

*University-National
Oceanographic
Laboratory System*

**RESEARCH VESSEL
OPERATORS COMMITTEE
NEWSLETTER**

**31 August 1990
Volume 14**

EDITOR'S NOTE

Greeting from the friendly shores of the Chesapeake Bay.
This edition of the newsletter contains the agenda and other information concerning the October RVOC meeting.....B.K. Cornwall

RVOC MEETING

The annual RVOC meeting will be hosted by the Louisiana Universities Marine Consortium, LUMCON, in New Orleans, Louisiana, October 9-11, 1990.

Steve Rabalais of LUMCON has provided information regarding accommodations and social activities, which is included with the Newsletter under separate cover as RVOC MEETING INFORMATION.

Please be sure to respond to the Questionnaire. Mail or FAX your response to Bruce Cornwall at CBI as soon as possible so we can give Steve a final head count for the social activities. If you did not receive the RVOC MEETING INFORMATION or Questionnaire please call Bruce Cornwall at CBI (301) 867-7550 x 246.

RESEARCH VESSEL OPERATOR'S COMMITTEE

1990 Annual Meeting
Louisiana Universities Marine Consortium
Dauphin Orleans Hotel
415 Rue Dauphine
New Orleans, Louisiana
9-11 October 1990

Meeting Room

AGENDA

0830, Tuesday, 9 October 1990

REGISTRATION AND COFFEE

WELCOMING REMARKS

- Steve Rabalais, Marine Superintendent, LUMCON
- Dr. Michael Dagg, Interim Executive Director, LUMCON
- Jim Williams, Chairman, RVOC

OLD BUSINESS

- Minutes of the 1989 Meeting - Jim Williams
- RVOC Newsletter - Bruce Cornwall
- Communications Guide - Ken Palfrey
- Wire Update - Don Moller
- RVOC Charter/Membership - Dean Letzring
- Alcohol/Zero Tolerance: One Year Later - Jim Williams
- RVOC Safety Committee Report - Bill Coste
- Federal Register Monitor - Bill Barbee

NEW BUSINESS

- Instructions for Preparation of Proposals (Blue Book) - Dolly Dieter

AGENCY REPORTS

- National Science Foundation - Dolly Dieter
- Office of Naval Research - June Keller
- UNOLS - Bill Barbee
- NOAA
- U.S. State Department - Tom Cocke

SPECIAL REPORTS

- THOMAS G. THOMPSON - Bill Jeffers
- VICKERS - Don Newman
- MAURICE EWING - Sam Gerard
- KNORR/MELVILLE - Joe Coburn
- RIDGELY WARFIELD - Bruce Cornwall
- WEATHERBIRD II - Harry Barnes

0830 Wednesday, 10 October 1990

INVITED SPEAKERS

- Use of Fiber Optics at Sea - Chris Van Alit (WHOI)
- New Design, Traction Unit Winch - Ivor Chivers (NERC)

SAFETY SEMINAR

- Safety Manual - Bill Coste
- Safety Training/Videos - Bill Coste
- Diving: Chapter 15 of the UNOLS Safety Standards - Jack Bash

WORKSHOPS

- Vessel Chartering - Joe Coburn
 - Small Boat Operations - Tim Askew
-

0830 Thursday, 11 October 1990

ROUND TABLE DISCUSSION

- Alcohol
- Drug Testing
- Smoking
- Amenities to Scientists in Port
- Garbage Disposal (MARPOL)
- New Technology:
 - * Communication
 - * Navigation
 - * Dual Axis Speed Logs

BUSINESS MEETING

- Election of Chairman and Vice Chairman
- 1991 RVOC Meeting Agenda Topics
- 1991 RVOC Meeting Location

ERIC NELSON RETIRES

Captain Eric B. Nelson, Marine Superintendent for the Duke/University of North Carolina Oceanographic Consortium retired May 31, 1990 after 22 years of service. A true gentleman, Eric will be missed by the RVOC. We wish him fair winds and following seas in his retirement.

With Eric's retirement, Quentin Lewis has been named Marine Superintendent at Duke. The RVOC welcomes Quentin and wishes him well.

UPDATE ON R/V THOMAS G. THOMPSON

The R/V Thomas G. Thompson (AGOR 23) was launched at Halter Marine Shipyard, Moss Point, Mississippi on July 27, 1990. Dr. Dora Henry, Professor Emeritus at the University of Washington, served as "sponsor" to christen the ship in appropriate ceremonies. Construction and trials will take one more year, with delivery of the ship now scheduled for July 9, 1991.

LOCAL SHIPYARDS BENEFIT FROM RESEARCH FLEET

Editor's Note: The following article appeared in the LUMCON Newsletter, April, 1990. It was provided by Steve Rabalais.

Research institutions from Hawaii, Washington, Massachusetts, California and Bermuda are taking advantage of the abundance of surplus oilfield vessels and the underutilized shipbuilding and fitting facilities in the northern Gulf of Mexico. Seven oceanographic research vessels are currently in the northern Gulf being built, converted, refitted or are awaiting contracts for refit. They are:

R/V Thomas G. Thompson

The original Thompson (AGOR 9) was built by the U.S. Navy at Marinette Marine Corporation in Marinette WI in 1963. The ship was decommissioned in 1988 and her replacement the Thomas G. Thompson (AGOR 23), under construction at Halter Marine, Inc. in Moss Point, MS is scheduled for delivery on May 9, 1991. Like her predecessor she will be operated by the University of Washington.

The Moss Point yard won the \$20 million plus contract by responding to the Navy's open request with the most appropriate design at the most reasonable price. Information on the other participants for the contract is regarded by the Navy as restricted.

The new ship will be 274 long and will carry a scientific party of 25. Scientific equipment will include a Krupp-Atlas Hydrosweep DS SWATH mapping system, RDI-VM Acoustic Doppler Current Profiler and Seabird Electronics SBE-9 and EG&G Neil Brown Mark III CTD systems.

R/V Knorr

The Knorr (AGOR 15), which hosted Robert Ballard's world famous expeditions to the Titanic is currently at McDermott Shipyard in Morgan City, Louisiana. She is undergoing an extensive mid-life refit which includes lengthening the ship by 34 ft., replacing her propulsion system, enlarging laboratory space, and providing accommodation for a larger scientific party. The new vessel will be 278 feet long, 46 feet wide and 100 feet high. The \$22 million retrofit was accomplished by placing the 1915 ton ship in dry dock using a gigantic barge mounted crane.

The Knorr will be returned to her operating institution Woods Hole Oceanographic Institute in June. Upon her return the vessel will set sail on voyages to study global warming trends.

R/V Melville

The R/V Melville (AGOR 14) is also at McDermott Shipyard in Amelia undergoing the same mid-life refit as her sister ship the Knorr. The Melville was lifted from the water on March 7 using the same crane and dry dock vacated by the Knorr two weeks earlier. Both ships are owned by the Navy and funded in part through the National Science Foundation. Melville is operated by the Scripps Institute of Oceanography and is home ported at the Institution's facilities in San Diego, California.

Both ships were built for the Navy by Defoe Shipbuilding Co. in Bay City, Michigan. The decision to refit the two vessels, instead of building new ships, was made to save money and time.

R/V Maurice Ewing

The R/V Bernier was recently purchased by the Lamont-Doherty Geological Observatory of Columbia University to replace the R/V Robert D. Conrad (AGOR 3). The Bernier was purchased from a Canadian firm, renamed the R/V Maurice Ewing and is currently at Equitable shipyard in New Orleans. The vessel is being converted to a multipurpose research vessel. In her old life she was used by the Canadians as a seismic vessel.

The \$4 million plus refit is funded in part by the National Science Foundation and includes the addition of a SWATH mapping system similar to the one installed in the Thompson, a new stern mounted "A" frame and side mounted davit, work bays for CTD and ROV operations and improved hydraulics.

R/V Weatherbird

The Bermuda Biological Station for Research also decided to take advantage of the abundance supply of existing out-of-service oilfield boats to meet their demand for a research vessel. The station had operated three small vessels (55'-65') in the past but needed a larger ship for Global Ocean Flux Studies being funded by the National Science Foundation.

The vessel they chose was a 115' x28' x8' built in 1983. Conversion of the vessel from a seismic ship tender to an oceanographic vessel began at Quality Shipyard in Houma, and included the addition of deck handling equipment, new engines, and the conversion of

some of her mud tanks to machinery and storage areas. The ship is scheduled to return to Quality Ship Yard next year to complete the conversion process and completely refit all the ship's living quarters.

R/V Western Straights

The R/V Western Straights was purchased recently by the University of Hawaii from Western Geophysical. The 185' seismic research vessel is at the Waterways Towing Company in Chicksaw, Alabama, waiting for proposals for bids to be issued for a major refit of the ship. The conversion will include lengthening the vessel by 30 feet, refurbishing all habitable spaces, including the bridge, and refitting the vessel for her new life as a mothership for the submersible program at the Hawaii Underwater Research Laboratories.

Nathaniel B. Palmer

Currently under construction at Northern American Shipyard in Larose, LA the Nathaniel B. is owned by Chouest Boat Rentals of Galliano, LA. The vessel will be leased to NSF Polar Programs for use in the Antarctic. The 300' icebreaker will cost about \$30-40 million. Operating parameters include the ability to maintain 3 kts. in up to 3' of ice.

Other vessels in the UNOLS fleet constructed in Northern Gulf yards are:

Moana Wave - University of Hawaii, built at Halter Marine Sorvieen, Inc. in New Orleans, LA.

Robert Gordon Sproul - Scripps Institute of Oceanography, built at Steine Fabricators, Inc. in Bayou La Batre, LA

Laurentian - University of Michigan, built at F.B.Walker & Sons in Pascagoula, MS

Gyre - Texas A&M University, built at Halter Marine in New Orleans, LA

Pelican - Louisiana University Marine Consortium and

Longhorn - University of Texas both built at Allied Shipyard in LaRose, LA

Cape Henlopen - University of Delaware, built at Swiftships in Morgan City, LA

THE FOLLOWING PAGES OF THE NEWSLETTER
ARE DEVOTED TO CLIPPINGS, FORMS, AND
OTHER INFORMATION THAT SHOULD BE OF
INTEREST TO RVOC MEMBERS.

RVOC OPERATORS DIRECTORY

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Joe Coburn	WHOI	(508) 548-1400	(508) 548-8675	WHOI.SHIPS
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Dean Letzring	Texas A&M	(409) 740-4469	(409) 740-4456	RV.GYRE
Lee Knight	Skidaway	(912) 356-2486	(912) 356-2751	D.MENZEL
Quentin Lewis	Duke	(919) 728-2111	(919) 728-2514	DUKE.UNC
Don Newman	USC	(213) 830-4570	(213) 830-6328	R.PIPER
Waddy Owen	U of Delaware	(302) 645-4320	(302) 645-4006	W.OWEN
Ken Palfrey	OSU	(503) 867-0224	(503) 867-3733	OSU.SHIPS
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Steve Rabalais	LUMCON	(504) 851-2808	(504) 851-2874	LUMCON
Tom Smith	U of Alaska	(907) 224-5261	(907) 224-3392	T.SMITH
Jim Williams	SIO, UCSD	(619) 534-1643	(619) 534-1635	SCRIPPS.MARFAC
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Thomas C. Johnson
Director

Eric B. Nelson
Marine Superintendent

George A. Newton
Asst. Marine Supt./
Equipment Officer

Joseph F. Ustach
Executive Officer

**DUKE/UNIVERSITY OF NORTH CAROLINA
OCEANOGRAPHIC CONSORTIUM**

Duke University Marine Laboratory
Beaufort, North Carolina 28516
(919) 728-2111



R/V CAPE HATTERAS

May 24, 1990

Captain James Williams
Marine Superintendent
Scripps Institution of Oceanography
La Jolla, California 92093

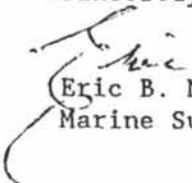
Dear Jim:

I want to thank you for your very thoughtful letter in regards to my retirement. I appreciate having these written words to read as time goes on and be assured I will read them again and again.

I will certainly miss my friends and colleagues who are associated with what I believe to be the finest vessel operation organization ever put together - the RVOC - but again warm memories will keep me company.

Again thank you and may God bless you.

Sincerely,


Eric B. Nelson
Marine Superintendent

EBN:dtj

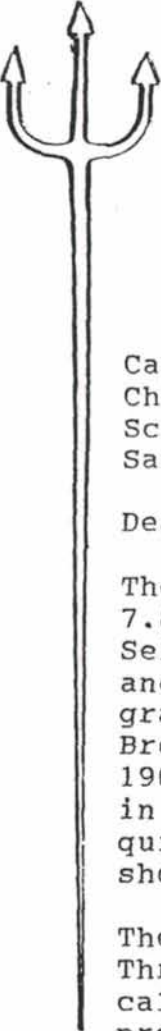
S.H. Applegarth, Jr.

CONSULTANT
OCEANOGRAPHY

MARINE
SURVEYOR

HONGA, BOX 679
CHURCH CREEK P. O.
MARYLAND 21622
301-397-3245

10 June 1990



Captain Jim Williams
Chairman, Research Vessels Operators Council
Scripps Institute of Oceanography
San Diego, California 92152

Dear Jim:

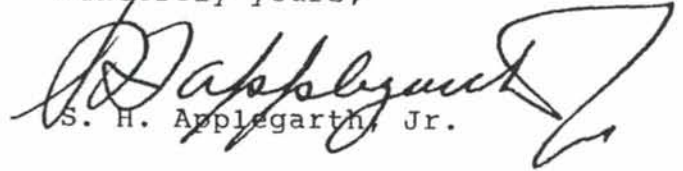
The October 1989 Research Vessel Safety Standards, paragraph 7.8 is redundant in part. It states, "Vessels should carry Self-Contained Breathing Apparatus (air-pack and/or OBA)... and when space permits, fireman's outfits." Then, in paragraph 8.6, it correctly points out that Self-Contained Breathing Apparatus are part of a fireman's outfit (46 CFR 196.35). The reference to this apparatus should be deleted in paragraph 7.8 or the paragraph otherwise modified to require, as a minimum, the Self-Contained Breathing Apparatus should be carried if there is no room for fireman's outfits.

The other paragraph I should like to comment on is 8.5, Line-Throwing Appliance and Rescue Boat. The paragraph specifically recommends against the shoulder gun but touts rocket propelled cannister types: The shoulder gun has several advantages. The line throwing gun kit contains 10 projectiles, 25 cartridges and 4 lines. This gives at least 4 tries to get a line to the distressed person, boat or ship, plus 6 more tries if you carry extra lines or fake down your own light line. The closed cannister, rockets are dated and must be replaced periodically. Once the device is used, it cannot be reused and additional cannisters with rockets must be available. Another type, the impulse-projected rocket has advantage over the cannister type in that multiple charges are carried. Forty six CFR 196.15.25 (a) requires quarterly training and firing (emphasis added) of both the impulse-projected rocket type and the shoulder type. Comment: The impulse type can be dangerous unless one is very careful (rockets can tumble and return to the ship with serious results) and the cannister type is totally expended when fired.

(2)

Consideration should be given to not favoring one device over the other but leaving the decision to the operator. As for myself, I would opt for the shoulder gun.

Sincerely yours,


S. H. Applegarth, Jr.

cc to: R. West
R. Dinsmore

GPS Defense Plans Off The Mark

As readers may or may not know, the accuracy of the GPS navigation system is being degraded as part of the Department of Defense's (DOD) plan for its implementation. Over the last year, we have been enjoying some excellent navigation. The accuracy has been very good, and if one could deal with the significant periods when no satellites were visible, it was quite usable, and offered advantages over transit satellite navigation. Of course, the specter of "Selective Availability" has hung over the system since the Department of Defense first uttered the words, casting a pall of uncertainty on the viability of GPS as the navigation system of choice for maritime users. The statements heard were: "They'll never do it!" and "Well, it'll still be better than loran" and "Instead of inches, we'll have to measure the accuracy in feet."

Now that several of the new (block 2) satellites are in orbit and operating, reality has struck. DOD has turned on the "dithering" on those satellites, and the word I heard at the 1990 RTCM assembly is that it will not be turned off. The accuracy has been stated by DOD with a formula meaning that 95 per-

cent of fixes are within a sphere roughly 200 meters in diameter. That accuracy has been verified by measurement. This is considerably worse than the accuracy enjoyed by loran-C users in many coastal U.S. locations, and much worse than the capability of this very expensive navigation system.

Presumably, this purposely introduced variation in the positions provided by the GPS system is to deny our enemies the same accuracy our military enjoys. DOD expects the maritime community to use GPS on the high seas and loran-C when in coastal waters. They intend to allow use of the high-accuracy modes of the GPS system by the military (non-interruptible, or "anti-spoofing") and by selected civil users (P-Codes). An office is being set up to process requests for permission to use the P-Codes on a basis of need and lack of alternatives. We have no idea how favorably they will react to such requests, or how, as a practical matter, they will implement the permission and enable a user's receiver. We do know, however, that it will not be less expensive.

My simplistic view of the whole situation is that the best navigation system in existence is not "too good". If a mariner or pilot or policeman or delivery truck can be placed more accurately on the face of the world, let's do it! In case of national threat, then de-accurize the system. To do otherwise is to accept "second-best" navigation and allow unsafe conditions.

I believe that all potential users of this great navigation system should press the U.S. government to turn off the "dithering" in the GPS system now, and leave it off until a national threat occurs. Write your senator and representative, urging them to notify the DOD of your displeasure.

WILLIAM R. MILLER
Product Manager
Furuno USA Inc.
San Francisco, Calif.

Tonnage measurement

The Coast Guard has recommended that the International Maritime Organization International Tonnage Convention be adopted for all domestic applications after July 19, 1994, including vessels of less than 79 feet that are not measured under the current system. This would require that all vessels measured under the current system be remeasured and that ITC tonnage be used for the application of all domestic laws and regulations.

— N. Powers

AWO protests CG draft tonnage study

The Coast Guard's draft vessel tonnage survey report to determine the impact of changing domestic measurement systems to meet international ones does not provide the full picture and misleads by omission, said Joseph Farrell, president of American Waterways Operators. He asked the Coast Guard to attach AWO's comments about the report to the final report draft for Congress.

At the center of the inland barge and towing industry trade association's concerns are the affects on domestic laws and fees, since tugboat tonnage increases about four times under the international convention measurement. Although the draft report suggests that manning requirements be readjusted by the Coast Guard, no specifics are given.

A recommendation to keep existing tonnage cites after conversion would result in a requirement for additional living space for crew members aboard certain vessels, and for a three-man instead of a two-man watch in one case. Additional load line and additional radiotelephone requirements could be imposed on certain vessels. "These additional requirements would be imposed on vessels which currently operate safely and efficiently solely because of a modified tonnage measurement," Farrell said. If the report is implemented, other factors may be sacrificed just to have one tonnage measurement system in domestic and in international waters, he emphasized.

Buyers of new 406-MHz EPIRBs may experience delivery delays

By Paul Lazarus
Associate Technical Editor

Emergency position-indicating radio beacons, or EPIRBs, have been around for about two decades. But it wasn't until this May that a new law went into effect requiring 406-MHz EPIRBs aboard commercial fishing vessels operating more than 3 miles from shore.

The EPIRBs specified by the Coast Guard represent a new generation of equipment of this type. They function on a dedicated frequency of 406.025 MHz, linking them to an international search-and-rescue satellite system, whose acronym is COSPAS/SARSAT. When each EPIRB is initially encoded into the satellite's data bank, it renders that particular signal unique, like an electronic fingerprint. Once activated, the signal is picked up and relayed by satellite to ground stations, which then identify the vessel in distress and fix its position to within 3 miles.

Impressed by the speed and accuracy of information offered by this new EPIRB system, the Coast Guard decided to phase

out the use of older, less reliable EPIRBs by the fishing industry in favor of the so-called 406 series.

There are two categories of 406 EPIRBs. A Category 1 unit automatically floats free of a sinking vessel and then emits its signal. The Category 2 version must be activated manually. Though both types are electronically similar, Category 2 units are allowable only for boats without accommodations. Both categories are powered by long-life batteries; equipped with a high-intensity strobe light that penetrates fog and other poor-visibility conditions; and transmit a 121.5-MHz homing signal.

Five manufacturers are currently building 406 EPIRBs that meet Federal Communications Commission and Coast Guard standards. Additional companies from the United States and other countries are seeking official approval of their units in order to enter the market. It is expected that the present per-unit price will decline

somewhat as the manufacturing field expands.

Many fishermen held off purchasing this mandatory equipment until the deadline date arrived, thereby creating a bulge of back-orders among all the firms supplying 406 EPIRBs. As of early June, deliveries to prepaid customers were running about 30 days behind schedule, but 90-day delays were also reported, depending on the manufacturer and the particular model.

Though the satellite EPIRBs all conform to strict specifications, these units vary in design, price and special features. What follows is a brief roundup by manufacturer of the approved Category 1 and Category 2 EPIRBs available at press time. Note the presence of manufacturers from across the Atlantic, where EPIRBs have been regulation safety equipment for some time. Dollar amounts shown in parentheses below are the manufacturers' suggested list prices.

ACR. Made in the United States. On the Category 1 model (\$3,500), the beacon is triggered by a hydrostatic release mechanism; the Category 2 model (\$2,700) is merely a manual version of the same unit. ACR's antenna folds inside the storage canister. ACR Electronics, P.O. Box 5247, Ft. Lauderdale, FL 33310, tel. (305) 981-3333.

Kannad. Made in France. At just under 4 lbs., not including its housing, the Kannad unit is the lightest on the market. (The other EPIRBs are at least twice as heavy.) The only physical difference between the Category 1 (\$2,200) and 2 (\$1,600) versions,

besides the automatic release mechanism, is the container. The Category 2 model can be readily upgraded and recoded to a Category 1 EPIRB. The U.S. distributor is Electronics Safety Device, P.O. Box 1034, Manhasset, NY 11030, tel. (516) 627-5627.

Litton. Made in the United States. The key elements of these EPIRBs are encased in an integral housing: The beacon is self-contained, and the antenna is enclosed in an upright position. Category 1 lists for \$1,995, Category 2, \$1,795. Litton Industries' EPIRBs are distributed by Kodan International, 77 Accord Park Dr., Norwell, MA 02161, tel. (617) 871-6223.

Lokata. Made in England. Four models are offered, three of which are Category 1 types. One version of these has a built-in heater to ensure effectiveness in icy waters; another is triggered by a non-mechanical submersion release. The Category 1 units list from \$2,100 to \$2,700. The fourth model, a Category 2, lists for \$1,875. The antenna in all models remains upright inside the canister. Lokata EPIRBs are distributed by Furuno U.S.A. Inc., P.O. Box 2343, San Francisco, CA 94083, tel. (415) 873-9393.

RA 406. Made in England. This EPIRB is self-contained (there is no can or container), available only as a Category 1 device (\$2,300) and is activated by a hydrostatic release. In September, though, the U.S. distributor is introducing two new lines of EPIRBs of both categories, with one line being locally manufactured. The RA 406 is distributed by World of Business, P.O. Box 17, Sequim, WA 98382, tel. (206) 683-6928.

As ship capsized, crew fought over suits

SEATTLE (AP) — Crew members fought over survival suits in the final minutes before a fishing boat sank in the Bering Sea a week ago, a survivor testified at a hearing yesterday.

Crew member Harvey Dale Philpot also told the Coast Guard and National Transportation Safety Board inquiry that he couldn't close the suit he had grabbed because the zipper was corroded.

Philpot, 20, testified he had received no safety training aboard the 162-foot trawler *Aleutian Enterprise*, which capsized and sank March 22. Nine crew members are missing and presumed dead. Twenty-two crew members survived.

The crewman said there was little warning the ship was in

trouble, and that he first noticed something was wrong when it began to list while he was on the lower deck.

Philpot said he tried to turn on a pump, but it didn't work. Crew members then began yelling to abandon ship and he ran to get a survival suit.

At a box where the flotation suits were stored, he and four men struggled over the suits.

"People were trying to grab from one another," he said.

Philpot said someone tried to grab his suit, but "I was holding on to it. I wasn't letting go."

Once he was topside, Philpot donned the suit and tried to zip it up, but found the zipper corroded.

Marine Insurers Conference Targets Industry Faults

ANTWERP, Belgium — Improperly used technology, smaller crews, older ships and poorly-trained personnel are creating new hazards at sea, an international conference of marine insurers heard.

The report was among those delivered at the International Union of Marine Insurance annual conference in Antwerp, Belgium.

Shipowners' efforts to remain competitive in the international marketplace have led them to try to improve efficiency by using more automation technology and fewer crew members, said Harry S. Keefe, president, GRE America. Keefe is a hull-loss prevention expert and vice chairman of the American Institute of Marine Underwriters.

However, Keefe said, true efficiency must incorporate a level of safety "tolerable" to society.

He added the so-called "ships of the future" being constructed in West Germany, Japan, Norway, France and the Netherlands have used automation to cut crew sizes down to as few as 11 people. A Danish-built 84,000-ton tanker will use only one person on bridge watch night or day, he said.

"Logic tells me that if a huge, fast ship loaded with complicated, high-technology gear is to be crewed by 11 persons, they had better be very high quality people who have had extensive training."

But there has been a virtual training standstill in the maritime field

"We have had a revolution in technology accompanied by a de-emphasis on maritime training."

*Harry S. Keefe
President
GRE American*

for the past 10 years, he added.

Keefe also said that economics forces shipowners to retire ships at more advanced ages.

He cited statistics that show the average age of the world fleet is increasing: 35 percent of the tanker and bulk-carrier fleet is estimated at between 15 and 19 years old and data from Lloyd's Register shows 70 percent of all steam and motor ships were more than 10 years old in 1988.

Keefe said the drive to remain competitive by reducing operating costs may be leading shipowners to reduce crew sizes on older vessels as well. He noted published reports alleging that automation is being forced on older ships not designed for it and that crews have been reduced to dangerously low levels.

Ship pilots from such widely-separated areas as New York harbor and the Suez Canal have told him they are concerned not only about

the small numbers of crews, but also about the limited skills modern seafarers possess.

The National Cargo Bureau has found a growing disregard for proper lashings on containers stowed on deck, which the organization partially attributes to reduced crew size.

Keefe said the growing number of vessels flying flags of convenience may not be properly regulated by flag states, such as Panama, Cyprus and a multitude of new flag states.

"I think this is a significant factor in reducing ship safety," said Keefe.

"I do not believe that the organizations responsible for enforcement of maritime regulations in these countries have the structure, experience or power that their counterparts in traditional maritime nations have enjoyed."

Such nations are in competition for the business of registering ships, said Keefe, which makes it difficult for them to maintain and enforce safety standards.

He also observed that the effectiveness of classification societies—organizations that develop ship design criteria and inspect vessels to see they meet these standards—and even marine underwriters are affected by market forces.

"At the same time, we have had a revolution in technology accompanied by a de-emphasis on maritime training," he said. "In this scenario, who cares about safety?" □

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

An association of Institutions
for the coordination and support
of university oceanographic facilities

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February 12, 1990

TO: UNOLS Community

FROM: George H. Keller, UNOLS Chairman

SUBJ: Unauthorized consumption of alcohol aboard UNOLS vessels

All the UNOLS ship operators have established policies regarding the consumption of alcohol aboard their ships. The liability impact on the operator when there is an accident and alcohol is found to be involved can be devastating, and prompts this memorandum. The seriousness of this issue was brought to the attention of the UNOLS Council, and it is strongly committed to backing the operators in coping with this problem.

In the future, research vessel operators will insure that those going aboard their vessel(s) are informed of the institution's policy regarding the consumption of alcohol. Anyone found in violation of the policy will be reported to his/her employer and will be restricted from use of the ship another time. Whether the institution gives the individual a second chance will be its call.

The UNOLS Council has gone on record as fully supporting the above stated practice and will work closely with the operators to deal with any problem of unauthorized consumption of alcohol aboard the UNOLS vessels.

cc: W. Barbee
D. Heinrichs
K. Kaulum
J. Williams

DRUG TESTING REVISITED

by Michael Eisele '80

In November, 1988, the U.S. Coast Guard issued final regulations requiring marine employers to institute drug and alcohol testing programs for sea-going employees. As reported in the fall, 1989 *Kings Pointer*, the new regulations required testing prior to employment, testing during license renewal, post-accident testing, testing with reasonable cause, and random testing. Employers were required to phase in various aspects of the testing program, with initial implementation scheduled for June 21, 1989.

Prior to implementation, the Coast Guard's testing program was challenged in the federal courts by labor unions, individual seamen, and an association of vessel owners. These challenges, primarily based on the Fourth Amendment's prohibition of "unreasonable searches and seizures," were decided by the U.S. District Court for the District of Columbia on December 18, 1989. In its decision, the Court prohibited the Coast Guard from requiring random testing, but upheld all other aspects of the testing program.

The Fourth Amendment

In deciding this case, the Court relied heavily on principles drawn from two recent U.S. Supreme Court cases which had considered mandatory drug testing programs involving Customs Service and railroad employees. These cases reaffirmed that the public interest in regulating certain industries may outweigh an individual's rights under the Fourth Amendment. The Customs Service and railroad cases also established that the government did not need to prove that a drug problem existed within a particular industry to require testing. Once the government establishes that deterrence of drug use in a particular industry will serve a public interest, the only remaining question is whether that interest outweighs individual privacy rights.

The Coast Guard has stated that its testing program is not designed to prosecute drug users, but to prevent drug and alcohol related accidents. With very little discussion, the Court accepted the Coast Guard's argument that its regulations advanced legitimate public interests in maritime safety. Despite the fact that the Coast Guard provided no substantial evidence of drug or alcohol abuse in the maritime industry, the Court agreed that the potential results of drug and alcohol abuse aboard ship warranted government regulation. Accordingly, the Court's analysis focused on the balance between the public interest and the individual's privacy interests without seriously considering whether a drug problem exists among merchant seamen.

Public Interest Versus Privacy Rights

In deciding the constitutionality of drug testing programs, courts have considered whether an individual has any control over the decision to test or the timing of the testing. For example, the testing program upheld in the Customs Service case only required drug testing of employees seeking promotion to jobs involving access to classified information, drug interdiction, or firearms use. Accordingly, individuals could avoid testing by not seeking promotion to jobs in these categories. The railroad case involved regulations requiring testing of employees only after accidents or in case of suspected drug use.

The testing program created by the Coast Guard is obviously far more intrusive than the programs considered in either the Customs Service or railroad cases. However, the Court analogized both cases, pointing out that merchant seamen, like customs employees, could control certain aspects of the testing program by simply not applying for new employment. Unfortunately, the Court did not appear to consider the fact that the rotary shipping systems prevalent in the industry force many seamen to frequently seek new jobs and new employers. Unless a change is made before full implementation, the current regulations will require a seaman employed on a rotary basis to undergo testing at least twice a year to remain continuously eligible for new employment.

Courts deciding drug testing issues have also found that individuals working in highly regulated industries should expect to undergo increased scrutiny by government regulators. In a preliminary decision, the Court compared the maritime industry to the railroads, describing the maritime industry as "one of the most closely regulated businesses in the nation." The Court cited the Coast Guard's authority to enforce certification standards and working conditions, as well as the industry practice of requiring a pre-employment physical. The Court determined that this existing regulation reduced any expectation of merchant seamen to privacy under the Fourth Amendment.

After balancing these factors, the Court determined that the public interest in avoiding marine casualties outweighed any individual privacy interests in avoiding pre-employment testing, renewal testing, post-accident testing, and reasonable cause testing. Accordingly, these aspects of the testing program were upheld.

Random Testing

In considering the Coast Guard's random testing program, which would have required unannounced testing of 50% of maritime employees annually, the *Transportation Institute* Court found a greater degree of intrusion on individual privacy rights. Although the actual means of testing would presumably be identical to other aspects of the Coast Guard's program, the Court appeared to be affected by the fact that random testing was not initiated by the individual, either by seeking employment or by being involved in an accident. Accordingly, the Court believed that random testing was a greater intrusion into the individual's privacy rights. Because of this greater degree of intrusion, the Court reexamined the link between random testing and the government's safety concerns, finding that the Coast Guard could not justify random testing of those persons not directly linked to the navigation or operation of merchant vessels.

In its decision, the Court noted that the random testing scheme included steward department personnel, whose functions were not particularly safety sensitive, as well as entry-level deck and engine personnel who had no responsibility for vessel operations. The Court believed that random testing of these personnel did not substantially contribute to vessel safety, and was outweighed by the intrusion into individual privacy interests. Because the existing regulations applied to all sea-going employees, the Court invalidated the entire random testing program, but noted that the Coast Guard would be free to draft new random testing regulations which only require testing of personnel directly involved in vessel operations. According to Coast Guard officials, new regulations will be proposed which limit random testing to accommodate the Court's concerns.

The Coast Guard's new drug testing program will undoubtedly prove to be of value in screening drug impaired seamen. The benefits of this program should extend beyond the avoidance of marine casualties. For example, it might be expected to prevent customs penalties associated with drug smuggling and reduce the incidence of personal injury claims. However, it remains to be seen whether the program will result in benefits sufficient to justify its cost to industry. Unfortunately, it may prove difficult to measure the success of the testing program as a deterrent because of the lack of significant information regarding shipboard drug abuse prior to implementation.

Letters

RANDOM DRUG TESTING

I read your editorial in the January 1989 MARINE LOG and I am concerned about the conclusions you have reached. Random drug screening is a tool that can prevent problems and allow those who are substance-dependent an opportunity for treatment.

The unions have argued, successfully, that this is an unwarranted infringement on their Constitutional rights. I agree that it is a little degrading to be asked to urinate in a bottle on demand and that it may infringe on individual rights, but random drug testing is not being used as a basis for prosecution. It is being used to test for competency of employment! The risk of having someone who is under the influence of drugs at the wheel of a ship is immense. The judge did not consider the greater good in his deliberations in this case.

A shipowner is in the position of having people drive his vessel with no indication of fitness other than a preemployment screening. If an individual on a vessel has an accident, the injured party may have the vessel adjudged unseaworthy if he can prove one of his fellow seafarers was on drugs before or during the time of the accident. The shipowner pays, not the seafarer on drugs. Doesn't a shipowner have the right to protect his property and limit his risk?

The reason I quit going to sea is that I didn't want to be a part of the drug and alcohol culture that exists under the current system. Perhaps it is not random drug testing that would make "life at sea even less attractive than it is right now," but the lack of testing.

Our company has been involved in various forms of drug testing in anticipation of DOT rules. Our testing to date has shown that 6% of seagoing staff are taking drugs and that more than 80% of all accidents involve someone under the influence of drugs or alcohol. In the face of these numbers, an operator can quickly recoup any money invested in a random testing program. If you think life at sea

is unattractive, think how it must be to put your life in the hands of someone on drugs.

Our random program applies to all employees from the lowest new hire to the chairman of the board. You argue that stewards are in less critical positions than masters so they should be tested less. In fact stewards have one of the worst safety records in the fleet. Our program is intended to reduce personal accidents as well as disasters at sea.

It all comes down to resolve and commitment. We are in a war on drug abuse on our vessels and in all areas of our society. Do we have the resolve to win it? You say that maritime unions are committed to a drug-free work place, but it can be demonstrated that in the absence of random testing, 6% of workers will be under the influence and they will cause more than 80% of all accidents. That doesn't sound like a very high level of commitment to me.

If a random test reveals that a seafarer is under the influence of drugs, he can receive treatment for the abuse. If random testing is outlawed, this same individual can be treated for a broken leg or fitted for a pine box. Worse, he could cause the injury or death of an innocent person who has the misfortune to be working with him. Which is the greater good? I have to go with prevention. I hate to wait for an accident just to find the cause.

The survival of the U.S.-flag fleet depends on only one thing: its commercial viability. Things that detract from profitability work against the flag. Things that can influence profits in a positive way will help the flag to increase. Random testing is a clear positive step and the unions and lawyers will not allow owners to take it.

Allan Leskinen
Director of Technical Services
Zapata Gulf Marine Corp., Houston.

APRIL 1990 MARINE LOG

THE CAPITAL, Annapolis, MD

428 users in Coast Guard anti-drug units

KNIGHT-RIDDER NEWS SERVICE

SAN JOSE, Calif. — For every three drug smugglers the U.S. Coast Guard caught recently in its war on dope, more than one member of the agency's main anti-smuggling units was punished for drug violations, a study for the *San Jose Mercury News* has found.

Members of the units — which are based throughout the country from San Francisco to Miami — were disciplined 428 times for drug offenses in 1987 and 1988, according to the 16-month study by the Coast Guard

in response to a Freedom of Information Act request by the *Mercury News*.

During the same two-year period, the Coast Guard arrested or helped other law-enforcement agencies arrest 1,099 people for drug offenses. That means one person assigned to the agency's "front line" in law enforcement, as one official described the units, was disciplined for every 2.6 civilians the agency busted for drugs.

Cocaine was involved in 48 percent

of the punishment cases, only slightly less often than marijuana. A handful of other cases involved morphine, PCP and methamphetamine, or "speed."

It was hard to tell from the sketchy documents provided by the Coast Guard where the offenses occurred in many cases, but at least 32 of the disciplined employees appeared to have been stationed in California. The South Florida area had the biggest share of punished personnel — at least 73.

Although the study showed that one member of the units was punished for drugs every 41 hours, on average, Coast Guard officials said it would be wrong to conclude that drugs have seriously undermined the agency.

The study merely proves that drugs are used in all levels of society, they said, and that the Coast Guard — the country's main military agency involved in drug interdiction — is serious about punishing drug abusers in its ranks.

ANNEX V OF MARPOL 73/78 PROHIBITS THE DISCHARGE OF PLASTIC FROM ANY VESSEL ANYWHERE IN THE MARINE ENVIRONMENT.

PLASTIC INCLUDES BUT IS NOT LIMITED TO: plastic bags, styrofoam, styrofoam (popcorn) packing materials, six pack holders, bottles, caps, lids, styrofoam cups and lids, plastic strapping bands, sheeting, fishing nets, buckets, hard hats, vegetable sacks, milk jugs, egg cartons, gloves, rope, shoes, sneakers, flashlights, straws, stirrers, syringes, lighters, and shrink wrap or materials which contain only small portions of plastics like a plastic lined paper cup.

Special areas: On 1 Oct 1989 the Baltic Sea became a "Special Area". In "special areas" only food waste can be discharged from a vessel beyond 12 miles from shore.

Definitions: "Greywater" means drainage from dishwashers, shower, laundry, bath, and washbasin drains and does not include drainage from toilets, urinals, hospitals, and cargo spaces.

"Dishwater" means the liquid residue from the manual or automatic washing of dishes and cooking utensils which have been pre-cleaned to the extent that any food particles adhering to them would not normally interfere with the operation of automatic dishwashers.

Disposal of any garbage is prohibited except dishwater or greywater.

(This includes the internal waters of U.S. and the Great Lakes.)

Food waste, paper rags, glass, metal bottles, crockery and similar refuse if comminuted or ground to pieces no larger than 1 square inch (excludes plastic material, garbage that floats and dunnage).

All garbage allowed closer plus paper, rags, glass, metal, bottles, crockery and similar refuse without being ground (excludes plastic material and garbage that floats and dunnage).

All garbage allowed closer plus dunnage and garbage that floats (excludes plastic material).



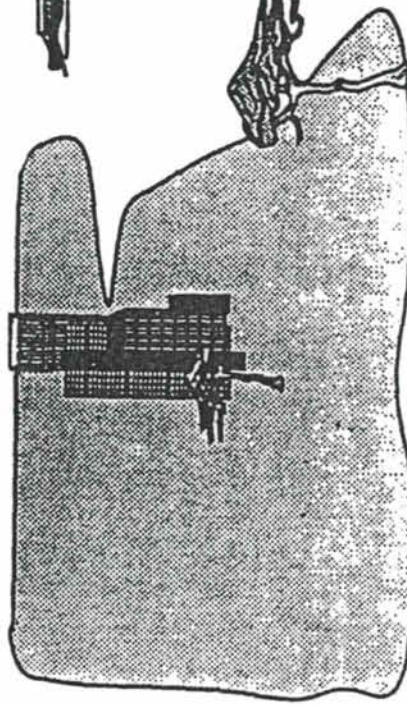
3 miles



12 miles



25 miles



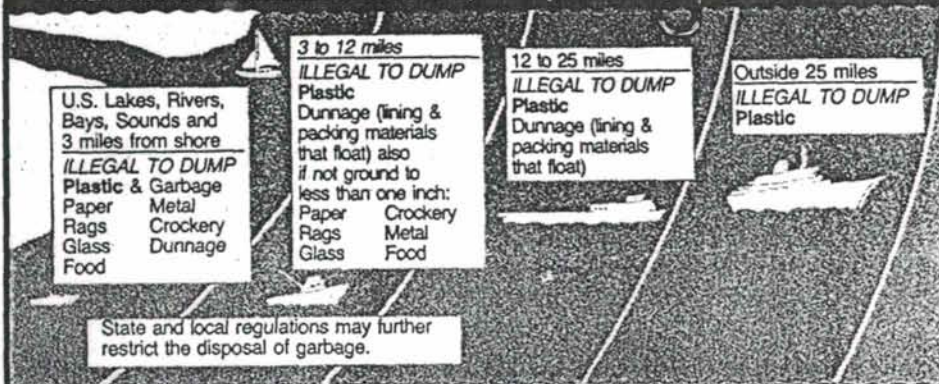
Fixed or floating platforms and vessels within 500 feet of these structures may not discharge any garbage except food waste ground to less than 1 square inch in size may be disposed of when 2 miles or more from land.

MET #S-226

THIS PLACARD CAN BE OBTAINED FROM MARINE EDUCATION TEXTBOOKS, HOUMA, LA
CALL (504) 879-3866 FOR CATALOG. COST IS \$4.00 EACH PLUS HANDLING.

It is illegal for any vessel to dump plastic trash anywhere in the ocean or navigable waters of the United States. Annex V of the MARPOL TREATY is a new International Law for a cleaner,

safer marine environment. Each violation of these requirements may result in civil penalty up to \$25,000, a fine up to \$50,000, and imprisonment up to 5 years.



WORKING TOGETHER, WE CAN ALL MAKE A DIFFERENCE!

CENTER FOR MARINE CONSERVATION 1725 DeSales Street, NW Washington, DC 20036 (202) 429-5609

Beginning July 31, all vessels over 26' must display a durable placard, like the one above, that explains MARPOL Annex V disposal regulations. The Center for Marine Conservation (CMC) is providing placards free to individuals and for a nominal charge to organizations ordering 50 or more. Contact CMC, 1725 DeSales St. NW, Washington, DC 20036, tel. (202) 429-5609.





Newsletter

VOLUME 9, NUMBER 2

FEBRUARY 1990

FCC PROPOSES REQUIREMENT FOR AUTOMATIC VHF TRANSMITTER DEACTIVATION

In response to a Petition for Rule Making, the Federal Communications Commission (FCC) has issued a Notice of Proposed Rule Making (NPRM) to incorporate into the Commission's Rules a requirement that would eliminate prolonged inadvertent keying of VHF shipboard transmitters operating in the maritime mobile service. The intended effect would be to enhance maritime safety and conserve enforcement oriented resources.

The proposed rule change would require that VHF ship station transmitters be equipped with (1) an automatic timing device that deactivates the transmitter after an uninterrupted transmission period of more than three minutes and (2) a device that provides an indication that the timer has deactivated the transmitter.

As proposed, the requirement would apply to VHF ship station transmitters manufactured or imported into the United States after July 31, 1992, or installed after July 31, 1993. VHF ship station transmitters installed on or before July 31, 1993, would be grandfathered indefinitely while located at the same ship station or coast station.

The NPRM specifically requests comments on proposed phase out periods, on the effect this proposal would have on public correspondence and duplex operations, and on what uninterrupted time period should be specified before deactivation is required.

Comments on the proposal may be filed with the FCC on or before March 29, 1990 and reply comments on or before April 13, 1990. The proposed action will need consideration by public correspondence service providers, manufacturers, and users. RTCM plans to submit formal request for a thirty day extension of comment period to provide time for adequate review, however it is not known whether or when such an extension might be approved. Accordingly, those concerned should file comments in time to meet the currently prescribed deadline. RTCM comments on the NPRM will be developed by an Ad Hoc Committee from comments received from RTCM members. Those concerned with the issues raised in this NPRM are encouraged to both respond to the FCC by filing comments and to advise the RTCM office of their views so that they may be taken into account in developing RTCM comments. Copies of the NPRM are available to RTCM members on request to the RTCM Office at (202) 639-4006. Request document JULIET ALFA.

NAVTEX MARITIME SAFETY BROADCASTS

On March 9th, the U.S. Coast Guard began broadcasting NAVTEX maritime safety information from San Francisco, California; Long Beach, California; and Astoria, Oregon on a trial operational basis. They also plan to begin operating NAVTEX from Kodiak, Alaska and ADAK, Alaska by May 1990. Identification characters and broadcast schedules for current Coast Guard NAVTEX Pacific stations is as follows:

	<u>LONG BEACH</u> <u>CALIFORNIA</u>	<u>ASTORIA</u> <u>OREGON</u>		
Installation	pre-operation	pre-operation		
Identification (B ₁)	Q	W		
Schedule (UTC)	0445, 1045, 1645, 2245	0130, 0730, 1330, 1930		
	<u>SAN FRANCISCO</u> <u>CALIFORNIA</u>	<u>HONOLULU</u> <u>HAWAII</u>	<u>GUAM</u>	
Installation plan	pre-operation	operational	pre-operation	
Identification (B ₁)	C	O	V	
Schedule (UTC)	0400, 1000, 1600, 2200	0040, 0640, 1240, 1840	0100, 0700 1300, 1900	

ATLANTIC HIGH SEAS MARITIME SAFETY BROADCASTS

The U.S. Navy (CINCLANTFLT) is considering terminating their Atlantic Composite High Frequency broadcasts, which include Atlantic Ocean High Seas weather forecasts and warnings and Defense Mapping Agency NAVAREA IV and HYDROLANT navigational warnings intended for U.S. and foreign cargo vessels. The Coast Guard keys these Morse Code broadcasts over several Navy Communications Stations in the U.S. and Europe. The Navy has asked the Coast Guard to include in current broadcasts a request for comments from users. The Coast Guard will include this request in the broadcasts until March 12th, and on the end of March will compile results received and send them to the Navy. If the results show few ships use these HF broadcasts, the navy will terminate them.

INMARSAT TO IMPROVE COVERAGE FOR MARITIME SERVICES

Inmarsat has announced that it will improve the global coverage of its system by increasing the number of satellite coverage regions from three to four. The fourth coverage region will be created initially by relocating the current 26 degrees west satellite to 55.5 degrees west to serve the Atlantic Ocean Region-West. The existing 18.5 degrees west satellite will be retained at its present location to serve the Atlantic Ocean Region-East.

MARINE SAFETY UPDATE

Alaska Marine Safety Education Association

SPRING

Box 2592, Sitka, Alaska 99835

(907) 747-3287

1990

PROPOSED COMM. FISHING SAFETY REGS ARE OUT!

The long awaited proposed rulemaking regarding safety regulations for the commercial fishing industry is out. Published on April 19, 1990, the public will have until August 20, 1990 in order to submit their written comments. Persons submitting comments should include their name and address, identify this notice of rulemaking (NPRM) (CGD 88-079), identify the specific issue to which each comment applies, and give reasons for these comments. Anyone writing in their comments is urged to read the first part of the 40 page proposed rule making. Comments submitted should address the U.S. Coast Guard rationale contained in the first half of this proposed rulemaking in order to have maximum input. Groups, as well as individuals, are also encouraged to submit comments. Comments should be mailed to:

Executive Secretary
Marine Safety Council (G-LRA-2/3600) (CGD 88-079)
U.S. Coast Guard
2100 Second Street, SW
Washington, D.C. 20593-0001

In Alaska, copies of the entire Proposed Rulemaking can be obtained by calling 1-800-478-7369 and leaving your address on the answering machine, or by writing to;

LCDR. Glenn Sicks
Commander (mvs)
17th Coast Guard District
P.O. Box 3-5000
Juneau, Ak. 99802

If you have concerns about this Act, this may be your last chance for input. The final rule is expected to be out in early 1991, with some aspects of the Act to have a one to several year implementation period after that. A brief summary of the Proposed Rulemaking is contained in this issue.

At least three public hearings will be scheduled to take place in Alaska. Exact dates and locations have not yet been decided, although Kodiak, Anchorage/Kenai area, and Sitka have been discussed as possible sites. Verbal comment can be taken at these public hearings, if you have not had a chance to write in your comments and live near one of these sites.

ARTICLES IN THIS ISSUE MAY BE REPRINTED WITHOUT PRIOR PERMISSION
PROVIDED A.M.S.E.A. AND MARINE SAFETY UPDATE ARE CREDITED. COPIES
OF REPRINT MUST BE FORWARDED TO A.M.S.E.A, BOX 2592, SITKA, AK, 99835

TRAINING SCHEDULE & THINGS HAPPENING

June 5 -8 SEATTLE Navigation, Stability, Safety equipment & Survival procedures, Medical Emergencies at Sea (Med 1); Fire-fighting June 16; Advanced Medical Emergencies (Med 2) July 23. Contact Leslie Hughes, NPFVOA, 1800 W. Emerson, Suite 101 Seattle, WA. or call (206) 285-3383.

June 15 -17 Anchorage Marine Safety & Survival Ak. Wilderness Studies-Univ. of Ak.-Anchorage 2533 Providence phone 786-1122 Cost is \$87

JULY 22 -24 SITKA AMSEA will host the second annual Marine Safety Seminar for members of U.S. Marine Safety Assn. This 3 day seminar will consist of two tracts, one for members who attended last year, and one for first time participants. This seminar is being conducted to allow manufacturers, distributors, and trainers to meet each other and practice with different types of safety and survival equipment, as well as to discuss safety topics of mutual concern. For more information on this seminar contact:

Meg Morgan
U.S. Marine Safety Assn.
1900 Arch Street
Philadelphia, PA. 19103



September 20 & 21 SITKA - international symposium for TRAINING AND TECHNOLOGY FOR SAFETY AT SEA. This symposium is being sponsored by the University of Alaska-Sea Grant and AMSEA, in cooperation with the International Association of Sea Survival Trainers (IASST) which will be holding its annual general meeting after the symposium. For more information about this symposium, which would make an excellent refresher for AMSEA instructors and other interested persons, call AMSEA or ;

Brenda Melteff
Symposium Coordinator
University of Alaska-Sea Grant Program
138 Irving II
Fairbanks, Ak. 99775-5040
(907) 474- 7086

October - SITKA- The next AMSEA Marine Safety Instructor course will be conducted sometime in October in Sitka. People interested in this 6 1/2 day course should contact the AMSEA office to be put on the tentative roster. These people will then be notified of the exact dates, costs and other details of this course.

October & December-SITKA- Marine Safety & Survival courses and First Aid for Fishers and other Mariners, Call Islands Campus 747-6653

December- Petersburg-1st week - Marine Safety & Shipboard Medical

WANT A MARINE SAFETY & SURVIVAL COURSE IN YOUR COMMUNITY? OTHER WORKSHOPS WILL BE SCHEDULED THIS FALL BUT AMSEA NEEDS TO HEAR FROM YOU

SUMMARY OF PROPOSED RULEMAKING ON F/V SAFETY ACT

prepared by AMSEA
Box 2592
Sitka, Ak. 99835

DEFINITIONS:

Boundary line in general follow the trend of seaward high water shore-lines and cross the entrances to small bays, inlets, and rivers.

High Seas are waters outside of the three mile territorial sea. This is generally three miles offshore the outer coast. Refer to nautical charts of the area.

Length is length of boat on vessel document or certificate.

SUBPART B--REQUIREMENTS FOR ALL VESSELS

Personal Flotation Device and Immersion suits;

*Beyond the Boundary Line, all F/V must have an immersion suit for everyone onboard with a light and reflective tape.

*Inside the Boundary Line, F/V less than 40 ft. must have Type I, II, III, V Hybrid, or immersion suit for everyone onboard.

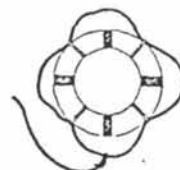


Ring lifebuoys:

*F/V over 65 ft. 3 orange life buoys minimum 24 inch diameter.

*F/V 27 to 65 ft. 1 orange buoy 24 inch diameter.

*F/V 16 to 26 ft. one buoyant cushion or ring life buoy.



Survival Craft:

*Survival craft already onboard before the effective date of this regulation may continue to meet the requirement provided it is of the type required and is in good condition.

*Documented F/V operating beyond 50 miles from shore or with more than 16 persons on board (POB) require an inflatable L/R with SOLAS A pack

*Doc.F/V 20 to 50 miles offshore or more than 16 POB SOLAS A or B pack

*Doc.F/V ocean 3 to 20 miles or more than 16 POB need inflatable L/R

*If more than 3 miles and not documented and less than 16 POB an inflatable L/R or Inflatable Buoyant Apparatus is required.

*Ocean inside the Boundary Line, or beyond Line but not on the High Seas; documented and 36 ft. or more in length or more than 16 POB requires inflatable L/R or inflatable buoyant apparatus. If not documented and longer than 36 Ft. or any vessel less than 36 ft, require L/R, inflatable Buoyant Apparatus, buoyant apparatus or life float.

*Compliance in the No. Pacific for documented vessels is within 1 yr. of the effective date of these regs. and up to 4 yrs. for all others.

*Annual servicing is required on inflatable survival craft.

*The capacity of a small boat carried onboard may be counted towards the capacity of a required buoyant apparatus, life float, or inflatable buoyant apparatus, provided it meets the requirements for flotation and safe loading in CFR 33 part 183 if stowed so it floats free.



Distress Signals:

*Beyond Boundary Line or 3 miles from coastline require 3 parachute, 6 hand and 3 smoke flares.

*Within 3 miles, one electric distress light, or 3 approved flares plus day distress signals of one distress flag or 3 flares or smokes.



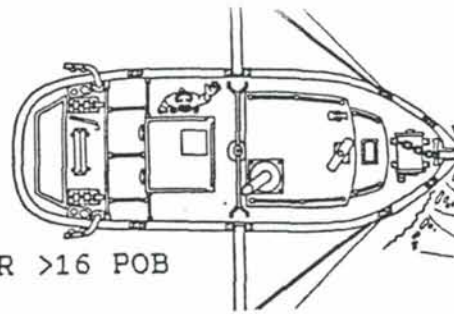
Portable Fire Extinguishers:

*Minimum of one B-I or B-II (for fuel fires) aboard each vessel with more required for vessels over 65 feet.

Injury Placard:

*Each vessel must post placard which requires each seaman on board to report an injury or illness within 7 days of occurrence.

SUMMARY CON'T.



SUBPART C--DOCUMENTED VESSELS BEYOND BOUNDARY LINE OR >16 POB

First Aid Equipment and Training:

- *Must have on board a first aid manual and medicine chest.
- *Within 2 years of the Final Rule, F/Vs with more than 2 POB must have at least 1 POB certified in CPR and first aid. F/V with more than 16 POB would require more people certified in CPR and first aid.

Guards on Exposed Hazards-- such as machinery, exhaust pipes etc.

Charts and Other Publications-- chart scale size appropriate for safe navigation, plus Coast Pilot, tide tables etc.

*F/V over 12 meters in length required to have Rules of the Road.

Compasses--and compass deviation table at operating station.

Anchors--and other related gear appropriate to voyage.

Radar Reflectors-- for nonmetallic hulls.

Communication Equipment:

- *VHF capable of contact with public coast station or USCG.
- *If more than 20nm from shore or in "dead zone" SSB required.
- *All radio equipment supplied with alternative source of power.

Bilges:

- *Alarms--F/V more than 36 ft. need a visual and audio bilge alarm.
- *Pump must drain any watertight compartment.
- *Except where individual pumps are provided for each space, bilge suction lines must lead to a manifold with appropriate valves.

Electronic Position Fixing Devices:

- *If longer than 79 ft., Loran C, GPS or Sat-Nav. required.

Emergency Instructions:

- *If more than 16 POB, posted in conspicuous locations onboard.

Instruction, Drills, Safety Orientation:

- *Person in charge must ensure drills are conducted once/month.
- *3 yrs. after Effective Date, individuals conducting drills must be trained in proper procedures for conducting drills and instruction.
- *New crew must receive safety orientation before vessel is operated.

SUBPART D--REQUIREMENTS FOR VESSELS THAT ARE BUILT AFTER OR UNDERGO A MAJOR CONVERSION AFTER THE EFFECTIVE DATE AND THAT OPERATE WITH MORE THAN 16 PEOPLE ON BOARD.

- *These vessels will have to meet higher standards for firefighting equipment, fuel systems (gasoline will not be allowed), piping, hull construction, electrical systems, provide each occupied compartment with 2 means of escape, and have rails on all weather decks.

SUBPART E--STABILITY STANDARDS FOR ALL VESSELS THAT ARE BUILT OR SUBSTANTIALLY ALTERED AFTER THE EFFECTIVE DATE OF THESE REGULATIONS.

- *Strict standards will be applied to all vessels affected
- *Owner will have the responsibility to choose a qualified party to perform stability calculations and test results.
- *Regs are very technical, consult with a good naval architect.

SUBPART F--FISH PROCESSING VESSELS

- *Every two years each vessel must be inspected by ABS or similar organization to prove compliance with this Act.
- *Any vessel built or undergoing a major conversion after July 27, 1990 must be classified by ABS or other similar organization.

REMEMBER, THIS IS ONLY A SUMMARY OF THE PROPOSED REGULATIONS! FOR THE COMPLETE 40 PAGE PROPOSED RULEMAKING LEAVE YOUR ADDRESS ON THE MESSAGE PHONE AT 1-800-478-7369 IF YOU LIVE IN ALASKA FOR YOUR OWN COPY.

THE F/V SAFETY ACT

WHAT'S IN EFFECT RIGHT NOW

Though referred to in the F/V Safety Act of 1988, EPIRB's have been legislated by another independent law. As of May 17, 1990 all commercial fishing industry vessels that operate on the high seas must have an appropriate EPIRB. This means all fishing vessels whether skiffs or large trawlers that operate beyond three nautical miles from most coast lines must be so equipped. Even if a vessel only briefly transits waters beyond the territorial sea such as going across a major inlet, they will need a Category I-406MHz unit unless a Class A unit had been installed aboard the vessel prior to October 1988. Everyone travelling on the high seas will need a FCC approved 406 EPIRB by August 1, 1991. Failure to have the proper safety equipment aboard might cost a violator \$5000 in fines, but more importantly deprive the people onboard the sophisticated rescue capabilities that the 406 units provide.

Many provisions of the F/V Safety Act need to be made law by the creation of regulations by the Coast Guard. The proposed regulations are soon to be published in the Federal Register and most likely will not go into effect until early 1991. However, the Act has several provisions in it that are in effect right now.

The US Coast Guard has the authority to terminate a voyage of a fishing vessel if it feels the vessel is being operated in an unsafe manner. This might include failing to have aboard specified safety or survival equipment, qualified operators, or unseaworthy conditions of hull or machinery. It is a potentially very heavy enforcement stick.

If your vessel measures 20 or more gross tons and is on a voyage from a US port, a written agreement between the master or person in charge and each seaman employed aboard the vessel is required. The vessel owner is expected to sign it. It shall include the term of employment, such as this halibut opening or this particular salmon season, and specify the wage or share for that period of employment. This protects both owners and crewmen in the event of later disagreements. It would be wise to consult with a lawyer on the specifics of your own situation. With luck one would never have to drag the contract before a judge, but if it did come to that be sure you have it right in the first place.

Recovery of wages or shares of fish under this agreement can be made by an aggrieved crewmember. If they are awarded a judgement the vessel is liable in rem for what is owed. That means if an owner fails to honor his agreement with a crewmember the vessel can be seized and sold at auction to satisfy the debt. This action must be brought within six months of the sale of the fish.

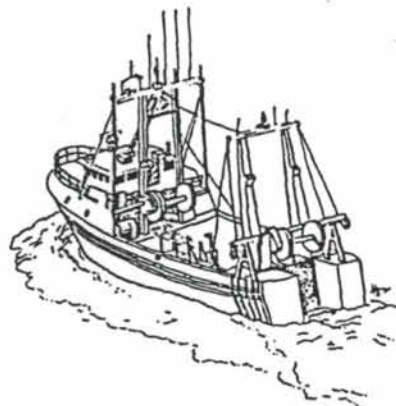
A seaman on a fishing industry vessel shall notify the master or person in charge regarding any illness, disability, or injury suffered when in service to the vessel no later than seven days after it took place. A placard should be displayed aboard all vessels alerting crewmembers of this responsibility. This allows masters and owners to provide proper attention to injuries and keeps unscrupulous crew from suing owners months and years later for previously unreported injuries.

The world of the commercial fisherman has never been particularly easy. Dealing with the provisions of the Fishing Vessel Safety Act will create more work and expense for some fishermen. It should be remembered that the intent of the Act was to reduce the loss of life and property associated with this profession. Voluntary compliance has been incomplete and public pressure has forced Congress to create a broad law. The Coast Guard will be enforcing the regulations it has written to put teeth in this law. The legal system will further see that the rules are followed. Fishermen to a greater or lesser degree will have one additional layer of complexity to deal with in their lives.

Contributed by: Jim Herbert
Alaska Vocational Technical Center
P.O. Box 889
Seward, AK 99664
(907)224-3322

**GENERAL TRAWL SAFETY TIPS
WITH APPLICATION TO OTHER FISHERIES AND DOCKSIDE ACTIVITIES**
[with thanks to N.E.T. Systems and Lori Hamilton]

Wear safe clothing:
deck suit/ PFD
non-skid boots
proper sized and type gloves
hard hat
warm/dry clothing



WATCH YOUR HANDS.

Be aware of areas where hands may be caught as equipment or gear moves.
Watch for fishhooks on wire rope.
Be careful using capstans to avoid catching tips of gloves or fingers
in turn of the line.

Make sure gear and equipment is properly sized and maintained. Inspect systems visually
with each set/haulback; inspect thoroughly as time allows.

Only experienced operators should run hydraulics.

Hardware:

Use all components only within safe working load
Remember that all hardware is designated for use in a straight line
pull; do not induce a sideways pull in chain, shackles, hammerlocks,
etc.
Grease blocks and ball-bearing swivels every day
Secure lifting hooks when not in use. Beware of swinging hooks.
Welding or torching hardware results in significant weakening.
Keep strong chain straps where they can be easily found in an emergency.



Think ahead to what will be happening next.

Be aware of movement as gear is hauled in/set.
Wait for gear to stop moving before hooking up or disconnecting
connectors.
Do not stand under any hoisted weights.
Be aware of movement due to shifting strain or swells.
Do not jump over or straddle ropes or wires which may snap up.
Do not stand in bight of line or wire which may come tight.
Stay out of direct line of strain on wires or lines so if they do break
you are out of area of snapback.
Secure weights and other heavy objects which may move across the deck.



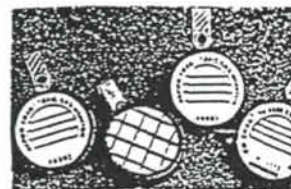
FOR MORE INFORMATION...

Nor'Eastern Trawl Training & Education Center
7910 NE Day Road West
Bainbridge Island, WA 98110
(206)842-5623

Classes include: Basic Deck Skills, Advanced Deck Skills, and
Skippers' Seminars

CHECKING FOR CARBON MONOXIDE ON BOARD

by Kris Benson



Though many crews have experienced or witnessed cases of carbon monoxide (CO) poisoning on board, little research has been done to see how extensive the problem is on Alaskan vessels. Even low levels of CO can be dangerous on vessels because long before symptoms, such as headaches appear, the toxic gas can affect the crew's judgement and vision. These impairments could, in turn, increase chances of injuries. Sources of CO include oil or gas cook stoves, engine exhaust, or cigarette smoke.

To see if low levels of CO accumulates on vessels, a small study was conducted last November. *Boat owners in Sitka and Petersburg were asked to participate. Captains were able to test for CO in the wheelhouse and/or the engine room by using glass detector tubes. Thirty-four boat owners agreed to participate. Of those who reported the test results, none had levels of CO that were high enough to cause harm.

With limited samples, it is not possible to draw solid conclusions about CO levels on Alaskan boats. Experience was gained that will benefit any future study.

If you are wondering about CO on your vessel, remember that CO is odorless, even though you might detect odors from other components of exhaust. Diesel combustion produces less CO than gas combustion, however, diesel burning does create CO and if there is not enough ventilation it can accumulate to lethal levels. Some cases of CO poisoning have occurred even when the wheelhouse windows and doors were open.

It is important to recognize the symptoms of CO poisoning (frontal headache, nausea, shortness of breath on exertion, confusion) and get the victim to fresh air. Unfortunately, many boat operators mistake the symptoms for effects of tension, lack of sleep, sea sickness, or hangover. For any of these problems, fresh air will not hurt, so it is recommended for the symptoms.

If you would like to determine if there is a CO problem on board, small badges are available from safety supply and/or pilot supply stores for approximately \$4 each. They do not measure an exact amount of CO, but will turn color if the level exceeds nationally accepted workplace standards. They are only good for an eight-hour period and as an approximate indicator. Marine supply stores also have CO monitors that constantly monitor the air. These are available for around \$200.



*Study conducted by the Alaska Health Project, 431 W. 7th, Suite 101, Anchorage, Alaska, 99501. (907)276-2864 or 1-800-478-2864. Study funded by University of Alaska Sea Grant.

CO detectors cost about \$4.00.

Available from:

Sahlberg 276-5494
1702 Ship Ave., Anchorage

Safety Inc. 562-3000
1515 E. Tudor, Anchorage

Eagle Enterprises 562-2331
700 W. Int'l Airport Rd., Anch.

Safety & Supply 561-8500
5861 Arctic Blvd., Anchorage

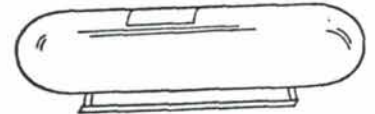
NEW PUBLICATIONS AND VIDEOS...

Marine Survival Equipment and Maintenance, Fisheries Safety and Survival Series. Written by Hank Pennington. This nontechnical booklet on fisheries safety and survival is designed to help commercial fishermen with the process of selecting, installing, and maintaining emergency equipment for a commercial fishing vessel. The booklet covers emergency communications, EPIRBs, fire extinguishers, immersion suits, life rafts, and training in the use of emergency equipment. Included is a self-quiz and guidance on how to get more information. The booklet can be used by itself or with a video tape by the same title. The workbook and video combination is well suited for group education. The book is \$4.00 and the video is \$15.00. Book and video are available from the Alaska Sea Grant Marine Advisory Program, 2221 E. Northern Lights Blvd., Suite 110, Anchorage, AK 99508-4140. (907) 274-9691

It Could Have Been Prevented



The Alaska Small Boat Safety Video is Here! It Could Have Been Prevented, was filmed in Kotzebue, Alaska on the Noatak River using local people to relay the story of a drowning tragedy and to detail ways to prevent these senseless deaths. Produced for both adults and children in grades 4-12 in rural interior and western Alaska, this video will speak to anyone who spends time on rivers or coastal waters. Ideal for the classroom or training sessions. 17 minutes. 1/2 " VHS. Funded by a grant from the State of Alaska, Division of Public Health and the University of Alaska-Marine Advisory Program. Available by sending \$15.00 each payable to AMSEA P.O. Box 2592, Sitka, AK 99835.



* * * 406 EPIRB UPDATE * * *

Several items on 406 EPIRBs are worthy of note. First the compliance date for commercial fishing vessels that operate on the high seas was May 17th. Vessels that did not have a Class A EPIRB on board their vessel by Oct. of 1988 would be required to have a 406 this fishing season. Many people have reported the unavailability of 406 EPIRBs on the market. As a result, many people will be unable to have one in hand although the compliance date has passed. The USCG has suggested that if boarded this season, persons unable to buy a 406 EPIRB have some proof of good faith attempt to purchase such a device, such as a receipt of one ordered or numbers of suppliers contacted etc. Although this may not exempt one from having one, it may help lessen the penalty.

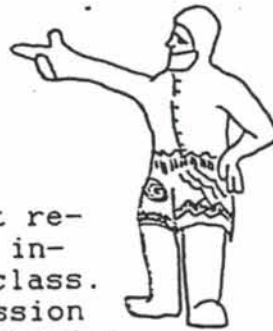
However, this compliance date has been suspended for a limited number of fishing vessels, specifically, those without berthing facilities and galleys. The USCG is considering a less expensive alternative for these vessels, such as the Category 2 manually activated 406. But for now, those open boat "day trippers" who fish on the High Seas will have the 406 requirement suspended. Stay tuned for more....

Finally, at the same time the Proposed Rulemaking for the Fishing Safety Act came out, another Proposed Rule was published extending the 406 requirement to all uninspected commercial vessels. This would include "6 pak" charter boat operators, uninspected tow boat operators, etc. The public has until June 16th to comment to the Executive Secretary, Marine Safety Council, (G-LRA-2/3600) (CGD 87-016a), U.S. Coast Guard, 2100 Second St., S.W., Washington, D.C. 20593-0001.

KEY POINTS TO REMEMBER ABOUT YOUR 406 EPIRB;

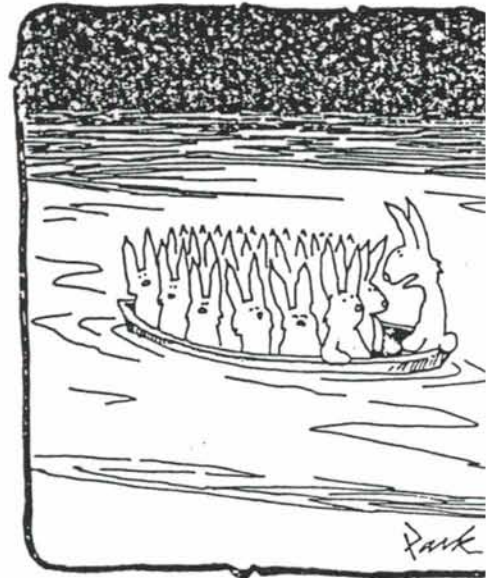
- * Remember to send in the card to NOAA that comes with your EPIRB! It will contain important Search and Rescue information for the USCG.
- * Install the EPIRB according to the manufacturers recommendation!
- * Test your EPIRB once a month and write it in your logbook!

AMSEA SHORTS...



AMSEA INSTRUCTOR REFRESHER CLASS

In April AMSEA conducted its first refresher class for instructors. 12 instructors attended the 3 days of class. Some of the highlights of this session was fisherman JOE DONOHUE's presentation on his vessel capsize, and SHIRLEY BERGEY's description of Copper Center's water safety program that travels around their region with huge swimming pools! (and we all thought that dragging liferafts and survival suits was a chore!) It appears that a refresher course will be a annual event in the future!



I'm only going to say this one more time: our only chance is self-control!

AMSEA HAS NEW STAFF MEMBER

Anyone calling the AMSEA office in the future may get AMSEA's new Administrative Assistant, Yuki Gough. Yuki has had several seasons of work in the fishing industry and we feel very fortunate to have her with us. Feel free to give her a call if you have any training needs or questions. Speaking of training needs, Jerry and Yuki will be out of the office most of June but someone will be in occasionally that month to take care of immediate concerns. So plan ahead if you have needs from us during the month of June! Good luck to Jeannette who is going fishing!

AMSEA MEMBERSHIP DRIVE

Due to decreased funding (next years budget may be reduced by 50%) and increased activity (MARINE SAFETY UPDATE goes out to over 1,600 people!) and need, AMSEA is soliciting memberships in order to help support its volunteer instructors and other marine safety activities. Members would receive future issues of Marine Safety Update and will be supporting marine safety. If you have been receiving this UPDATE and find it or other services AMSEA supplies useful, please consider a donation which we are working to make tax deductible. Please fill out the membership form below and return to AMSEA. Meanwhile, a safe summer to you all!

AMSEA MEMBERSHIP FORM

12 MONTH MEMBERSHIP:

Feeling the Pinch	\$ _____	_____	Group	\$100.00	_____
Individual	\$20.00	_____	Sustaining	\$500.00	_____

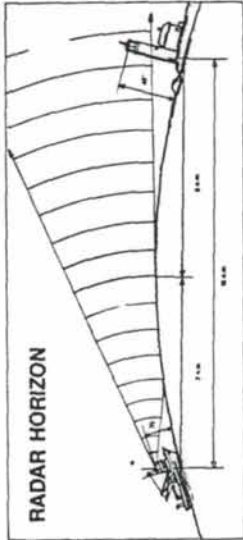
Please find a check enclosed for \$ _____ made out to AMSEA for the continuation of Marine Safety and Education Projects.

NAME _____

ADDRESS _____

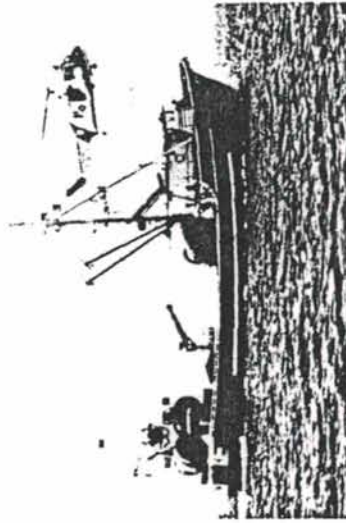
ZIP _____

NPFVOA EDUCATIONAL MATERIALS
NPFVOA VESSEL SAFETY MANUAL



The NPFVOA Vessel Safety Manual, with more than 320 illustrations and photographs, is internationally recognized as the most comprehensive set of safety recommendations ever prepared for commercial fishermen. Produced in cooperation with the U.S. Coast Guard, the manual incorporates material from existing sources and draws upon the experiences of fishing vessel operators and the Coast Guard and includes the following topics:

- Vessel Familiarity
- Medical Emergencies At Sea
- Rules of the Road
- Watchkeeping
- Safety Equipment & Survival Procedures
- Vessel Systems
- Stability
- Coast Guard Procedures
- Working Conditions
- Fire Prevention & Control
- Common Vessel Safety Concerns
- Seamanship & Nomenclature



SAFETY & SURVIVAL AT SEA VIDEO TAPES

The four Safety & Survival at Sea video tapes are designed to roughly parallel the Crew Training Program and provide convenient and portable refresher training aids. Ranging from 22 to 46 minutes in length, these tapes are titled:

- Fishing Vessel Stability
- Fire Prevention & Control
- Medical Emergencies at Sea
- Safety Equipment & Survival Procedures



NPFVOA USE ONLY
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 Shipped _____
 Paid Ck _____
 Amount _____
 Ck. Dep. _____

NPFVOA VESSEL SAFETY PROGRAM
ORDER FORM

Date: _____
 Name: _____
 Co./Vessel: _____
 Address: _____
 City: _____
 State: _____ Zip: _____
 Telephone: () _____
 Ship Via: 4th Class Mail _____ Other _____
 Ship To: _____
 Address: _____
 City: _____ Zip: _____
 State: _____

Qty	Item	Price	Shipping and Handling United States International	Total
	Vessel Safety Manual	\$ 45.00	\$ 3.00ea. \$ 10.00ea.	
	EMT Book	\$ 30.00	\$ 2.50ea. \$ 10.00ea.	
VIDEOTAPES BETA — VHS —				
	Fire Prevention and Control (26 min.)	\$ 35.00	\$ 1.50 ea. \$ 3.50ea.	
	Medical Emergencies at Sea (42 min.)	\$ 35.00	\$ 1.50ea. \$ 3.50ea.	
	Fishing Vessel Stability (22 min.)	\$ 35.00	\$ 1.50ea. \$ 3.50ea.	
	Safety Equipment & Survival Procedure (48 min.)	\$ 35.00	\$ 1.50ea. \$ 3.50ea.	
	Safety & Survival @ Sea Video Set 4 tape set VHS _____ Beta _____	\$ 125.00	\$ 2.00ea. \$ 10.00ea.	
Subtotal = qty x price plus qty x shipping				SUBTOTAL
Washington residents add .081% sales tax to subtotal				TAX
Grand Total - Subtotal plus tax				GRAND TOTAL

PLEASE MAKE CHECKS PAYABLE TO
 NPFVOA VESSEL SAFETY PROGRAM
 1800 W. EMERSON, STE. 101
 FISHERMEN'S TERMINAL
 SEATTLE, WA 98119
 (206) 285-3383 • FAX 286-9332

MAIL PAYMENT WITH ORDER - ALL ORDERS MUST BE PREPAID

|| Send me Crew Training Program schedule of class dates.



Vessel Safety Manual
 VESSEL SAFETY MANUAL
 VESSEL SAFETY MANUAL

Vessel Safety Program

- SAFETY MANUAL
- CREW TRAINING PROGRAM
- SAFETY & SURVIVAL AT SEA VIDEO TAPES

NORTH PACIFIC FISHING VESSEL OWNERS' ASSOCIATION
VESSEL SAFETY PROGRAM
 1800 W. Emerson, Suite 101
 Fishermen's Terminal
 Seattle, Washington 98119
 (206) 285-3383

Сделано в Москве в 1954 году
в мастерской № 1
Института Академии Наук СССР

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THE NPFVOA VESSEL SAFETY PROGRAM

Commercial fishing is dangerous. There are no technological means of removing the hazards of the sea, nor can human error be entirely eliminated. While the dangers inherent in commercial fishing cannot be avoided, they are magnified or minimized by the actions of each vessel's skipper or crew. The best constructed and equipped fishing vessel is as good a risk as the people who own and operate it.

Knowledge and preparation are vital, and the Vessel Safety Program is an effort to boost the level of emergency preparedness within the commercial fishing fleet. The objectives are twofold: to save lives and property, and to impact the availability and cost of fishing vessel insurance. The Vessel Safety Program is an industry effort to institute loss control aboard fishing vessels on a voluntary basis.

The Vessel Safety Program was developed by the North Pacific Fishing Vessel Owners' Association in 1985, with grants from the U.S. Coast Guard and the National Marine Fisheries Service. It consists of three elements: the Vessel Safety Manual, the Crew Training Program and the Safety & Survival at Sea Video Tapes.



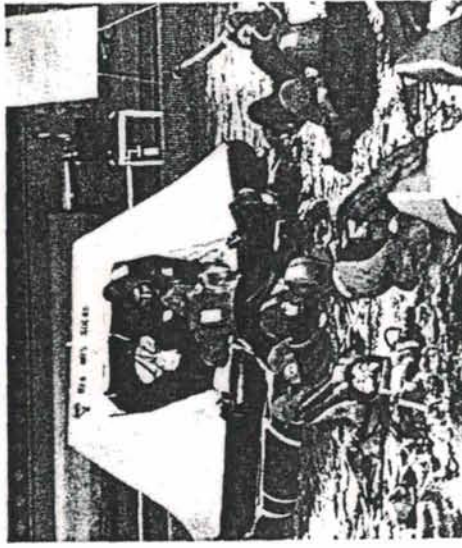
CREW TRAINING PROGRAM

- 1) Fire Prevention & Control**
Hands-on practice at fighting fires under very realistic circumstances using a 147-foot vessel simulator and a variety of other "props" at the Washington Fire Training Center. Participants learn fire control theory and gain experience at using portable fire extinguishers, fixed fire suppression systems and water hoses.
\$200 **8 Hours**
- 2) Safety Equipment & Survival Procedures**
Survival theory using vivid visual aids, followed by in-the-water exercises employing exposure suits, inflatable liferafts, and a array of other survival gear. Instruction

includes survival at sea and ashore, treatment of hypothermia, and search and rescue procedures. Hands-on training covers signalling devices, man-overboard and abandon-ship emergencies, boarding the liferaft and cold water survival techniques.

8 Hours

\$100



3) Medical Emergencies At Sea

U.S. Coast Guard approved for First Aid and CPR licensing requirements

This specialized class focuses on the unique problems encountered in performing first aid at sea, where the victim has only his crewmates to depend on. Each commercial fisherman has a responsibility for learning as much first aid as possible. Training by medical professionals includes hands-on practice at patient assessment, wound management, CPR, transporting the injured, and other emergency medical procedures. Course concludes with a practical scenario which includes a radio call.

8 Hours

\$100

4) Navigation: Collision Avoidance

Watchkeeping standards; overview of the Rules of the Road and related casualties as a result of violations; and how to plan a voyage, including chart problems. Recommended for the beginner and as a refresher for the experienced seaman.

8 Hours

\$100

5) Vessel Stability

Understanding the Stability Booklet; load lines; load limitations; effects of icing, free surface, following seas, and other conditions affecting stability. Students learn how to calculate and evaluate various vessel conditions by conducting actual rolling tests aboard a vessel.

8 Hours

\$100

NPFVOA Certificates are issued upon completion of the above courses.

6) Safety and Emergency Drill Instructor Orientation

This course is intended for masters and senior shipboard personnel who are charged with conducting and supervising a vessel's safety and emergency training program. Covered topics include procedures for conducting and evaluating training drills, vessel emergency party organization, recommended training and drill topics and scenarios, and documentation of training conducted. It is strongly recommended that participants have previously completed NPFVOA's Fire Prevention and Control and Safety Equipment and Survival Procedures classes, or their equivalents.

\$100.00/Person up to \$250.00/Vessel **1/2 Day**

7) Survival Afloat Seminar

A full-day, comprehensive emergency training program held on board the client's vessel. This unique course of instruction is designed to train entire crews in the fundamentals of fire-fighting, damage control, and abandon ship procedures in the environment where it is more relevant—namely, their own ship or boat.

Each Seminar is custom-tailored to the vessel on which it is to be conducted. In addition to teaching basic skills, the seminar emphasizes and assists with the development of a sophisticated shipboard training and drill program (based upon the NPFVOA Safety Manual and Video Tapes), which will remain aboard and be of use to future crew members long after the instructor goes home.

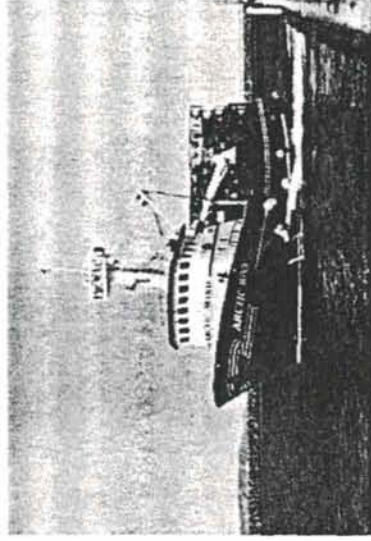
It is not the intention of the Seminar to take the place of the shoreside safety training classes offered by the NPFVOA. Rather, it is expected that the onboard training offered by the Seminar will complement these classes by helping crew members adapt methods and procedures learned in the classroom to the actual environment of their own vessel.

Vessels with 6 or less crew **\$ 475.00**

Crew of 6 to 40 **\$ 975.00**

Crew of more than 40 **\$1275.00**

Above fees apply to Seminars held in Seattle area only. Survival Afloat Seminar can be arranged in Alaskan and other locations by special arrangement with NPFVOA. Extra costs will include payment of instructor travel and lodging expenses, daily rate, and travel delay rate (if encountered).





**VESSEL SAFETY PROGRAM
CREW TRAINING SCHEDULE
1990**

1990 marks the 5th year that the Vessel Safety Program has offered fishermen and other mariners hands-on practice at fighting fires, treating medical emergencies at sea, using the latest safety & survival equipment, as well as principles of navigation and stability. In addition to regularly scheduled classes, the Vessel Safety Program will arrange special sessions for groups of 12 or more at special rates whenever possible. To register call (206)285-3383.

FIRE FIGHTING AND CONTROL \$200/1 Day

Classes: July 16, Aug. 13, Sept. 10, Oct. 15, Nov. 5, 19, Dec. 3

MEDICAL EMERGENCIES AT SEA (MED I) \$100/1 Day

U.S. Coast Guard approved for First Aid & CPR licensing

Classes: July 20, Aug. 17, Sept. 14, Oct. 16, Nov. 8, 16, Dec. 7

SAFETY EQUIPMENT AND SURVIVAL PROCEDURES \$100/1 Day

Classes: July 17, 20, 23, 24, Aug. 14, Sept. 7, Oct. 17, Nov. 6, 20, Dec. 4

NAVIGATION \$100/1 Day

Classes: Aug. 20, Sept. 13 (Other dates to be announced)

STABILITY \$100/1 Day

Classes: July 18, Aug. 15, Sept. 12, Oct. 10, Nov. 7, Dec. 5

*****NPFVOA CERTIFICATES ISSUED UPON COMPLETION*****

ADVANCED MEDICAL EMERGENCIES AT SEA (MED II) \$100/ 1/2 Day

Those who have completed the basic NPFVOA Medical Emergencies at Sea Course will be eligible to take this class. Hands-on training will include suturing, medical injections, and treatment of eye and dental emergencies.

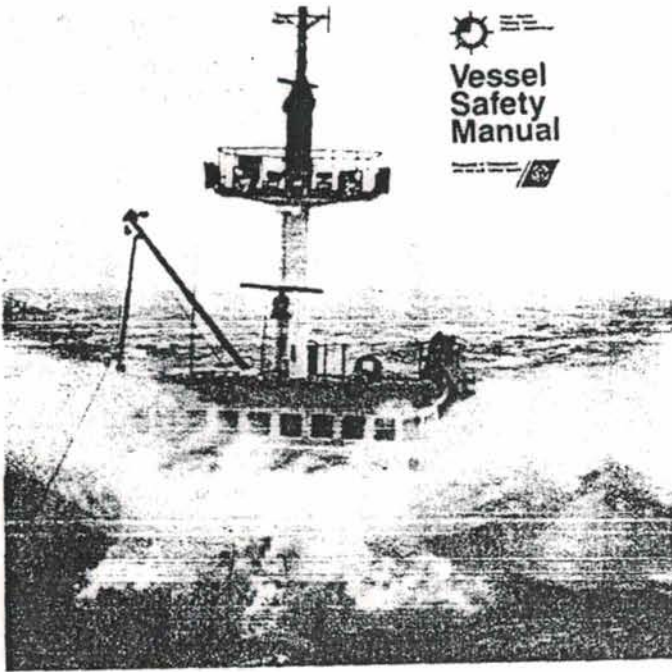
Classes: July 19, August 3, Nov. 9 (Other dates can be arranged by request)

INTRO. TO USE OF SELF-CONTAINED BREATHING APPARATUS \$600 for 1-12 persons; \$900 for 13-18 persons
1/2 Day

Learn to deal with hazardous atmospheric conditions caused by fire or chemical casualties with challenging hands-on training. Call this office to schedule 1/2 day session (8:00-12:00; 12:30-4:30).

TUITION POLICY

Payments should be made payable to the NPFVOA Vessel Safety Program upon receipt of an invoice. If you are unable to attend the class for which you have enrolled, please contact this office as soon as possible. Unless sufficient notice is given, the Vessel Safety Program cannot guarantee refunds or credits. We suggest you arrange for a substitute, if necessary.



**Vessel
Safety
Manual**

NPFVOA VESSEL SAFETY MANUAL

The NPFVOA Vessel Safety Manual, with more than 320 illustrations and photographs, is internationally recognized as the most comprehensive set of safety recommendations ever prepared for commercial fishermen. Produced in cooperation with the U.S. Coast Guard, the manual incorporates material from existing sources and draws upon the experiences of fishing vessel operators and the Coast Guard and includes the following topics:

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- Vessel Systems
- Stability
- Coast Guard Procedures
- Working Conditions
- Fire Prevention & Control
- Common Vessel Safety Concerns
- Seamanship & Nomenclature

SAFETY & SURVIVAL AT SEA

VIDEOTAPE SERIES

The four Safety & Survival at Sea video tapes are designed to roughly parallel the Crew Training Program and provide convenient and portable refresher training aids. Ranging from 22 to 46 minutes in length, these tapes are titled:



Medical Emergencies at Sea

(Running Time 42:00)

Components:

- I. Introduction
- II. The A,B,C's
- III. The Secondary Survey
- IV. On-Board Treatment

Safety Equipment & Survival Procedures

(Running Time 48:00)

Components:

- I. Introduction
- II. The Seven Steps
- III. The Distress Call
- IV. Dress for Survival
- V. Survival Suits
- VI. Inflatable Liferrafts
- VII. Distress Signals
- VIII. Personal Survival Kits
- IX. Man Overboard
- X. Search and Rescue

Fire Prevention & Control

(Running Time 26:00)

Components:

- I. Introduction
- II. Preparation
- III. Prevention
- IV. The Nature of Fire
- V. Classification of Fire
- VI. Water
- VII. Portable Extinguishers
- VIII. Fixed Fire Extinguishing Systems
- IX. Fighting the Fire

Fishing Vessel Stability

Components:

- I. Introduction
- II. The Skipper
- III. The Righting Arm Curve
- IV. Stability Hazards
- V. The Stability Test

Introduction

The purpose of this study is to investigate the effects of various factors on the performance of a system. The study is divided into several sections, each focusing on a different aspect of the system's performance.

The first section discusses the theoretical background of the system, including the underlying principles and the various components that make up the system. This section also provides a detailed overview of the system's architecture and the data used in the study.

The second section describes the experimental setup, including the hardware and software used, the test procedures, and the data collection methods. This section also discusses the limitations of the study and the potential sources of error.

The third section presents the results of the study, including the performance metrics and the statistical analysis. This section also discusses the implications of the results and the potential applications of the findings.

The fourth section concludes the study and provides a summary of the key findings. This section also discusses the future directions of the research and the potential for further studies.



Methodology



The methodology used in this study is a combination of theoretical analysis and experimental testing. The theoretical analysis involves a detailed review of the literature and the development of a mathematical model of the system. The experimental testing involves the construction of a physical model of the system and the measurement of its performance under various conditions.

The data collected during the experiment is analyzed using statistical methods to determine the significance of the results. The results are then compared to the theoretical predictions to evaluate the accuracy of the model.

The results of the study show that the performance of the system is significantly affected by the input and output parameters. The theoretical model provides a good approximation of the experimental results, but there are some discrepancies between the two. These discrepancies are likely due to the simplifications made in the model and the limitations of the experimental setup.

The study has several limitations, including the limited range of input and output parameters and the potential for measurement error. Future studies should investigate the effects of a wider range of parameters and use more advanced measurement techniques to improve the accuracy of the results.

The findings of this study have several practical implications. They can be used to optimize the performance of the system and to identify the key factors that affect its performance. This information can be used by engineers and researchers to design more efficient systems and to improve the performance of existing ones.



NPFVOA USE ONLY	
Rec'd	_____
Shipped	_____
Paid Ck. #	_____
Amount	_____
Ck. Dep.	_____

**VESSEL SAFETY PROGRAM
ORDER FORM**

Date: _____

Name: _____ Ship To: _____

Co./Vessel: _____

Address: _____

City: _____

State: _____ Zip: _____

Telephone: (____) _____ Ship Via: 4th Class Mail _____ Other _____

Qty	Item	Price	Shipping and Handling		Total
			United States	International	
	Vessel Safety Manual, 2nd Edition	\$55.00	\$4.00ea.	\$12.00ea.	
	EMT Book, 3rd Edition	\$30.00	\$3.50ea.	\$10.00ea.	
VIDEOTAPES					
	Fire Prevention and Control (26 min.)	\$35.00	\$1.50ea.	\$3.50ea.	
	Medical Emergencies at Sea (42 min.)	\$35.00	\$1.50ea.	\$3.50ea.	
	Fishing Vessel Stability (22 min.)	\$35.00	\$1.50ea.	\$3.50ea.	
	Safety Equipment & Survival Procedure (46 min.)	\$35.00	\$1.50ea.	\$3.50ea.	
	Safety & Survival @ Sea Video Set 4 tape set VHS _____ Beta _____	\$125.00	\$3.00ea.	\$10.00ea.	
Subtotal = qty x price plus qty x shipping			SUBTOTAL		
Washington residents add .081% sales tax to subtotal			TAX		
Grand Total = Subtotal plus tax			GRAND TOTAL		

WE REGRET WE CANNOT ACCEPT PURCHASE ORDERS OR CREDIT CARDS
ALL ORDERS MUST BE PREPAID AT TIME OF ORDERING
PLEASE MAKE CHECKS PAYABLE TO:
NPFVOA VESSEL SAFETY PROGRAM

North Pacific Fishing Vessel Owners' Association
1800 W. Emerson, Suite 101, Fishermen's Terminal, Seattle, WA 98119
Telephone (206) 285-3383 FAX (206) 286-9332



TRANSPORTATION • INDUSTRY • DRUG • EDUCATION • COMPANY

For Immediate Release:

November 1, 1989

Videotape, Manual Explain Coast Guard Drug & Alcohol Testing Regs

The Seattle-based Transportation Industry Drug Education Company (TIDECO) has produced a 15-minute videotape intended to assist vessel operators and other transportation employers in coping with mandatory drug testing requirements imposed by the federal government.

Acting through operating agencies like the Coast Guard and the Federal Aviation Administration, the federal Department of Transportation (DOT) now requires transportation employers to test key operational personnel for drug and alcohol abuse. For fishermen and other commercial vessel operators, *post-casualty* and *for-cause* testing requirements may necessitate at-sea testing performed by on-board personnel.

Titled *Urinalysis Testing in the Transportation Workplace*, TIDECO's videotape provides a concise how-to on urinalysis collection procedures, including explanations of the testing process, the collection site, administering the test, storage and shipment, certified testing laboratories and medical review officers.

Produced by John Sabella & Associates, the videotape is easily understood and can be utilized in the following ways:

- As a training aid for shore-based collection site personnel;
- As a means of defusing employee anxiety about privacy and accuracy;
- As a reference for ship's personnel performing on-board testing.

TIDECO's informational materials also include a detailed explanatory manual titled *Urinalysis and Blood Alcohol Testing in the Transportation Workplace*, which includes copies of all applicable regulations.

In addition, the company provides urine collection kits meeting all DOT requirements.

For further information, contact TIDECO at (206) 622-5809. Fax: (206) 932-7812. Or write in care of Post Office Box 2762, Seattle, WA 98111.



TRANSPORTATION • INDUSTRY • DRUG • EDUCATION • COMPANY

ORDER FORM

QUANTITY	ITEM(S)	PRICE	SHIPPING & HANDLING	TOTAL
	Videotape: Urinalysis Testing in the Transportation Workplace VHS <input type="checkbox"/> BETA <input type="checkbox"/>	\$99.95	\$2.50	
	Manual: Urinalysis and Blood Alcohol Testing in the Transportation Workplace: Coast Guard	\$25.00	\$2.50	
	Urinalysis Kit	\$8.00	\$1.75	
	Subtotal			
	Washington Residents add 8.1% sales tax			
	Total Order			

Name: _____ Company / Vessel: _____

Address: _____ City: _____ State: _____ Zip: _____

Telephone #: () _____ FAX #: _____

Please Make Checks Payable to: T.I.D.E.CO.

Enclose Check / Money Order and send to:

T.I.D.E.CO.
 P.O. Box 2762
 Seattle, WA 98116

Telephone# (206) 622-5809

Fax# (206) 932-7812

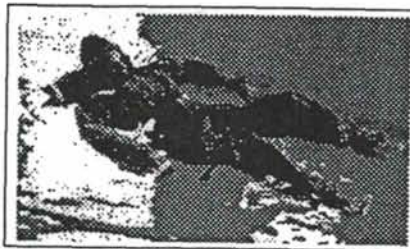
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THE MARINE SURVIVAL EQUIPMENT TRAINING PROGRAM



Going to sea is dangerous, and crew training is vital. Emergencies can strike even the best boats, and the only way to maximize the chance that personnel aboard your vessel will survive a catastrophic incident is to make sure everyone is prepared. Modern equipment makes the chances of surviving an emergency at sea greater than ever before, but equipment is only as good as the people using it. To protect their lives and to fulfill your moral and legal responsibilities, your crew needs a combination of the right equipment *and* the right training. Now, the *Marine Survival Equipment Training Program* provides vessel owners with flexible crew training tools that can be used at-sea or ashore. The program consists of the 96-page *Cold Water Survival Handbook* and five 12- to 17-minute videotapes that offer comprehensive recommendations on how to select, maintain and use marine survival equipment.

Order Form

Quantity	Item	Price	Shipping & Handling	Total
	<i>Cold Water Survival Handbook</i>	\$15.95	\$1.50	
	Marine Survival Equipment Videotape Series VHS Beta			
	<i>Immersion Suits</i>	\$19.95	\$2	
	<i>Inflatable Life Rafts</i>	\$19.95	\$2	
	<i>EPIRBs</i>	\$19.95	\$2	
	<i>Personal Flotation Devices</i>	\$19.95	\$2	
	<i>Visual Distress Signals</i>	\$19.95	\$2	
	Five-Tape Set	\$89.95	\$5	
	Complete Program (Handbook & 5 Videotapes)	\$99.95	\$6	
	Washington residents add .081% state sales tax			
	Shipment outside of U.S., add \$5		\$5	
	Total Order:			

Ship To

Name: _____ Company/Vessel: _____
 Address: _____ City: _____ State: _____ Zip: _____
 Telephone: _____

Orders must be prepaid/send check or money order to:

John Sabella & Associates, Inc.
 4215 - 21st Ave. W., Suite 107
 Seattle, WA 98199
 (206) 281-8074

Make Checks payable to John Sabella & Associates, Inc.

TRAINING SERVICES

**COURSES
SOFTWARE
VIDEOTAPES
BOOKS**



**HOUSTON
MARINE**

1600 20th Street
Kenner, Louisiana 70062
1-800-535-8803

TRAVEL DIARY

18th Nov 1968

18

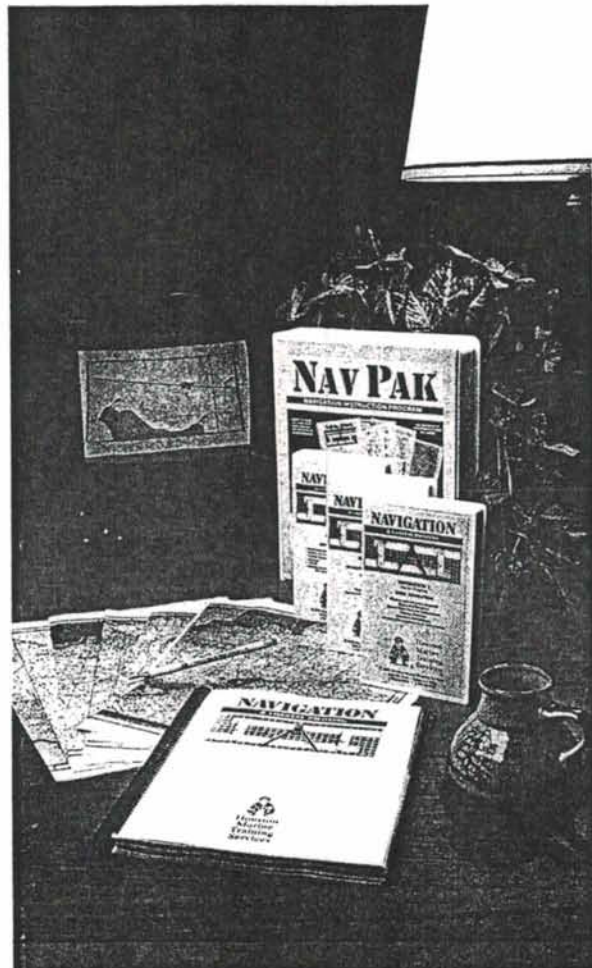
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NAVPAK™

NAVIGATION VIDEOTAPE INSTRUCTION PROGRAM

Designed for license candidates and serious boaters, the NAVPAK will give you six hours of videotape instruction that will take you page by page through the Houston Marine Navigation and Coastal Piloting book, explaining every technique in detail. The video and textbook method will enable you to learn the necessary material at your own convenience, on your own time, and in the comfort of your own home.



HERE'S WHAT
YOU GET

Navigation and Coastal Piloting text (287 pages) Price: \$49.95

Six hours of videotape instruction (VHS format):

Tape 1—BASIC NAVIGATION

Price: \$69.95

- Latitude and Longitude
- Measuring Distance
- Finding Direction
- Speed-Time-Distance Calculations
- Correcting for Compass Errors

Tape 2—ADVANCED PILOTING

Price: \$69.95

- Dead Reckoning Plotting
- Finding Set and Drift
- Finding an EP
- Leeway
- Finding Course to Steer
- Finding Position by LORAN
- Running Fixes
- Finding Position by Bearings/Radar Ranges
- Relative Bearings

Tape 3—NAVIGATIONAL PUBLICATIONS

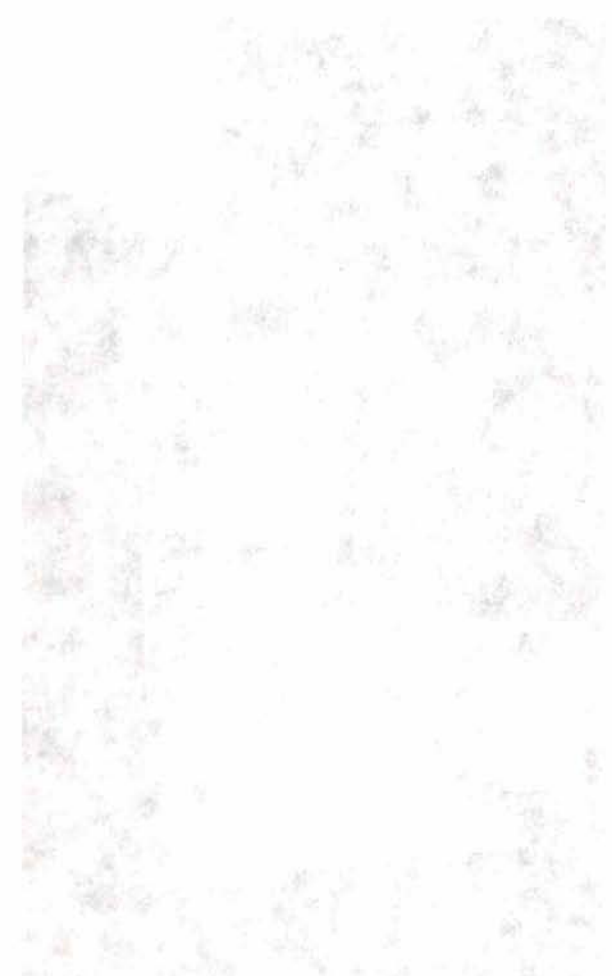
Price: \$69.95

- Aids to Navigation
- Tide Calculations
- Tidal Current Calculations

~~List Price \$259.99~~
PACKAGE PRICE \$199

NAVY

NAVY DEPARTMENT
WASHINGTON, D. C.



NAVY DEPARTMENT
WASHINGTON, D. C.

NAVY DEPARTMENT
WASHINGTON, D. C.

NAVY DEPARTMENT, WASHINGTON, D. C.

PRICE LIST

12/1/89

ITEM NO.	Study Guides	SUGG. RET.
2000	COLREGS Book	16.95
2010	Unified Rules Book	16.95
2030	Navigation & Coastal Piloting Book	49.95
2020	Master/Mate and Operator Book	59.95
2260	Able Seaman Manual	39.95
2270	Tankerman Manual	39.95

ITEM NO.	Videotapes	SUGG. RET.
2250	NAVPAK - (includes Navigation and Coastal Piloting book and 3 videos)	199.00
9010	Navigation 1 - Basic Navigation*	69.95
9020	Navigation 2 - Advanced Navigation*	69.95
9030	Navigation 3 - Publications*	69.95
9040	Rules of the Road Video	69.95

* Because these videotapes are based on the Navigation and Coastal Piloting book, it is recommended that you have a copy of the text in addition to the tapes.

QUESTION & ANSWER BOOKS		
Featuring actual USCG test questions and illustrations—ideal for the budget-minded.		
ITEM NO.		SUGG. RET.
1600	Rules of the Road (all licenses)	\$24.95
1610	Navigation (INL/NC)-OUPV & 100 ton	19.95
1620	Navigation (INL/NC)-200 to 1600, OUTV	29.95
1625	Navigation Oceans (up to 1600 g.t.)	49.95
General Subjects Q&A		
1650	"6 Pack"(OUPV), 100 ton, & 200 ton	39.95
1660	Master/Mate, 500 ton or 1600 ton	49.95
1670	Operator, Towing Vessels (INL/NC/WR)	39.95
1696	Engineer—DDE and Limited	coming soon
1698	Engineer—Unlimited	coming soon

REFERENCE BOOKS		
Add these to your permanent library for future reference.		
ITEM NO.		SUGG. RET.
2330	USCG Licenses and Certificates	18.50
2060	Subchapter C	9.95
2052	Subchapter D	14.95
2055	Subchapter I	12.95
2050	Subchapter T	9.95
2090	Deck License Illustration Book	14.95
1694	Engineer License Illustration Book	24.95
2110	Chemical Data Guide	34.95

"6 Pack" Charterboat Captain (Operator, Uninspected Passenger Vessels)		
Item Number		Sugg. Ret.
2620	Course - Near Coastal	595
2625	Course - Inland	595
300X-2255	PassPak <i>Plus</i> videos - NC	595
301X-2255	PassPak <i>Plus</i> videos - Inland	595
300X	PassPak - Near Coastal	395
301X	PassPak - Inland	395
2150-2255	Exam Prep Kit <i>Plus</i> videos	395
2150	Exam Prep Kit	195
1800	AnswerPak	79

Master, 100 Gross Tons		
Item Number		Sugg. Ret.
2640	Course - Near Coastal	695
2645	Course - Inland	695
302X-2255	PassPak <i>Plus</i> videos - NC	595
303X-2255	PassPak <i>Plus</i> videos - Inland	595
302X	PassPak - Near Coastal	395
303X	PassPak - Inland	395
2151-2255	Exam Prep Kit <i>Plus</i> videos	395
2151	Exam Prep Kit	195
1800	AnswerPak	79

Master or Mate, 200 Gross Tons

Item Number		Sugg. Ret.
2650	Course - Near Coastal	795
2651	Course - Inland	795
304X-2255	PassPak <i>Plus</i> videos - NC	645
305X-2255	PassPak <i>Plus</i> videos - Inland	645
304X	PassPak - Near Coastal	445
305X	PassPak - Inland	445
2152-2255	Exam Prep Kit <i>Plus</i> videos	395
2152	Exam Prep Kit	195
1805	AnswerPak	89

Towing Vessel Operator

Item Number		Sugg. Ret.
2630	Course - Near Coastal	795
2635	Course - Inland	795
2631	Course - Western Rivers	595
310X-2255	PassPak <i>Plus</i> videos - NC	695
311X-2255	PassPak <i>Plus</i> videos - Inland	695
313X-2256	PassPak <i>Plus</i> videos - West. R.	495
310X	PassPak - Near Coastal	495
311X	PassPak - Inland	495
313X	PassPak - Western Rivers	445
2154-2255	Exam Prep Kit <i>Plus</i> videos-NC/INL	395
2155-2256	Exam Prep Kit <i>Plus</i> video - WR	245
2154	Exam Prep Kit - NC/INL	195
2155	Exam Prep Kit - Western Rivers	195
1810	AnswerPak - NC/INL	89
1815	AnswerPak - Western Rivers	79

Upper Level Deck Licenses

Item Number		Sugg. Ret.
2698	Unlimited Master - Course	1995
309X	Unlimited Master - PassPak	995
2697	Chief Mate - Course	1895
309X	Chief Mate - PassPak	895
2696	Second Mate - Course	1795
309X	Second Mate - PassPak	795
2695	Third Mate - Course	1695
309X	Third Mate - PassPak	695
2580	First Class Pilot - Course	595
2636	Master/Mate Fish Vess. NC - Course	795
330X	Master/Mate Fish Vess. NC PassPak	495

Certificates

Item Number		Sugg. Ret.	Item Number		Sugg. Ret.
2520	Able Seaman/Lifeboatman - Course	299	2610-2616	QMED Oiler - Course	299
315X	Able Seaman/Lifeboatman - PassPak	249	320X-321X	QMED Oiler - PassPak	249
2530	Tankerman - Course	249	For other QMED endorsements - Call Houston Marine		
316X	Tankerman - PassPak	199			

Master or Mate, 500/1600 G.T. *Near Coastal*

Item Number		Sugg. Ret.
2660	Course - 500 gross tons	995
2670	Course - 1600 gross tons	995
308X-2255	PassPak <i>Plus</i> videos - Master	695
306X-2255	PassPak <i>Plus</i> videos - Mate	695
308X	PassPak - Master	495
306X	PassPak - Mate	495
2153-2255	Exam Prep Kit <i>Plus</i> videos	395
2153	Exam Prep Kit	195
1820	AnswerPak	99

Master or Mate, 500/1600 G.T. *Inland*

Item Number		Sugg. Ret.
2675	Course - Master or Mate	795
309X-2255	PassPak <i>Plus</i> videos - Master	695
307X-2255	PassPak <i>Plus</i> videos - Mate	695
309X	PassPak - Master	495
307X	PassPak - Mate	495
2153-2255	Exam Prep Kit <i>Plus</i> videos	395
2153	Exam Prep Kit	195
1820	AnswerPak	99

Engineer Licenses

Item Number		Sugg. Ret.
2780	DDE 1000/4,000 HP - Course	495
317X	DDE 1000/4,000 HP - PassPak	395
2785	DDE Unlimited - Course	595
318X	DDE Unlimited - PassPak	495
2790	Ch./Asst. Eng. 1600 Ton NC - Course	695
318X	Ch./Asst. Eng. 1600 Ton NC - PassPak	595
2794	Ch./Asst. Eng. 1600 Ton OC - Course	995
318X	Ch./Asst. Eng. 1600 Ton OC - PassPak	895
2798	Ch./Asst. Eng. Fish Vessels - Course	695
318X	Ch./Asst. Eng. Fish Vessels - PassPak	595
2800	3rd Assistant Eng. - Course	1495
318X	3rd Assistant Eng. - PassPak	695
2810	2nd Assistant Eng. - Course	1595
319X	2nd Assistant Eng. - PassPak	795
2820	1st Assist. Eng. Unlimited - Course	1695
319X	1st Assist. Eng. Unlimited - PassPak	895
2830	Chief Eng. Unlimited - Course	1795
319X	Chief Eng. Unlimited - PassPak	995

Partial Exams and Upgrades

Item Number		Sugg. Ret.	Item Number		Sugg. Ret.
2700	Basic Navigation Course	299	2720	Gen. Subjects OUPV/100 ton - Course	149
2710	Intermediate Navigation Course	399	382X	Gen. Subjects OUPV - PassPak	149
2570	Celestial Navigation Course	795	382X	Gen. Subjects 100 Tons - PassPak	149
	Firefighting	Call	2760	Gen. Subjects 200 Ton - Course	199
	Radar Observer	Call	383X	Gen. Subjects 200 Ton - PassPak	149
2685	OUTV to Master 500 tons - Course	299	2740	Gen. Subjects 500/1600 Ton - Course	349
380X	OUTV to Master 500 tons - PassPak	249	383X	Gen. Subjects 500/1600 Mast. - PassPak	249
2690	Upgrade to 150/200 tons* - Course	99	383X	Gen. Subjects 500/1600 Mate - PassPak	249
380X	Upgrade to 150/200 tons* - PassPak	99	384X	Gen. Subjects OUTV - PassPak	249
2680	OUPV to Mate upgrade* - Course	199	2880	Sail Addendum - Course	49
381X	OUPV to Mate upgrade* - PassPak	149	385X	Sail Addendum - PassPak	49
2600	Rules of the Road Review - Course	199	2885	Assistance Towing - Course	49
381X	Rules of the Road Review - PassPak	149	385X	Assistance Towing - PassPak	49

* Does not include "Intermediate Navigation," which may be required by some USCG Regional Exam Centers.



ORDER FORM

ASK YOUR LOCAL DEALER OR SEND THIS FORM TO THE ADDRESS ON THE REVERSE

Name _____ Money order AMEX
 Address _____ VISA Mastercard
 City _____ Card no. _____
 State _____ Zip _____ Phone _____ Expiration date _____

Quantity	Item No.	Item name	Price	Total

If ordering software, circle the size of disk you need: 3.5" 5.25"

Signature: _____

\$3.00 for orders of less than \$30
 \$4.00 for orders of \$30-\$100
 \$6.00 for orders of over \$100

LA residents add 4% sales tax

Shipping and Handling

Total

Subtotal

THE UNIVERSITY OF CALIFORNIA, BERKELEY

EXAMINATIONS

PHYSICS 8C
MAY 1, 2002
11:00 AM - 12:30 PM
150 MINUTES
100 POINTS
NAME: _____
SECTION: _____

ALL CALCULATIONS MUST BE SHOWN

1. A particle of mass m moves in a circular path of radius r with constant speed v .
(a) Find the magnitude of the centripetal acceleration.
(b) Find the magnitude of the net force on the particle.

2. A block of mass M is pushed up an inclined plane of length L and height h by a force F applied parallel to the incline. The coefficient of friction is μ .
(a) Find the work done by the force F .
(b) Find the change in mechanical energy of the block.

3. A spring with spring constant k is stretched by a distance x .
(a) Find the work done by the spring force.