lights specified in these Rules or do not impair their visibility or distinctive character, or interfere with the keeping of a proper look-out.

(c) The lights prescribed by these Rules shall, if carried, also be exhibited from sunrsie to sunset in restricted visibility and may be exhibited in all other circumstances when it is deemed necessary.

(d) The Rules concerning shapes shall be complied with by day.

(c) The lights and shapes specified in these Rules shall comply with the provisions of Annex I to these Regulations.

Comment: Existing Rule 1 is the basis of this rule with one significant change. Under the existing rules various running lights *may* be used from sunrise to sunset during conditions of restricted visibility. Under this rule various running lights *must* be used when encountering restricted visibility during daylight hours.

#### RULE 21

#### DEFINITIONS

(a) "Masthead Light" means a white light placed over the fore and aft centreline of the vessel showing an unbroken light over an arc of the horizon of 225 degrees and so fixed as to show the light from right ahead to 22.5 degrees abaft the beam on either side of the vessel. (b) "Sidelights" means a green light on the starboard side and a red light on the port side each showing an unbroken light over an arc of the horizon of 112.5 degrees and so fixed as to show the light from right ahead to 22.5 degrees abaft the beam on its respective side. In a vessel of less than 20 metres in length the sidelights may be combined in one lantern carried on the fore and aft centreline of the vessel.

(c) "Sternlight" means a white light placed as nearly as practicable at the stern showing an unbroken light over an arc of the horizon of 135 degrees and so fixed as to show the light 67.5 degrees from right aft on each side of the vessel.

(d) "Towing light" means a yellow light having the same characteristics as the "sternlight" defined in paragraph (c) of this Rule.

(c) "All round light" means a light showing an unbroken light over an arc of the horizon of 360 degrees.

(f) "Flashing light" means a light flashing at regular intervals at a frequency of 120 flashes or more per minute.

Comment: The entire section of rules dealing with lights and shapes has been restructured in hopes that it will become more readable and consequently more useful to the mariner. The arc of visibility and range of visibility constitute important information for the mariner, and therefore have been included in Rules 21 and 22 respectively. Notice, however, that the information is no longer repeated in every rule. This we consider to be a significant editorial improvement. The technical methods necessary to arrive at proper arcs of visibility and ranges, as well as the various vertical and horizontal separations between lights, are matters of primary concern to ship builders. This information has been relegated to an annex so as not to clutter that information which the drafters feel the mariner needs concerning lights for properly navigating his vessel.

In addition to these editorial changes, there have been significant physical changes which we will touch on under individual rules. The change to the metric system for linear measurement will ultimately have impact upon building and repair facilities but is not of particular concern in the operation of the vessel.

Under the existing Rules (10(a)) it is mandatory that the sternlight be at the stern. This is of some concern for vessels with unusual sterns such as stern trawlers or LASH vessels with the open stern. In our view such strict wording is impracticable. In paragraph (c) of new Rule 21, the rules drafters have very nicely modified the "sternness" of the sternlight location.

In 1948 the requirements for a small light aft of the stack on towing vessels was added as an aid for towed vessels to steer by. In paragraph (d) this light has been replaced by a towing light. This, of course, is for stern tows only. The light is located above, in line with, and in addition to the normal sternlight and is yellow in color. This is the first time the color yellow has been brought into the rules. Now we can say the rules contain a four color system instead of the traditional three (Red, Green, White, and now Yellow).

In the present rules various running lights with specified arcs use the terms "unbroken light" or "unbroken arc" which have been taken literally. On the other hand, lights which are to be visible all around the horizon have been taken to mean as near as practicable. This is common sense since it is virtually impossible to have more than one all around light with an unbroken arc on any given vessel. New Rule 21(c) describes the all around light as an unbroken light over an arc of the horizon of 360 degrees. This is clearly not feasible; however, a realistic interpretation of what is attainable has been made in Annex I paragraph 9(b) to these rules. This should be particularly pleasing to the U.S. Navy which has for years wanted a specific interpretation of "all around the horizon."

On the face of it, paragraph (f) gives a construction specification for a flashing light and should be more properly placed in Annex I to these rules which contains specifications for lights. However, there are two very good reasons for putting the flashing light definition in the "mariners' rules" rather than the "manufacturers' annex": firstly, to warn the mariner that flashing lights are for the first time used in the rules as identification signals; secondly, it is of interest to the mariner that these lights flash at the extremely high rate of 120 flashes per minute. Since the most rapid of the quick flashing aids to navigation lights are 60 flashes per minute the mariner now knows there is a recognizable difference which will preclude confusing aids with flashing lights aboard ship. The only place this flashing light is allowed is for air cushioned vessels when operating in their non-displacement mode (Rule 23(b)). However, an additional set of flashing yellow lights (with a much slower flash) is authorized for special fishing conditions covered in the last paragraph of Annex II to these Rules. Additionally, U.S. submarines and barges pushed ahead in certain U.S. waters also carry flashing yellow lights. Admittedly, their flashes are at a different (slower) frequency but not enough different to preclude the possibility of confusion. We must confess our sympathies are with the mariner on this one.

#### RULE 22

#### VISIBILITY OF LIGHTS

The lights prescribed in these Rules shall have an intensity as specified in Section 8 of Annex I of these Regulations so as to be visible at the following minimum ranges:

- (a) In vessels of 50 metres or more in length:
  - -a masthead light, 6 miles;
  - -a sidelight, 3 miles;
  - -a sternlight, 3 miles;
  - -a towing light, 3 miles;
- -a white, red, green or yellow all-round light, 3 miles. (b) In vessels of 12 metres or more in length but less
  - than 50 metres in length: —a masthead light, 5 miles; except that where the length of the vessel is less than 20 metres, 3 miles;
  - -a sidelight, 2 miles;
  - -a sternlight, 2 miles;
  - -a towing light, 2 miles;
- -a white, red, green or yellow all-round light, 2 miles.
- (c) In vessels of less than 12 metres in length:
  - -a masthead light, 2 miles;
  - -a sidelight, 1 mile;
  - -a sternlight, 2 miles;
  - -a towing light, 2 miles;
  - -a white, red, green or yellow all-round light, 2 miles.

Comment: For vessels roughly 150 feet in length or over, ranges of visibility of all lights have been increased by 1 mile. For vessels between roughly 36 and 65 feet, side light visibility requirements have increased by 1 mile. Otherwise, the visibility standards are essentially the same. For the first time these visibility requirements have been translated into meaningful manufacturers' language, specifically, intensity requirements. These may be found in Annex I. As a practical matter the United States already has intensity standards for its navigational lights which are in fact more stringent than these international standards. The upshot of this is that vessels that currently meet U.S. standards are probably already in compliance with these new international requirements as far as visibility and intensity are concerned.

#### RULE 23

#### POWER-DRIVEN VESSELS UNDERWAY

(a) A power-driven vessel underway shall exhibit:

(i) a masthead light forward;

 (ii) a second masthead light abaft of and higher than the forward one; except that a vessel of less than 50 metres in length shall not be obliged to exhibit such light but may do so;

- (iii) sidelights;
- (iv) a sternlight.

(b) An air-cushion vessel when operating in the non-

displacement mode shall, in addition to the lights prescribed in paragraph (a) of this Rule, exhibit an all-round flashing yellow light.

(c) A power-driven vessel of less than 7 metres in length and whose maximum speed does not exceed 7 knots may, in lieu of the lights prescribed in paragraph (a) of this Rule, exhibit an all-round white light. Such vessel shall, if practicable, also exhibit sidelights.

Comment: Here we begin to see the fruit of the editorial labors put into the rule changes. A quick comparison will show how much easier it is for the mariner to read and understand this Rule 23 as compared with present Rule 2 with its cumbersome details. Other significant editorial changes are also evident in this Rule. First, all sizes of power-driven vessels are now contained in this single rule which does away with the need for existing Rule 7 dealing with small craft. Second, all of the "running lights" are now contained in a single rule which is very convenient for the mariner and also does away with the need for existing Rule 10 dealing with sternlights. The masthead or range lights, as the case may be, the sidelights, and sternlights of vessels under normal operations are all contained in this one rule. Lights covering special operations of various kinds may, of course, be found in other rules. We would have preferred to see air cushioned vessels (which are covered in paragraph (b) of this rule) given separate rule status, however, in the overall comparison of this rule with existing rules we would award the drafters a grade of excellent in editorial changes.

#### RULE 24

#### TOWING AND PUSHING

(a) A power-driven vessel when towing shall exhibit:

(i) Instead of the light prescribed in Rule 23(a) (i), two masthcad lights forward in a vertical line. When the length of the tow, measuring from the stern of the towing vessel to the after end of the tow exceeds 200 metres, three such lights in a vertical line;

(ii) sidelights;

(iii) a sternlight;

(iv) a towing light in a vertical line above the sternlight;
(v) When the length of the tow exceeds 200 metres, a diamond shape where it can best be seen.

(b) When a pushing vessel and a vessel being pushed ahead are rigidly connected in a composite unit they shall be regarded as a power-driven vessel and exhibit the lights prescribed in Rule 23.

(c) A power-driven vessel when pushing ahead or towing alongside, except in the case of a composite unit, shall exhibit:

(i) instead of the light prescribed in Rule 23(a)(i), two masthead lights forward in a vertical line;

(ii) sidelights;

(iii) a stern light.

(d) A power-driven vessel to which paragraphs (a) and (c) of this Rule apply shall also comply with Rule 23(a) (ii).

(e) A vessel or object being towed shall exhibit:

(i) sidelights;

(ii) a sternlight;

(iii) when the length of the tow exceeds 200 metres, a diamond shape where it can best be seen.

(f) Provided that any number of vessels being towed or pushed in a group shall be lighted as one vessel, (i) a vessel being pushed ahead, not being part of a composite unit, shall exhibit at the forward end, sidelights;

(ii) a vessel being towed alongside shall exhibit a sternlight and at the forward end, sidelights.

(g) Where from any sufficient cause it is impracticable for a vessel or object being towed to exhibit the lights prescribed in paragraph (e) of this Rule, all possible measures shall be taken to light the vessel or object towed or at least to indicate the presence of the unlighted vessel or object.

Comment: As with Rule 23 above for power-driven vessels, this rule dealing with the towing situation is much easier to read and to understand than the existing rules. In addition to significantly simplifying the language, the drafters have combined the rules for the towing vessels and the vessel towed into one clearlywritten rule. Under present rules towing is cumbersomely covered in Rule 3 and towed vessel requirements are hidden in the sailing vessel Rule 5. Except as mentioned later under Rule 2 there have been very few significant changes in lighting requirements for the towing situation. In paragraph (a) the yellow towing light already mentioned has been added to replace the "light to steer by" contained in the present rules. Paragraph (b) has been added to recognize a newcomer on the scene. Marine technology has advanced to the stage where tugs and barges of specific design can be mechanically locked so rigidly in the pushing mode that they can successfully overcome high seas operation. The rule says this combination is to be lighted as a conventional powerdriven vessel. In paragraph (c) towing alongside is mentioned for the first time in the International Rules.

Under the present rules it is necessary that towing vessels over 150 feet in length carry range lights; however, this is not clearly indicated. Paragraph (d) of the new rule makes it abundantly clear that range lights will be used where appropriate. Paragraphs (e) and (f) deal much more clearly with the towed vessel than does existing Rule 5. Again towing alongside is recognized. Paragraph (g) recognizes that some tows are much more difficult to light than are conventional barges or vessels. Examples would be raw timber carried in various configurations by logging towers or the partially submerged bags called Dracones which carry liquids and are becoming ever more common. This rule is very flexible and in essence does no more than ask the mariner to "give it his best shot." Because the vast majority of these types of towing situations are done at exceedingly slow speeds, it is not, in our view, impracticable to require a float with a white light on it. We would have preferred this rule to be a bit more stringent.

In U.S. waters mariners have experienced some difficulty in identifying various towing situations. This is particularly true of confrontations between towing complexes and various pleasure craft. Our more complicated lighting rules for towing situations generally reflect this difficulty. Accordingly, our mariners had sought three changes to the International Rules in this area: A white or even yellow flashing twenty point light to be located in the center of the bow of a pushed-ahead complex to improve this situation and bring the International Rules more closely in line with actual U.S. practice; three lights in a vertical line to indicate towing astern regardless of whether or not the two exceeded 600 feet, and two lights in a vertical line to indicate towing by pushing ahead or towing along side; and towing vessel lights to be allaround lights and located on the after mast for better identification from all directions. Although our mariners supported some of these changes by better than a 10 to 1 margin, the international community obviously did not share our enthusiasm.

#### RULE 25

SAILING VESSEL UNDERWAY AND VESSELS UNDER OARS

(a) A sailing vessel underway shall exhibit:

(i) sidelights;

(ii) a sternlight.

(b) In a sailing vessel less than 12 metres in length the lights prescribed in paragraph (a) of this Rule may be in a combined lantern carried at or near the top of the mast where it can best be seen.

(c) A sailing vessel underway may, in addition to the lights prescribed in paragraph (a) of this Rule, exhibit at or near the top of the mast, where they can best be seen, two all-round lights in a vertical line, the upper being red and the lower green, but these lights shall not be exhibited in conjunction with the combined lantern permitted by paragraph (b) of this Rule.

(d) (i) A sailing vessel less than 7 metres in length shall, if practicable, exhibit the lights prescribed in paragraph (a) or (b) of this Rule, but if she does not, she shall have ready at hand an electric torch or lighted lantern showing a white light which shall be exhibited in sufficient time to prevent collision.

(ii) A vessel under oars may exhibit the lights prescribed in this Rule for sailing vessels, but if she does not, she shall have ready at hand an electric torch or lighted lantern showing a white light which shall be exhibited in sufficient time to prevent collision.

(c) A vessel proceeding under sail when also being propelled by machinery shall exhibit forward where it can best be seen a conical shape, apex downwards.

Comment: Under the existing rules, sailing vessels must carry sidelights and a sternlight (Rule 5). Sailing vessels under 40 feet in length were relaxed to the extent that their sidelights could be portable (Rule 7(d)). Very small sailboats were required only to have a flashlight (Rule 7 (f)). All sailboats were afforded the option of carrying two twenty-point lights in a vertical line at their mast tops (red over green) for better identification. Under this new rule there has been essentially no change for large sailing vessels; however, the smaller craft have been juggled around a bit. For vessels less than twelve meters in length (this corresponds roughly to the old measurement of less than 40 feet in length) the portable sidelight option has been replaced with an option to show sidelights and sternlights from a single combined lantern at mast top. This, of

course, is a practical attempt at raising a sailing vessel's navigation lights above the area of interference from sails.

Permit us here, if you will, a slight *voir dire* excursion in defense of the mariner. Uoless this combined lantern is manufactured with a great deal of tender loving care it will appear as a tri-colored lantern.

In 1960 the present rules did away with a similar arrangement previously allowed for fishing vessels. We are not overjoyed to see this concept returned. Under the present rules there is only a three-colored system and the combined sidelight lantern for small craft is the only mixture allowed. Now consider what has been done in these rules; an additional color has been added, flashing capability has been added and a multicolored lantern has been added. This, of course, is added to the concept of two or more lights in a vertical line which has ever been present in the rules. Do not misunderstand-we are not opposed to additional concepts such as these; indeed, we are in favor of them. It is certainly much easier to remember an additional color or a flashing light than it would be to remember another combination of red, white and/or green in some vertical configuration. Our point is that we hope that future drafters will be extremely miserly in the assigning of various signals to various situations. We firmly believe that too many lights will increase confusion with a corresponding increase of danger in congested waters. A hindered towing vessel (covered in Rule 27(c) of these rules) borders on being a case in point, particularly if she is towing astern in excess of 200 meters such that the three light masthead signal would be required to shine forward. Consider three white lights on the foremast and an after range light on the after mast (assuming the vessel is in excess of 50 meters) plus two sidelights, the sternlight, and the after towing light. If this vessel wishes to claim hinderance privilege under the provisions of Rule 27(c) she must add three all-round lights therein required. (Red, White, Red).

This makes eleven lights in all required of this vessel with at least five visible from any direction and as many as nine visible from head-on. The mariner might justifiably argue that this is a bit much.

Identification signals (as opposed to running lights) are generally all-round lights. In paragraph (c) of this rule the optional red-over-green sailing vessel identification signal has been changed from its twenty-point characteristic contained in the present rules to all-round status as stated here. For obvious reasons of confusion this signal may not be used if the combination lantern election of paragraph (b) is exercised.

In paragraph (d) small sailboats are defined as anything under 7 meters. Vessels in this category need carry only a flashlight. U.S. sailing enthusiasts and sailing vessel manufacturers will probably be quite pleased with this rule, particularly for auxiliary sailing vessels under 7 meters in length, hecause it will be quite simple to comply with both national and international rules with one set of lights. The second section of this paragraph extends these sailing vessel lights and relaxations to vessels under oars, regardless of their size.

The final paragraph of Rule (e) is essentially the same as existing Rule 14 which requires a daylight shape for a vessel using both sail and power.

#### RULE 26

#### FISHING VESSELS

(a) A vessel engaged in fishing, whether underway or at anchor, shall exhibit only the lights and shapes prescribed in this Rule.

(b) A vessel when engaged in trawling, by which is meant the dragging through the water of a dredge net or other apparatus used as a fishing appliance, shall exhibit:

(i) two all-round lights in a vertical line, the upper being green and the lower white, or a shape consisting of two cones with their apexes together in a vertical line one above the other; a vessel of less than 20 metres in length may instead of this shape exhibit a basket;

(ii) a masthead light ahaft of and higher than the allround green light; a vessel less than 50 metres in length shall not be obliged to exhibit such a light but may do so;

(iii) when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a sternlight.

(c) A vessel engaged in fishing, other than trawling, shall exhibit:

 (i) two all-round lights in a vertical line, the upper being red and the lower white, or a shape consisting of two cones with apexes together in a vertical line one above the other; a vessel less than 20 metres in length may instead of this shape exhibit a basket;

 (ii) when there is outlying gcar extending more than 150 metres horizontally from the vessel, an all-round white light or a cone apex upwards in the direction of the gear;

(iii) when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a sternlight.

(d) A vessel engaged in fishing in close proximity to other vessels may exhibit the additional signals described in Annex II to these Regulations.

(c) A vessel when not engaged in fishing shall not exhibit the lights or shapes prescribed in this Rule, but only those prescribed for a vessel of her length.

Comment: Under existing rules green over white signifies dragging a dredge or trawl net which is considered less cumbersome and likely to endanger approaching vessels than surface net or long line fishing. The latter types of fishing are indicated by red over white. White lights for outlying gear and day shapes are also provided for. Under existing Rules a trawling vessel (green over white) may show an additional 20-point white light aft of its fishing signal but such light must be lower than the fishing signal. This light now is to be higher than the fishing signal, which makes sense because it will be easier to see and can be used as a range light. It is no longer optional for a fishing vessel in excess of 50 meters in length to carry this light. The remainder of the fishing vessel rule has been kept intact; however, four additional

#### RULE 27

#### VESSELS NOT UNDER COMMAND OR RESTRICTED IN THEIR ABILITY TO MANOEUVRE

(a) A vessel not under command shall exhibit:

(i) two all-round red lights in a vertical line where they can best be seen;

(ii) two balls or similar shapes in a vertical line where they can best be seen;

(iii) when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a sternlight.

(b) A vessel restricted in her ability to manoeuvre, except a vessel engaged in minesweeping operations, shall exhibit:

(i) three all-round lights in a vertical line where they can best be seen. The highest and lowest of these lights shall be red and the middle light shall be white;

(ii) three shapes in a vertical line where they can best be seen. The highest and lowest of these shapes shall be balls and the middle one a diamond;

(iii) when making way through the water, masthead lights, sidelights and a sternlight, in addition to the lights prescribed in sub-paragraph (i);

(iv) when at anchor, in addition to the lights or shapes prescribed in sub-paragraphs (i) and (ii), the light, lights or shape prescribed in Rule 30.

(c) A vessel engaged in a towing operation such as renders her unable to deviate from her course shall, in addition to the lights prescribed in sub-paragraph (b) (i) and (ii) of this Rule, exhibit the lights or shape prescribed by Rule 24(a).

(d) A vessel engaged in dredging or underwater operations, when restricted in her ability to manoeuver, shall exhibit the lights and shapes prescribed in paragraph (b) of this Rule and shall in addition, when an obstruction exists, exhibit:

(i) two all-round red lights or two balls in a vertical line to indicate the side on which the obstruction exists;

(ii) two all-round green lights or two diamonds in a vertical line to indicate the side on which another vessel may pass;

(iii) when making way through the water, in addition to the lights prescribed in this paragraph, masthead lights, sidelights and a sternlight;

(iv) a vessel to which this paragraph applies when at anchor shall exhibit the lights or shapes prescribed in subparagraphs (i) and (ii) instead of the lights or shape prescribed in Rule 30.

(e) Whenever the size of a vessel engaged in diving operations makes it impracticable to exhibit the shapes prescribed in paragraph (d) of this Rule, a rigid replica of the International Code flag "A" not less than 1 metre in height shall be exhibited. Measures shall be taken to ensure all-round visibility.

(f) A vessel engaged in minesweeping operations shall, in addition to the lights prescribed for a power-driven vessel in Rule 23, exhibit three all-round green lights or three balls. One of these lights or shapes shall be exhibited at or near the foremast head and one at each end of the fore yard. These lights or shapes indicate that it is dangerous for another vessel to approach closer than 1,000 metres astern or 500 metres on either side of the minesweeper.

(g) Vessels less than 7 metres in length shall not be required to exhibit the lights prescribed in this Rule. (h) The signals prescribed in this Rule are not signals of vessels in distress and requiring assistance. Such signals are contained in Annex IV to these Regulations.

Comment: This, of course, is the new version of present Rule 4 for not-under-command and hampered vessels. However, several modifications have been made in this area. In paragraph (b) (ii) the color requirements have been removed from the hampered-vessel day shape. Under existing rules the red, white, red hampered vessel signal is carried in lieu of range lights. Under these rules that signal is carried in addition to range lights ((b) (iii)). As discussed earlier, paragraph (c) of this rule makes provision for towing vessels to utilize this signal where appropriate.

Paragraph (d) introduces a new signal for dredging or other underwater operations, namely a signal indicating safe side or unsafe side. These types of vessels, in addition to the red, white, red hampered light, will on their safe side exhibit two green all-round lights in a vertical line indicating safe to pass. On the side where an obstruction exists there will be two red lights in a vertical line indicating it is unsafe to pass. Several of the European and other nations utilize this type of signal in their local rules. The United States' local rules generally handle this situation with whistle signal exchanges between the dredge and the approaching vessel to determine safe passing situation. We believe this is a good idea and would hope the green safe side, red unsafe side concept becomes a universally accepted set of signals.

In paragraph (e) a new concept of day shapes is introduced—the use of a rigid replica of an international code flag, namely "A". The code meaning for this signal as "diver-down" and it is here allowed for small vessels engaged in diving operations. The signal is to be at least 1 meter in height and measures are to be taken to ensure all-round visibility. Presumably this means either a crisscross or square matrix arrangement visible from all directions. In any event this would be quite a sizeable shape. For our money, we would prefer to comply with the basic rule and show the ball-diamond signal for a hindered vessel, particularly since Annex I Paragraph 6(c) allows smaller vessels to reduce the basic size of the signal compatible with the vessel limitations.

Under existing rules (4(d)(i)), minesweepers carry a green light or a ball at the foremast top and a similar signal at the end of the foremast yard on either side sweeping operations are being carried out. Under this rule these signals have not changed except that the masthead signal and both yard end signals must be shown at all times during sweeping operations regardless of whether or not sweeping is only conducted from one side.

Under existing rules, vessels of less than 65 feet in length need not display lights or shapes for not-undercommand and for vessels aground (Rule 7(g)). In the new rules (28(g)), the relaxations are limited to vessels of less than 7 meters in length. Presumably then under these rules all vessels roughly in excess of 21 feet must comply. There may be some relief from this situation at least for some additional vessels further on in the rules (see our comments concerning Rule 38(c)). Under existing rules, small vessels are presumably required to show both lights and shapes for hindered vessels (red, white, red). This rule exempts vessels less than 7 meters from the requirement to show corresponding day shapes. Unless the drafters had in mind some particular operation such as using a small vessel to shift oil booms, dredge lines or the like during daylight hours only, the logic of this wording escapes us.

Paragraph (h) of this rule is essentially the same as the advisement contained in the existing Rule 4(g).

#### RULE 28

#### VESSELS CONSTRAINED BY THEIR DRAUGHT

A vessel constrained by her draught may in addition to the lights prescribed for power-driven vessels in Rule 23, exhibit where they can best be seen three all-round red lights in a vertical line, or a cylinder.

Comment: Most of the maritime nations (our mariners were in favor of this by a margin of 4 to 1) wanted a special signal for the huge deep draft vessels while navigating in narrow channels or otherwise restricted waters. This signal appears to fill the bill very nicely. If there is a problem with this addition to the rules, it would be abuse of this signal by vessels not rightfully entitled to its use: by definition a vessel with an 8-foot draft could display this signal in a narrow channel of 9-foot depth if she were so inclined. However, if she were to equip herself to do so then subsequently continue to use these lights in larger and deeper channels that would be a significant breach of the intent of this rule. We do not believe this will be a serious problem.

#### RULE 29

#### PILOT VESSELS

(a) A vessel engaged on pilotage duty shall exhibit:

(i) At or near the masthead, two all-round lights in a vertical line, the upper being white and the lower red;
 (ii) when underway, in addition, sidelights and a sternlight:

(iii) when at anchor, in addition to the lights prescribed in sub-paragraph (i), the anchor light, lights or shape.

(b) A pilot vessel when not engaged on pilotage duty shall exhibit the lights or shapes prescribed for a similar vessel of her length.

Comment: The rule for pilot vessels has been shortened and streamlined. Again we offer praise to the drafters of the rules for a job well done. White over red has been retained. The lengthy portion dealing with sailing pilot vessels has been removed as have the provisions for displaying flare-up lights. Sailing pilot vessels are rapidly disappearing and most communications with pilot vessels are now by voice radio.

#### RULE 30

#### ANCHORED VESSELS AND VESSELS AGROUND

(a) A vessel at anchor shall exhibit where it can best be seen:

(i) In the fore part, an all-round white light or one ball;
(ii) at or near the stern and at a lower level than the light prescribed by sub-paragraph (i), an all-round white light.

(b) A vessel of less than 50 metres in length may exhibit an all-round white light where it can best be seen instead of the lights prescribed in paragraph (a) of this Rule.

(c) A vessel at anchor may, and a vessel of 100 metres and more in length shall, also use the available working or equivalent lights to illuminate her decks.

(d) A vessel aground shall exhibit the lights prescribed in paragraph (a) or (b) of this Rule and in addition, where they can best be seen:

(i) Two all-round red lights in a vertical line;

(ii) three balls in a vertical line.

(e) A vessel less than 7 metres in length, when at anchor or aground, not in or near a narrow channel, fairway or anchorage, or where other vessels normally navigate, shall not be required to exhibit the lights or shapes prescribed in paragraphs (a), (b), or (d) of this Rule.

Comment: The lights and shape requirements for vessels anchored or aground are similar to those contained in the existing rules with three exceptions. The anchor light no longer need be in the forward part of the vessel for vessels of less than 50 meters in length.

This gives much-needed flexibility to the placement of this light on smaller vessels. This change originated in the United States and was favored by our mariners in ratio 4 to 1. Paragraph (c) of this rule authorizes the use of deck lights to further illuminate an anchored vessel. This is made mandatory for vessels in excess of 100 meters in length. The wording of this paragraph is confusing and could be taken to mean a vessel in excess of 100 meters shall illuminate her decks at all times; however, the use of titles for these rules has solved that problem because now Rule 30 will not even be entered unless we are taking about a vessel anchored or aground. The idea of additional lighting for large anchored vessels originated from U.S. mariners who wanted to see the very large vessels illuminate themselves while at anchor with a deck light every 100 feet along the side (as is done in the Great Lakes now). We don't believe this is as good as the Great Lakes System; however, it does get the job done and we are glad to see this change in the rules.

In paragraph (e) small vessels are excused from the display of anchor or aground signals if they properly anchor off the beaten path. Our small boat community is much in favor of and will be exceedingly pleased with that portion of this rule. However, the 7 meter cutoff is going to give a little trouble. We have been generally unsuccessful in having small vessels utilize day shapes of any kind. In fact there is a pilot rule that excuses vessels of less than 65 feet from showing an anchor ball even in fairways and channels. Under this rule, vessels in excess of 7 meters are even responsible for aground signals.

Considering only pleasure craft, there are several hundred thousand U.S. vessels that might be affected by this rule.

When an anchored vessel is approached from ahead or astern, one of its so-called all-round anchor lights is usually obscured by the deck house. This fact is ignored by the existing rules. This new draft recognizes that fact in paragraph 9(b) of Annex I of these rules.

#### RULE 31

#### SEAPLANES

Where it is impracticable for a seaplane to exhibit lights and shapes of the characteristics or in the positions prescribed in the Rules of this Part she shall exhibit lights and shapes as closely similar in character and position as is possible.

Comment: Rather than fill several rules with dissertations on seaplanes (take a quick look at existing Rule 2 or existing Rule 11) the drafters have very wisely told the seaplane people in one short rule to do the best they can. Our mariners favored this change by a margin of 10 to 1.



# MARITIME SIDELIGHTS

## TOWBOAT OPERATOR LICENSING REQUIREMENTS BECOME EFFECTIVE

Last March the Coast Guard promulgated regulations requiring every commercial towing vessel of 26 feet or more in length while underway to be under the direction and control of a person licensed by the Coast Guard. Those regulations implemented the Towing Vessel Operator Licensing Act (46 U.S.C. §405(b)). The act exempts certain vessels engaged in the mineral and oil exploitation industry from the requirements. The regulations and the act became effective September 1, 1973.

The new regulations contain a section which permits the licensing of certain persons who had been employed in the towing industry before the effective date of the regulations under reduced examination require-(This is the so-called ments. "Grandfather Glause"). Under this provision, the only examination subject is the Rules of the Road applicable on the broad geographical waters upon which the applicant for a license had gained his service. The Coast Guard began examining and licensing these persons during the first week of March 1973. By September 1, there were 13,972 persons specifically licensed to operate uninspected towing vessels. This total includes 11,090 persons now holding licenses as Operator of Uninspected Towing Vessels, 146 persons holding licenses authorizing service as Second-Class Operator of Uninspected Towing Vessels (persons 19 and 20 years of age) and 2,736 persons who have previously existing deck licenses as master, mate or pilot specifically endorsed to authorize service on these vessels.

Listed below are the locations of various Coast Guard Marine Inspection or Marine Safety Officers and the number of licenses authorizing service on towing vessels under any of the categories discussed above.

-	
New Orleans	2,817
Memphis, Tenn	1,240
St. Louis	764
New York	681
Houston, Tex	675
Seattle	603
Norfolk, Va	584
Port Arthur, Tex	583
Portland, Ore	513
Louisville, Ky	456
Paducah, Ky	444
Huntington, W. Va	438
Pittsburgh, Pa	382
Mobile, Ala	375
Tampa, Fla	309
Albany, N.Y.	237
Baltimore	200
Nashville, Tenn	186
Philadelphia	183
Galveston, Tex	182
Jacksonville, Fla	180
Chicago	179
Corpus Christi, Tex	179

Los Angeles	_ 162
San Francisco	_ 149
Miami	_ 135
Wilmington, N.C	_ 121
Savannah, Ga	_ 106
Cincinnati	- 97
Dubuque, Iowa	_ 93
Juneau, Alaska	_ 89
Detroit	_ 78
Providence, R.I	71
Charleston, S.C.	_ 63
Anchorage, Alaska	. 57
Honolulu	50
Buffalo, N.Y	45
Cleveland	40
Portland Me	39
Boston	37
San Diego	36
San Juan PR	31
St Ignace Mich	- 30
Dubath Minn	- 50
Talada Obia	- 24
Cuerry Child	- 21
Cruain	- 0

Nationwide, approximately 23 percent of the applicants taking the Rules of the Road examination have failed.

Persons who wish to apply for licenses as Operator of Uninspected Towing Vessels under the "Grandfather clause" have through May 31, 1974, to file their applications at Marine Inspection Offices in any of the ports listed above. In order to qualify for the reduced examination, one must have had at least 1 year's experience in the operation of towing vessels in the 3 years preceding September 1, 1973.



### SEAMANSHIP TROPHY AWARDED FOR EIGHTH TIME

The above photograph shows Maritime Administration Eastern Region Director Thomas A. King presenting the 1973 American Merchant Marine Seamanship Trophy to Captain George L. Hollinger, master of the Pacific Far East Line freighter Japan Bear. In a ceremony which took place aboard the PFEL vessel Monterey in San Francisco, Captain Hollinger was honored for the distinguished seamanship he evidenced in the rescue of 32 persons from a sinking Karean ship in the East China sea last year.

This is the eighth award made since the Trophy was originated in 1962 to recognize acts of distinguished seamanship by United States Citizens. Nominations for the award, which are received on a continuing basis, are considered by a select committee comprised of leading executives from the shipping industry, maritime labor and the government. Robert J. Blackwell, Assistant Secretary of Commerce for Maritime Affairs, chairs the Select Committee.

The 1974 award will be given for events that occurred in calendar year 1973. Nominations are encouraged, and may be sent to the Office of the Eastern Region Director, Maritime Administration, 26 Federal Plaza, New York, N.Y. 10007.

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# COAST GUARD RULEMAKING

# (Status as of 1 November 1973)

	Notice of proposed rulemaking	Public hearing	Deadline for comments	Awaiting final action	Withdrawn	Published as rule	Effective date
1972 PUBLIC HEARING							
Tailshaft inspection and drawing (67–71, 4–71) Definition of international voyage (12–70) Portable foam firefighting equipment—tank vessels (17–	3–1–72 3–1–72	3–27–72 3–27–72	4–3–72 4–3–72	×		10-24-73	1-1-74
71)	3-1-72	3-27-72	4-3-72	×	• • • • • • • • • • •		
ANCHORAGE REGULATIONS							
Casco Bay, Maine Henderson Harbor, N.Y St. John's River, Fla. (CGFR 71–162). San Juan Harbor, P.R. (CGFR 72–12). Willington River, Ga. (CGFR 71–153). San Diego Harbor (CGD 72–228). Juan De Fuca, Wash. (CGD 72–233). Chester River, Md. (CGD 72–233). Chester River, Md. (CGD 73–10). Milwaukee Harbor, WI (CGD 73–48). Barbers Point, Oahu, HI (CGD 73–48). Barbers Point, Oahu, HI (CGD 73–48). Barbers Bay, NY (CGD 73–44). Baltimore Harbor, MD (CGD 73–125). Oyster Bay, NY (CGD 73–126). Potts Harbor, ME (CGD 73–124). Puget Sound Area, WA (CGD 75–180).	$\begin{array}{c} 6-16-72\\ 6-28-72\\ 12-22-71\\ 12-5-72\\ 12-5-72\\ 12-5-72\\ 1-9-73\\ 3-19-73\\ 3-90-73\\ 4-27-73\\ 6-19-73\\ 6-19-73\\ 8-24-73\\ \end{array}$		$\begin{array}{c} 7-19-72\\ 8-1-72\\ 1-31-72\\ 3-4-72\\ 12-27-71\\ 1-8-73\\ 2-27-73\\ 2-27-73\\ 4-16-73\\ 4-20-73\\ 5-29-73\\ 7-20-73\\ 7-20-73\\ 9-28-73\\ \end{array}$	******			
BOATING SAFETY (GENERAL)							()
Termination of unique vessels (CGD 73-40) Hazardous bar areas (CGD 73-41)	3–14–73 3–14–73	5-8-73 4-17 & 19-73	5–14–73 5–1–73	××			
BRIDGE REGULATIONS	11 11 70		10.15.50				
Nansemond R., Va. (CGD 72-244). John Day R., Blind Slough, Clatskanie R., Oregon (CGD 72-231). Nanticoke, Del. (CGFR 71-142). Ogden Slip, Chicago, Ill. (CGFR 72-16). Sacramento River, Cal. (CGFR 71-165). Clcar Creek, Tex. (CGD 72-165P). Pascagoula R. MS (CGD 73-140).	11-11-72 11-28-72 11-24-71 2-2-72 12-29-71 8-26-72		12-15-72 1-2-73 12-24-71 3-7-72 2-7-72 10-3-72	× ×××××		7–12–73	10-8-73 through
Cooper R. SC (CGD 73-139). Sacramento R. et. al. CA (CGD 73-142). Lechmere Canal MA (CGD 73-163). Westchester Ck. NY (CGD 73-166). Big Carlos Pass FL (CGD 73-164). Cheesequake Ck. NJ (CGD 73-162). Green R. KY (CGD 73-171). Pompano Beach, Fla. (CGD 72-158P). St. Lucie River, Fla. (CGD 72-168P). West Palm Beach, Fla. (CGD 72-168P). West Palm Beach, Fla. (CGD 72-167P). AIWW, Mile 342, Fla.; Drawbridge Operations (CGD 72-190P). Barnegat Bay, N.J. (CGD 72-211). Menominee River, W1 (CGD 73-12). Spa Creek, MD (CGD 73-13). Long Island Inland Waterway (CGD 73-23). Shaws Cove, CT (CGD 73-72).	7-12-73 7-20-73 8-10-73 8-10-73 8-10-73 8-21-73 8-22-72 8-26-72 8-26-72 9-30-72 10-31-72 1-26-73 1-26-73 2-12-73 4-18-73 Corrected		$\begin{array}{c} 8-14-73\\ 8-21-73\\ 9-11-73\\ 9-11-73\\ 9-11-73\\ 9-25-73\\ 9-26-72\\ 10-3-72\\ 10-3-72\\ 10-3-72\\ 12-5-72\\ 3-6-73\\ 3-6-73\\ 3-30-73\\ 5-18-73\\ \end{array}$	***********			1-4-74

December 1973

Coast Guard Rulemaking—Continued

	Notice of proposed rulemaking	Public hearing	Deadline for comments	Awaiting final action	Withdrawn	Published as rule	Effective date
pernong R., NC (CGD 73-111) way R., NJ (CGD 73-196). labama R., AL (CGD 73-195). shepoo R., SC (CGD 73-198). Red River LA & AR (CGD 73-197). Corte Madera CK, CA (CGD 73-199). Gulf Intracoastal Waterway, FL (CGD 73-204)	. 5-29-73 9-11-73 9-11-73 9-11-73 9-11-73 9-11-73 9-11-73		7-3-73 10-16-73 10-16-73 10-16-73 10-16-73 10-16-73	XXXXXX		9-13-73	8-15-73
Genesee R., NY (CGD 73-203). Navigable Waters in LA (CGD 73-214) Puyallup R., WA (CGD 73-215). Stony Ck., MD (CGD 73-242).	9–13–73 9–27–73 10–3–73 10–12–73	· · · · · · · · · · · · · · · · · · ·	10-16-73 10-30-73 11-6-73 11-20-73	×	••••••••••	· · · · · · · · · · · · · · · · · · ·	through 3–1–74
Compared Co. C. L. Compared Co. C. L.							
Dichlorobutene, Corrected, F.R. 9-20-72, Hazardous	8-31-72	9-28-72	10-2-72	×			
Certification of Cargo Containers for Transport under	8-30-72	10-24-72	10-31-72	×			
Miscellaneous Dangerous Cargoes (CGD 72-182) Marking of radioactive materials packages (CGD 73-	11–17–72 11–11–72	12-12-72	12–19–72 12–19–72	××	· · · · · · · · · · · · · · · ·		
Dangerous Cargoes, miscellaneous amendments (CGD	8-31-73	9-25-73	10-5-73	×			
/3-1/3)	9-5-73	9-25-73	10-5-73	×			
MARINE ENVIRONMENT AND SYSTEMS (GENERAL)			1.1				
Oil pollution prevention (CGFR 71-160, 161) Marine Sanitation Devices (CGD 73-83)	12-24-71 Adv.	2-15-72	4-21-72	×		12-21-72	7-1-741
Vessel traffic system, Puget Sound (CGD 73-158) Security Zone, New London CT (CGD 73-182)	6-18-73 8-6-73 8-23-73 corrected	8-30-73	8–15–73 9–17–73 9–28–73	×××	· · · · · · · · · · · · · · · · · · ·		
Occurrent in MARINE SAFETY (GENERAL)	9-4-73						
Water lights, floating electric (CGFR 72-20) Great Lakes Maritime Academy, List as a Nautical School Skin (CGP 70 ann)	2 <u>4</u> 72 3–9–72	4-18-72	3–19–72 4–24–72	××	·····		
Ship's Maneuvering Characteristics Data (CGD 72-	8-9-72	· · · · · · · · · · · ·	9-15-72	×		· · · · · · · · · · · · · · · · · · ·	
134PH)	8-22-72 Supp.	9-28-72	10-13-72	×		•••••	
Unmanned Barges; hull construction (CGD 72-130) Construction requirements for tank ships (CGD 72-245).	7-20-73 10-31-72 Adv.	12-19-72	8-31-73 12-29-72	××			
	1-26-73 Supp, Notice	•••••	3–15–73			••••••	
Wiring methods aud materials for hazardous locations (CGD 73-6).	1-3-13	*****			•••••	• • • • • • • • • • • • •	
Emergency Position Indicating Radio Beacons (CGD	2-14-73	•••••	3-16-73		• • • • • • • • • • • •	8-24-73	11-27-73
Firemen's outfits on manned tank barges (CGD 73-11)	3-5-73 4-26-73	4-18-73 On request	4-30-73 5-28-73	××			

<sup>1</sup> Various effective dates precede that indicated. See Federal Registers of 12-21-72 and 8-24-73:

## December 1973

Coast Guard Rulemaking—Continued

	Notice of proposed rulemaking	Public hearing	Deadline for comments	Awaiting final action	Withdrawn	Published as rule	Effective date
Dry chemical fire extinguisher requirements (CGD 73-73) Great Lakes pilot rules (CGD 73-100) Lifeboat winches for merchant vessels (CGD 73-103) Lifesaving equipment specification (CGD 73-130) Inflatable liferafts (CGD 73-160) Lifeboats for merchant vessels (CGD 73-116) Radar observer licensing (CGD 73-238) Pressure vessels (CGD 73-133)	6-8-73 8-1-73 8-21-73 8-28-73 9-27-73 10-3-73 10-12-73 10-12-73		7-10-73 9-3-73 9-28-73 9-28-73 9-28-73 10-31-73 11-2-73 11-30-73 11-16-73	×××××	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	

NOTE: This table which will be continued in future issues of the Proceedings is designed to provide the maritime public with better information on the status of changes to the Code of Federal Regulations made under authority granted the Coast Guard. Only those proposals which have appeared in the Federal Register as Notices of Proposed Rulemaking, and as rules will be recorded. Proposed changes which have not been placed formally before the public will not be included.

# AMENDMENTS TO REGULATIONS

### TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of Transportation

SUBCHAPTER Q—SPECIFICATION [CGD 73-11R]

#### PART 35-OPERATIONS

#### Tank Vessels Emergency Equipment Requirements

The purpose of these amendments is to revise the regulations concerning "Fireman's outfit on manned Tank Barges with cargo tanks of 15 feet or less in depth". The amendments are based on a notice of proposed rulemaking (CGD 73-11R) issued on April 26, 1973 (38 FR 10274). That notice described the changes and solicited comments from interested parties.

No comments were received and the proposed amendments are hereby adopted without change as set forth below.

Effective date.—These amendments are effective January 3, 1974.

Dated September 27, 1973.

G. R. BENDER, Admiral, U.S. Coast Guard Commandant. 1. § 35.30-20 is revised to read as follows:

#### § 35.30-20 Emergency equipment TB/ALL

(a) Two emergency outfits are required for the following:

(1) All tankships on international voyage.

(2) All tankships over 1,000 gross tons.

(3) All tankships having cargo tanks which exceed 15 feet in depth, measured from the deck to the lowest point at which cargo is carried.

(b) One emergency outfit is required for all manned tank barges having cargo tanks which exceed 15 feet in depth, measured from the deck to the lowest point at which cargo is carried.

(c) Each emergency outfit shall be equipped as follows:

(1) One approved fresh air breathing apparatus including belt and lifeline. The length of the air hose shall be sufficient to reach from the open deck, well clear of hatch or doorway, to any part of the holds, tanks and except as provided in the following subparagraph, the machinery spaces.

(2) If it is not practicable to reach all portions of the machinery space with the airhose of the fresh air breathing apparatus, an approved self-contained breathing apparatus with adequate lifeline shall be carried for use in the machinery space. In such case, the particular apparatus provided for the machinery space shall be used for no other purpose, shall be marked indicating the restriction to its use, and shall be stowed convenient to, but outside of the machinery space.

(3) One approved 3-cell, explosion-proof flashlight constructed in accordance with subpart 161.008 of subchapter Q (specifications) of this chapter.

(4) One fire ax.

(5) Boots and gloves of rubber or other electrically nonconducting material.

(6) A rigid helmet which provides effective protection against impact.

(7) Protective clothing of material that will protect the skin from the heat of fire and burns from scalding steam. The outer surface shall be water resistant.

(d) Approved self-contained breathing apparatus with adequate lifelines may be provided in addition to the equipment required in the preceding paragraph, and may be used in any space on the vessel.

(e) Lifelines shall be of steel or bronze wire rope. Steel wire rope shall be either inherently corrosion resistant or made so by galvanizing or tinning. Each end shall be fitted with a hook with keeper having a throat opening which can be readily slipped over a 5/8-inch bolt. The total length of the lifeline shall be dependent upon the size and arrangement of the vessel, and more than one line may be hooked together to achieve the necessary length. No individual length of lifeline may be less than 50 feet in length. The assembled lifeline shall have a minimum breaking strength of 1,500 pounds.

(46 U.S.C. 170, 391a, 416; 49 U.S.C. 1655(b); 49 CFR 1.4(b), 1.46 (b) and (o)(4).)

[FR Doc.73-21002 Filed 10-2-73;8:45 am]

(Federal Register of October 3, 1973.)

### TITLE 46—SHIPPING

#### Chapter I—Coast Guard, Department of Transportation

[CGD 72-92R]

SUBCHAPTER B-MERCHANT MARINE OFFICERS AND SEAMEN

#### PART 10—LICENSING OF OFFICERS AND MOTORBOAT OPERATORS AND REGISTRATION OF STAFF OFFICERS

#### SUBCHAPTER R-NAUTICAL SCHOOLS PART 166-DESIGNATION AND APPROVAL OF NAUTICAL SCHOOL SHIPS

#### Approval of Nautical School Ships

The purpose of the amendments in this document is to add to chapter I of title 46, Code of Federal Regulations, rules and regulations governing the issuance of documents to cadets at the Great Lakes Maritime Academy and the issuance of licenses to graduates thereof.

In the August 9, 1972, issue of the Federal Register (37 FR 16000), the Coast Guard proposed to list the Great Lakes Maritime Academy as a nautical school ship and to provide its graduates with professional status equivalent to that of graduates of other school ships. Interested persons were advised that they might participate in the proposed rule making by submitting written data, views, or arguments to the Executive Secretary, Marine Safety Council (GCMC/ 82) on or before September 15, 1972.

Written comment in opposition to the proposed rulemaking was received from a labor organization that claims to represent a majority of both deck and engine officers sailing on Great Lakes vessels and that has contractual responsibility for supplying qualified officers to meet the manpower needs of the Great Lakes maritime industry. The specific objections were that—

1. The Great Lakes Maritime Academy did not meet the requirements contained in 46 CFR 310 for purposes of Federal financial assistance and approval by the U.S. Maritime Administration;

2. The Great Lakes Maritime Academy's curriculum was inferior to that given at the other State academies;

3. The enrolled cadets were being allowed, prior to graduation, endorsements to their Merchant Mariner's Documents authorizing service as Able Seamen or in a rating as a Qualified Member of the Engine Department, contrary to the requirements in current regulations;

4. The academy's training vessels are different than Great Lakes' commercial carriers;

5. The cadets are supplanting unlicensed crew members;

6. A cadet/able seaman cannot gain sufficient knowledge in 3 months to qualify for a license authorizing service as First Class Pilot since an unlicensed seaman requires at least 1 year's service on the bridge of similar vessels in a rated capacity for a license;

7. The engineering cadets were not receiving sufficient experience in the 3-month period to qualify them to handle the responsibilities as Third Assistant Engineer of steam or motor vessels of any horsepower; and 8. The Great Lakes Maritime Academy's period of training is not 3 years as required as a minimum in 46 CFR 310.3.

As early as 1957 the trustees of Northwestern Michigan College proposed to establish a Michigan Maritime Academy to provide skilled personnel for vessels of the Great Lakes' commercial fleet. In 1967, the trustees requested the advice of the Commandant, U.S. Coast Guard. The recommendation of the Commandant was that the trustees enter into an agreement with the Maritime Administrator under the provisions of the Maritime Academy Act of 1958 (46 U.S.C. 1381, et seq.) and that when this was done, eligibility for Coast Guard licenses by successful graduates would be considered. Section 310.3(a) in chapter II of title 46, Code of Federal Regulations was amended by the Maritime Administration in the June 3, 1970 issue of the Federal Register (35 FR 3533) to include the Great Lakes Maritime Academy of Northwestern Michigan College as eligible to receive Federal aid under the act.

In 1969, the U.S. Coast Guard reviewed the prospectus of the academy and noted that, while the proposed program was not entirely new. it did represent the first step toward a program for the Great Lakes shipping industry. Being aware of the ongoing shortage of licensed officers as well as unlicensed seamen on the Great Lakes, the Coast Guard decided that the program could have an effect on the expected personnel shortage in the years ahead. The Coast Guard has always supported maritime training programs and indicated an interest in supporting the program which could provide an education to meet the demands of future technology in an expanding marine transportation industry. Also, the Coast Guard believed that the Maritime Administration was reviewing 46 CFR 310.3(c), to eliminate interpretations that would inhibit new, innovative programs. As a result of this belief, temporary approval was granted to the Great Lakes Maritime Academy in 1971 to allow the cadets to be issued Merchant Mariner's Documents with endorsements authorizing service in rated unlicensed capacities, both deck and engine, prior to graduation.

As a result of the comment received by the Coast Cuard on the proposed amendments, an intensive review was made of the program, and the following was determined:

(a) Federal assistance is provided to the Great Lakes Maritime Academy under the authority of the Maritime Academy Act of 1958.

(b) The cadets at the Creat Lakes Maritime Academy train as cadets for the required 6 months' time aboard Great Lakes commercial vessels.

(c) The size of each entering class of the Academy depends on the projection of the evaluations of the needs of the industry and availability of Federal funds.

(d) The curriculum of the Great Lakes Maritime Academy is not inferior to that given at other State academies.

(e) Although they are different than Great Lakes' commercial vessels, the Academy's training vessels will suffice for teaching the rudiments of seamanship and shiphandling.

(f) The Coast Guard has no objection to a cadet's supplementing his training vessel service with service as an ordinary seaman or wiper provided that the cadet produces a letter of commitment of employment from a responsible official in a position to hire or place an individual on a vessel and the service does not infringe upon the service as a cadet.

(g) Although cadets have been employed in unlicensed capacities, they did not supplant unlicensed personnel but filled berths that would have otherwise been vacant. It was found that organizations, other than those associated with the commenter, have solicited for or been amendable to employment of the cadets in unlicensed capacities.

(h) At least 1 year's service in the capacity of quartermaster, wheelman, able seaman, or an equivalent service on the Great Lakes is considered by the Coast Guard as a requirement. On the Great Lakes, the 1 year's service requirement is interpreted as being one season. The length of a season is variable and may be from 7 to 10 months duration, and the Coast Guard considers the required 6 months' service as cadet to be a reasonable equivalent to that required of other applicants.

(i) The Coast Guard limits each cadet (engine) license and documents in accordance with the experience that the cadet has received.

(j) Although the curriculum of the Great Lakes Maritime Academy can be completed in 33 months, it is equivalent in content to that provided at the other state academies.

(k) The Coast Guard has learned that organizations (other than the union) and steamship companies support the Great Lakes Maritime Academy's program.

(1) There continues to be a shortage of qualified officer and unlicensed personnel to fully man the Great Lakes' commercial fleet, and the median age of ships' officers continues to rise.

(m) A pier and mooring basin have been completed at the academy, and the largest deck officers' union has offered its facilities for radar training until the academy is able to obtain radar simulators. Various companies are providing equipment for training. A trust fund has ben established with an initial bequest of \$50,000 to aid fiancially deprived cadets. A vocational technical building has been constructed at the academy at a cost of \$389,750 to the State of Michigan. Unlike other state academies, when the academy has its own radar simulators and receives the approval of the Maritime Administration, the simulators will be available to all Great Lakes personnel.

(n) The Coast Guard obtained, unsolicited, copies of evaluation reports on 18 cadets serving during the summer of 1972. These reports represented the evaluations of nine Masters, one First Mate and nine Chief Engineers. Only one reported the cadets as unsatisfactory. Three others rated the cadets as only being fair to good, but five reports evaluated the cadets as being very good to exceptional.

In view of the foregoing, and the policy stated in the Maritime Academy Act of 1958, the Coast Guard considers that the Great Lakes Maritime Academy can serve a useful purpose by being at least one source of officers for Great Lakes commercial vessels. However, in consideration of the valid points raised by the commenter and the position taken by the Maritime Administration, the Coast Guard will amend any previous temporary approvals granted to the Great Lakes Maritime Academy as follows:

(a) In compliance with 46 CFR 310.3(c), cadets in training status aboard commercial vessels must sign on board as cadets and pursue their training within the framework of formal projects prepared and maintained by the academy.

(b) In compliance with 46 CFR 12.25-25, each enrolled cadet will be issued a Merchant Mariner's Document endorsed as either "Cadet (deck)" or "Cadet (engine)", as appropriate valid only while cadet in the U.S. Maritime Administration Training program. This document will serve as the Certificate of Identification and Certificate of Identification and Certificate of Service required in 46 U.S.C. 643 and 672. Documents of cadets with sea experience will contain any endorsement previously granted.

(c) In compliance with 46 CFR 12.10-3(a)(6), those cadets having completed nine months training and who show to the satisfaction of the cognizant Officer in Charge, Marine Inspection their ability as lifeboatmen, may have their document endorsed "Lifeboatman." This endorsement is considered by the Coast Guard as a prerequisite to establishing eligibility to sit for a deck license.

(d) In accordance with 46 U.S.C.

672(b), the following applicants upon graduation and passing the appropriate examination, will be issued the following documents:

(1) A "Cadet (deck)" will be issued a document endorsed "Able Seaman, Great Lakes—18 months" or "Able Seaman, Any Waters—12 months."

(2) A "Cadet (engine)" will be issued a document endorsed "Fireman, Oiler, Watertender" except:

(i) If the applicant's service has been on a vessel of over 4,000 horsepower, the document is endorsed. "Any unlicensed rating in the engine department"; or

(ii) If the applicant's service has been on board a motor vessel of less than 4,000 horsepower, the document is endorsed "Oiler". At a subsequent raise in grade, if the qualifying service is obtained on a vessel of 4,000 horsepower or over the applicant may then apply for a supplemental Merchant Mariner's Document endorsed, "Any unlicensed rating in the engine department."

(e) Upon graduation, a Cadet (deck) who shows evidence of 9 months' or more sea experience on a certificated vessel including not less than six months' sea service aboard a Great Lakes' commercial vessel as a cadet observing the navigation of a vessel and meeting the minimum requirements for at least the four upper lakes and their interconnecting waterways is eligible to be examined for a license authorizing service as First Class Pilot upon Lakes Superior, Huron, Michigan, Erie and their interconnecting waterways. For the further endorsement as Radar Observer, the requirements in 46 CFR 10.05-46 must be met.

Upon graduation, a cadet (engine) who shows evidence of 9 months or more sea experience on certificated vessels including not less than six months aboard Great Lakes' commercial vessels as a cadet observing the propulsion of a vessel is eligible to be examined for a license authorizing service as Third Assistant Engineer. To be eligible for a license authorizing service on both steam and motor vessels, the cadet must show six months' or more service as cadet (engine) aboard steam vessels and three months' or more service as cadet (engine) aboard motor vessels. Service aboard certificated schoolships in cruise status while assigned to engineering duties is credited. If the service has been aboard an inspected vessel of less than 4,000 horsepower, the license will have a horsepower limitation in accordance with 46 CFR 10.10-3(b).

(f) Each graduating cadet is examined by the Officer in Charge, Marine Inspection, Marine Inspection Office, St. Ignace, Michigan, under conditions as prescribed by him. Cadets may be examined as a class, but for those cadets who have not completely met the requirements for experience, the retention of the control of the cognizant Officer in Charge, Marine Inspection, St. Ignace, Michigan in the matter of the original license is to ensure equivalent examination for each cadet.

In consideration of the foregoing, the proposed regulations are hereby adopted without change and are set forth below.

Effective date.—These amendments shall become effective on November 26, 1973.

Dated October 16, 1973.

C. R. BENDER,

Admiral, U.S. Coast Guard Commandant.

(The complete text of these amendments was published in the Federal Register of October 24, 1973.)

#### TITLE 46—SHIPPING

SUBCHAPTER D—TANK VESSELS SUBCHAPTER H—PASSENGER VESSELS SUBCHAPTER I—CARGO AND MISCELLANEOUS VESSELS SUBCHAPTER U—OCEANOGRAPHIC VESSELS

[CDG 72-131R]

#### **GENERAL PROVISIONS**

#### International Voyage

The purpose of these amendments is to eliminate a contradiction in the use of the term "international voyage" within Coast Guard regulations. The amendments were proposed in a notice of proposed rulemaking published in the March 1, 1972 issue of the Federal Register (37 FR 4292), and in the Marine Safety Council Public Hearing Agenda (CG-249), dated March 27, 1972. The proposed amendments were identified as item 4 in the notice and agenda.

The Coast Guard invited interested persons to submit written comments by April 3, 1972. It also invited public participation at the public hearing which was held on March 27, 1972, in Washington, D.C. No comments, written or oral, were received.

The term "international voyage" in the applicability descriptions in §§ 30.01-6, 70.05-10, 90.05-10, and 188.05-10 of title 46, Code of Federal Regulations, is in conflict with the definitions of that term in §§ 30.10-36, 70.10-21, 90.10-17, and 188.10-35. The definition of the term includes every vessel which makes a voyage to a foreign port. The applicability sections appear to limit the term to those vessels covered by the International Convention for the Safety of Life at Sea, 1960, June 17, 1960, 16 UST 185, TIAS 5780 536 UNTS 27 (SOLAS 60).

In order to remove a possible source of confusion, the Coast Guard is deleting the definition sections and revising the applicability sections. This is necessary so the reader can determine when a vessel is on an "international voyage" and subject to requirments of the subchapter which implement SOLAS 60. It is also necessary to clarify the status of a vessel engaged on a voyage between different countries but not subject to SOLAS 60 by reason of the tonnage, registration in a country that is not signatory to the Convention, number of passengers, or similar exceptions to the Convention. Section 188.05-37 is revoked because it is redundant and, therefore, unnecessary.

Effective date.—These amendments are effective on January 28, 1974.

(The complete text of these amendments was published in the Federal Register of October 24, 1973.)

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### MERCHANT MARINE SAFETY PUBLICATIONS

The following publications of marine safety rules and regulations may be obtained from the nearest marine inspection office of the U.S. Coast Guard. Because changes to the rules and regulations are made from time to time, these publications, between revisions, must be kept current by the individual consulting the latest applicable Federal Register. (Official changes to all Federal rules and regulations are published in the Federal Register, printed daily except Saturday, Sunday, and holidays.) The date of each Coast Guard publication in the table below is indicated in parentheses following its title. The dates of the Federal Registers affecting each publication are noted after the date of each edition.

The Federal Register will be furnished by mail to subscribers, free of postage, for \$2.50 per month or \$25 per year, payable in advance. The charge for individual copies is 20 cents for each issue, or 20 cents for each group of pages as actually bound. Remit check or money order, made payable to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Regulations for Dangerous Cargoes, 46 CFR 146 and 147 (Subchapter N), dated October 1, 1972 are now available from the Superintendent of Documents price: \$5.75

#### CG No.

#### TITLE OF PUBLICATION

- 101 Specimen Examination for Merchant Marine Deck Officers (7-1-63).
- Specimen Examinations for Merchant Marine Deck Officers (2d and 3d mate) (10-1-73).
- 108 Rules and Regulations for Military Explosives and Hazardous Munitions (4–1–72). F.R. 7–21–72, 12–1–72.
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- 175 Manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department (3-1-73).
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- 191 Rules and Regulations for Licensing and Certification of Merchant Marine Personnel (6–1–72). F.R. 12–21–72, 3-2-73, 3-5-73, 5-8-73, 5-11-73, 5-24-73, 8-24-73, 10-24-73.
- 200 Marine Investigation Regulations and Suspension and Revocation Proceedings (5-1-67). F.R. 3-30-68, 4-30-70, 10-20-70, 7-18-72, 4-24-73.
- 227 Laws Governing Marine Inspection (3-1-65).
- Security of Vessels and Waterfront Facilities (3-1-72). F.R. 5-31-72, 11-3-72, 7-8-72, 1-5-73. 239
- Rules and Regulations for Passenger Vessels (5-1-69). F.R. 10-29-69, 2-25-70, 4-30-70, 6-17-70, 10-31-70, 256 12-30-70, 3-9-72, 7-18-72, 10-4-72, 10-14-72, 12-21-72, 4-10-73, 8-1-73, 10-24-73.
- 257 Rules and Regulations for Cargo and Miscellaneous Vessels (4-3-73). F.R. 6-28-73, 6-29-73, 8-1-73, 10-24-73.
- 258 Rules and Regulations for Uninspected Vessels (5–1–70). F.R. 1–8–73, 3–28–73.
- 259 Electrical Engineering Regulations (6-1-71). F.R. 3-8-72, 3-9-72, 8-16-72, 8-24-73.
- 266 Rules and Regulations for Bulk Grain Cargoes (5-1-68), F.R. 12-4-69.
- 268 Rules and Regulations for Manning of Vessels (10-1-71). F.R. 1-13-72, 3-2-73.
- 293 Miscellaneous Electrical Equipment List (9-3-68).
- 320 Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (7–1–72), F.R. 7–8–72. Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (12-1-71), F.R. 3-8-72, 3-25-72, 6-24-72, 323 7-18-72, 9-13-72, 12-8-72, 12-21-72, 1-8-73, 3-5-73, 6-29-73.
- 329 Fire Fighting Manual for Tank Vessels (7-1-68).
- 439 Bridge-to-Bridge Radiotelephone Communications (12-1-72).

#### CHANGES PUBLISHED DURING OCTOBER 1973

The following have been modified by Federal Registers:

CC-123, Federal Registers of October 3 and 24, 1978.

CG-190, Federal Register of October 5, 1973.~

CG-191, CG-256, and CG-257, Federal Register of October 24, 1973. L

