

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

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NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 4-82

Subj: Uninspected Commercial Vessel Safety

1. PURPOSE. This Circular is intended to provide information to vessel owners/operators and Officers in Charge, Marine Inspection concerning trends in uninspected commercial vessel safety.
2. BACKGROUND. During recent years, there has been an increase in the number of accidents involving uninspected commercial vessels. The statistics collected on these accidents are shown in Enclosure (1). These vessels are subject to only a small number of regulations and therefore are not boarded as often as inspected or recreational vessels. Even when these vessels are boarded, the examination is not -as detailed as other vessel boardings. Yet the functions uninspected commercial vessels perform are often inherently more dangerous than that of inspected or recreational vessels.
3. DISCUSSION.
 - a. The largest single source of accidents is collisions. Collisions account for 48% of the total number of accidents and 44% of the injuries. These collisions consist of vessels striking other vessels, vessels striking fixed objects and vessels striking debris. These statistics illustrate the importance of knowing the rules of the road and using appropriate charts in unfamiliar waters.
 - b. By far, the highest number of deaths occurred in sinking situations such as foundering, capsizing, flooding and groundings (grounding resulting in hull damage). The combined total number of deaths in these categories resulted in 68% of the total number of deaths. The deaths are generally the result of hypothermia, exposure, and finally drowning. The statistics for sinking situations also show that the death rate far exceeds the injury rate due to the incidences in which the victims find themselves in the water. The more time an individual spends in the water, the less chance there is for survival. Inflatable life rafts, exposure suits, and EPIRBs (Emergency Position Indicating Radio Beacons) have been effective in saving many lives by minimizing exposure.
 - c. Part of the reason the fatality rate is so high may be that time is lost by rescue units due to lack of, or poor communications. Rescue units, both Coast Guard and civilian, are often frustrated in their attempts to assist a sinking vessel because the operator cannot provide his rescuers with enough information to locate the vessel in distress.

- d. A lack of knowledge of stability problems and damage control procedures may be another cause. Capsizings had the highest fatality rate of all accident categories, 45% of the capsizings resulted in a death. A better understanding of vessel stability might have prevented some of the accidents, especially if the vessel capsized because of improper loading or topside icing. The control of flooding in some instances is a simple process. Yet in the 194 cases involving flooding \$4,064,000 worth of property was lost or damaged. Early detection of flooding and corrective action is essential. Perhaps some of that loss could have been prevented if basic damage control principles had been employed. Preplanning can be a key to effective action.
- e. The problem of explosions and fires is recognized by mariners. For this reason, uninspected vessel operators are probably better prepared to fight fires than they are to handle any other serious casualty. Even so, most of the fires are started by carelessness. Good housekeeping practices will greatly reduce the possibility of disastrous fires. It should also be noted that, unlike some spaces aboard inspected vessels, uninspected vessels may be constructed throughout with combustible materials such as polyurethane insulation, thus requiring a greater degree of awareness of the danger of fire.
- f. In addition to the casualty types mentioned already, uninspected vessel operators face another danger, specifically the equipment associated with the vessels' work. Winches, nets, cables, fishing rigs, and other auxiliary equipment have been the cause of several deaths and injuries. In these cases, the cause of the accident has generally been due to improper operation or improper maintenance of the equipment. Working with large equipment can be dangerous, however it becomes even more so when it is operated on a rolling vessel and exposed to a very corrosive atmosphere. This equipment can be subject to very high stresses. Jury-rig repairs and improvements are common. Improved maintenance together with correct operation of the equipment provide the best chance for a reduction in the accidents of this category.
- g. The human "machine" must be remembered also. Fatigue is a very real contributor to accidents. It is not caused just by hard work. Many stressors contribute; lack of sleep, noise, vibration, adverse weather, and anxiety to name a few. This factor coupled with the normal vessel operations combine to raise the risk of accident. Mariners must recognize that fatigue is a problem and minimize the cause and adjust operations to account for it.

4. ACTION.

- a. In keeping with the President's goal of self-regulation, organizations and parties associated with uninspected vessels such as towing, fishing, and other utility boat industries are encouraged to review and improve their safety campaigns and programs. A wider dissemination of vessel safety related information could improve the safety record of uninspected vessels.
- b. Improvements have been made in survival equipment which increase its reliability, ease of use, and comfort. It is strongly recommended that uninspected vessels carry such items as exposure suits, life rafts, EPIRBS, visual distress signals, extra PFDs, and survival and first aid kits. These items may never need to be used but they should be checked on a routine basis. They should be kept in an accessible area, generally above the waterline, ready for use. All personnel on board the vessel should be instructed in the proper use of the survival equipment and they should be shown where the items are stored. Posting a

listing of safety equipment on board and its location is recommended. Manufacturers and salesmen of various survival equipment often hold seminars and demonstrations on their equipment. These events provide an excellent opportunity for vessel operators to learn more about the particular equipment carried on their boats.

- c. Many uninspected vessels are now being constructed with installed fire fighting systems. These systems have been proved reliable and should be considered when vessels are laid up for repair or maintenance. Portable fire extinguishers are adequate for most fires, provided they are well maintained. For example dry chemical extinguishers should be inverted and shaken periodically to minimize compaction. Again, manufacturers and salesmen can provide instruction and demonstrations for their equipment. In addition to the fire fighting equipment, it is recommended that smoke detectors be installed in berthing areas. Also unoccupied spaces should be checked frequently for fire or flooding. The installation of bilge alarms which can detect flooding in these compartments would be very beneficial. Many cases have been reported in which the fire or flooding was discovered too late to combat the problem.
- d. EPIRBS should be carried on both vessels and life rafts. Their installation would assist significantly in reducing the communication and location difficulties. Experience to date indicates where EPIRBS have been used search and rescue craft have arrived on scene sooner. EPIRBS should be tested frequently to ensure their satisfactory operation, a precaution also necessary with the other components of a vessel's communication system.
- e. The most important recommendation is a need for increased training of all personnel sailing on uninspected vessels. Operators of these vessels should be well versed in the rules of the road, operational safety topics such as loading and stability, use and maintenance of auxiliary equipment, seamanship, communications, navigation, use of lifesaving and fire fighting equipment, and first aid. Many local organizations provide courses and programs in these subjects, often free of charge. Though not required by regulation, a working knowledge of these subjects will provide the safest possible environment for uninspected vessels. The importance of training in these subjects cannot be stressed enough. Enclosure (1) shows that 1503 groundings occurred where no damage to the hull resulted, thus indicating a minor accident. There were 6 deaths and 3 injuries in these groundings. Many of these casualties may have been avoided through adequate training.
- f. Uninspected vessel owners and operators should refer to the various accepted and published safety standards concerning construction and operation. Some examples of these accepted standards are:

- American Bureau of Shipping Rules
- American Boating and Yachting Council Construction Rules
- Torremolinos International Convention For The Safety of Fishing Vessels, 1977 Parts A and B (Developed by IMCO) Title 46 Code of Federal Regulations Parts 90 through 106 (Subchapter I)
- Title 46 Code of Federal Regulations Parts 175 through 187 (Subchapter T)

And the following Navigation and Vessel Inspection Circulars

- 1-63 Notes on Inspection and Repair of Wooden Hulls
- 10-65 Stability Determination in Capsizing Cases Involving Uninspected Vessels
- 7-68 Notes on Repair of Steel Hulls

- 6-72 CH-1 Guide to Fixed Fire Fighting Equipment Aboard Merchant Vessels
- 3-76 Stability of Fishing Vessels
- 8-80 Fire Hazard of Polyurethane and other Organic Foam
- 11-80 Structural Plan Review Guidelines for Aluminum Small Passenger Vessels

Although uninspected vessels are not required to meet these standards, they do provide excellent guidelines for many construction/repair and operating practices.

g. Coast Guard personnel should strongly recommend to personnel involved with uninspected vessels to follow the suggestions and recommendations outlined above and should assist operators by providing appropriate safety training materials or providing information on where materials or training can be obtained. For example:

- (1) The "Proceedings of the Marine Safety Council" contains information on publications in every issue. Special articles on films and other training aids are published from time to time.
- (2) Life raft servicing facilities can provide demonstrations on use of life rafts and their equipment. Out of date pyrotechnics may also be available for training purposes under controlled conditions.
- (3) Exposure suit and life raft manufacturers, as well as manufacturers of some other emergency equipment, provide illustrated placards on use of their equipment. These placards should be mounted in conspicuous places on the vessel.
- (4) For fishing vessels, the U.S. Dept. of Commerce sponsors the Marine Fisheries Advisory Committee (MAFAC), which has subcommittees dealing with safety. Through a regional network, every fishery in the country is represented. Individuals may obtain information on their programs by contacting them through local fishery trade associations.
- (5) The National Oceanic and Atmospheric Administration (NOAA) has been active in fishing vessel safety through their Sea Grant Program. Research programs have been supported at several universities which are specifically aimed at improving fishing vessel safety and informing fishermen of their findings. For example, the Fishing Vessel Safety Center at the University of Washington at Seattle has held traveling safety seminars for fishermen in the Pacific Northwest. The University of Alaska, through its Alaska Fisheries Safety Advisory Council, publishes an excellent newsletter, and has developed a vessel safety check-off list for operators. Texas A&M University also has an active program. Individuals may contact State universities in their area to determine if such services are available to them.



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UNINSPECTED VESSEL ACCIDENT STATISTICS
FOR FY 1978 and 1979 COMBINED

<u>Accident Type</u>	<u>No. of Cases</u>	<u>Deaths</u>	<u>Injuries</u>	<u>Property Damage</u>
Collision	5135	49	70	\$ 135,233,000
Explosion-fire	338	32	45	58,356,000
Grounding (Resulted in Damage to Hull)	1013	13	7	49,561,000
Grounding (Resulted in no Damage to Hull)	1503	6	3	780,000
Foundering	823	136	16	59,384,000
Capsizing	164	73	3	17,577,000
Flooding	194	7	2	4,064,000
Cargo Damage	3	0	0	85,000
Structural Failure	103	3	3	12,383,000
Machinery Failure	622	6	3	3,808,000
Equipment Failure	179	6	4	2,355,000
Nature (No other Category)	<u>605</u>	<u>6</u>	<u>7</u>	<u>31,831,000</u>
TOTALS	10,682	337	160	\$ 375,417,000

Total number of SAR calls received by the USCG from uninspected vessels 19833