PROCEEDINGS
OF THE MARINE SAFETY COUNCIL

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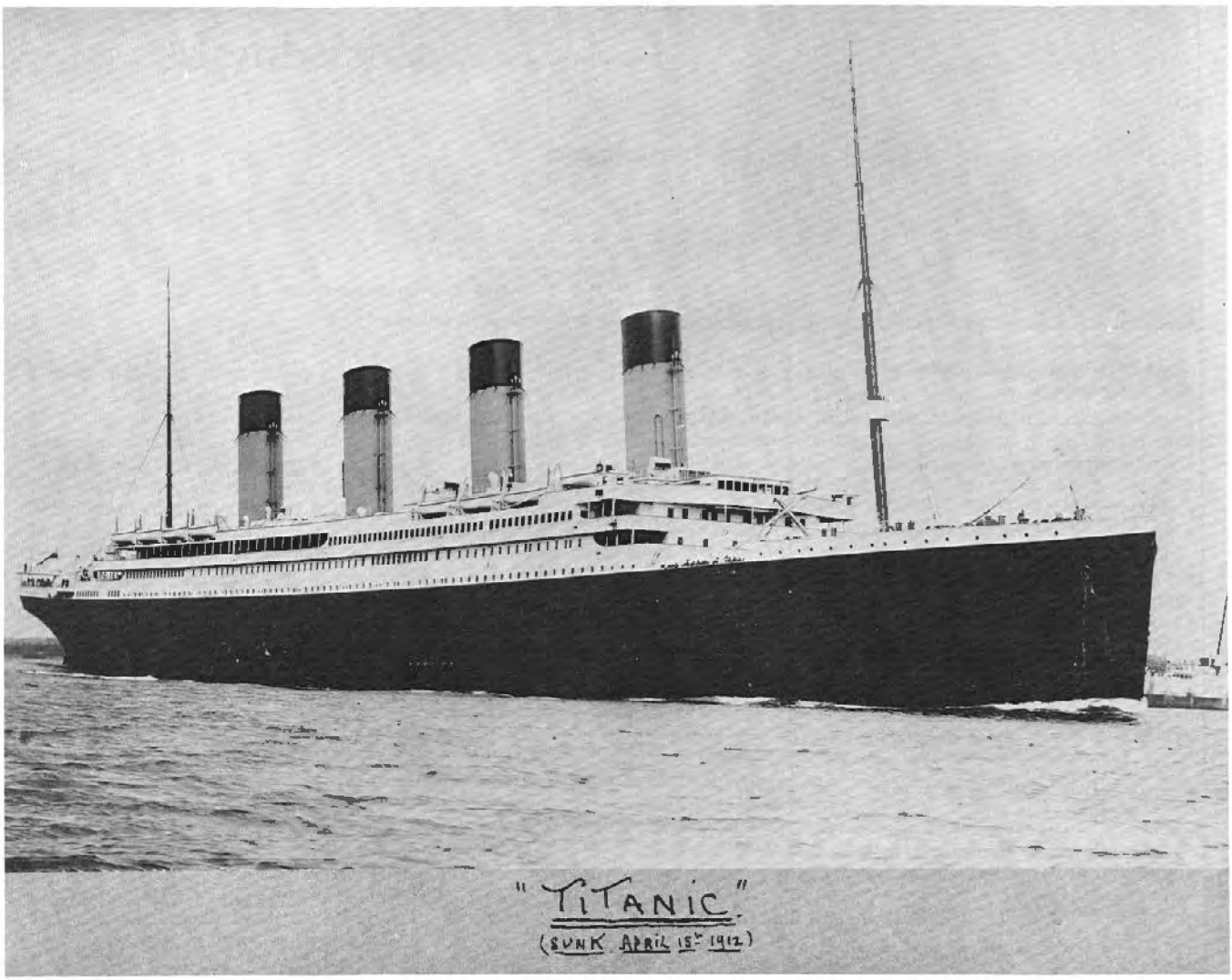

U.S. Department of Transportation **CG-129** United States Coast Guard

PROCEEDINGS

OF THE MARINE SAFETY COUNCIL

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Cover

On April 10, 1912, the TITANIC left England on her maiden voyage. Four days later, as her passengers were preparing a celebration of the last night of their journey to the U.S., the steamer struck an iceberg and sank.

Numerous iceberg warnings had been received by the vessel's wireless operators the same day, but these reports had gone unheeded.

The TITANIC's distress call was acknowledged by several ships; the CARPATHIA, 58 miles away, was first at the collision scene. Many passengers were saved, but survivors numbered less than one-third of the total persons on board. Perhaps many more would have lived had the wireless operator of the CALIFORNIAN (located only 10 miles from the disaster) not gone off duty for the night.

The importance of shipboard radio communications and, particularly, the evolution of the radio telegraph and the radio telephone on the Great Lakes, is discussed in an article beginning on page 6.

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

Marine Safety Council Membership

Rear Admiral Henry H. Bell has joined the Marine Safety Council as the new Chief, Office of Merchant Marine Safety. He assumed his present position in July upon the retirement of Rear Admiral William M. Benkert.

A native of Stamford, Connecticut, Rear Admiral Bell graduated from Greenwich High School in 1946. While attending Connecticut State Teachers College the following year, he won an appointment as cadet to the U.S. Coast Guard Academy in New London, Connecticut. There he earned a Bachelor of Science Degree in Marine Engineering and received a commission of Ensign on June 1, 1951.

His first assignment was to the 311-foot Coast Guard ocean station weather patrol vessel CASCO, based at Boston, Massachusetts. He then served as assistant engineer officer on board two more Boston-based vessels, first with the icebreaker EASTWIND in the Arctic and, secondly, the Gutter BIBB on North Atlantic Patrol.

In 1954 he began three years of post-graduate studies in Naval Architecture and Marine Engineering at the Massachusatts Institute of Technology. In July 1957 he received both Master of Science and Naval Engineer degrees, then served for a year as Ship Superintendent at the Coast Guard Yard, Curtis Bay, Maryland.

Resuming sea duty, then-Lieutenant Bell was assigned as Engineer Officer on board the icebreaker NORTHWIND of Seattle. During this assignment he made Antarctic Operation Deap Freeze IV of 1959, and participated in Bering Sea Patrol sojourns.

In April 1960 came a move to Coast Guard Headquarters, Washington, DC to the Merchant Marine Technical Division of the Office of Merchant Marine Safety. Situated in the Marine Engineering Branch of the division, he was occupied mainly with reviewing plans and specifications for inspected merchant marine vessels. This experience was utilized in his following assignment as Chief, Merchant Marine Technical Section in the Eighth Coast Guard District office, New Orleans, Louisiana. He filled two consecutive assignments at the Coast Guard Yard in Curtis Bay, Maryland, returning to Headquarters in 1970 to serve first as Assistant Chief and then Chief, Merchant Marine Technical Division. For that tour of duty he was awarded the Meritorious Service Medal. Other achievements included recognition for his contributions as a member of the Marine Pollution Conference Task Group and as a delegate of the United States International Conference on Marine Pollution in 1973.

In 1975, after completing a year of study, he was designated a Distinguished Graduate of the Industrial College of the Armed Forces, Ft. McNair, Washington, DC and also received a Master of Science degree in Administration from George Washington University. He was then transferred to the 12th Coast Guard District in San Francisco, California. There he served as Commauding Officer of the Marine Safety Office and as Captain of the Port of San Francisco until July 1977. At that time he assumed the duties of District Chief, Operations Division, his last assignment prior to his present position.

Mrs. Bell, formerly Brenda Bennett of Bethesda, Maryland, is a graduate of the Connecticut College for Women. She and Rear Admiral Bell have two daughters and one son.

Effective Inspection

5-64 CH-1	Renewal of Ocean Operators' and Operators' licenses
7-64	Renewal of Operators' licenses - Great Lakes
8-64	Renewal of Operators' licenses - Western Rivers
1-65	24.0' x 8.0' x 3.58' steel lifeboats with removable interiors, oar-propelled (App. No. 160.035/398/0), hand-propelled (App. No. 160.035/411/0), and motor-propelled (App. No. 160.035/412/0), manufactured by Welin Davit & Boat, Perth Amboy, New Jersey, replacement of short breast plates
5-65	Pyrotechnic Red Flare or Star Distress Signals for Pleasure Craft and other Uninspected Vessels
7-65 CH-1	Renewal of deck officers' licenses
10-65	Stability Determination in Capsizing Cases Involving Uninspected Vessels
12-65	Alteration or Modification of Existing Cargo or Tank Vessels; associated safety improvements
1-66	Requirements for Hull Structural Steel - Structural Continuity
3-66	Dual Tonnages; Application of
1-67	Stability Test - Preparations and Procedures
3-67	Alteration of ship's structure which may affect the adequacy of installed safety devices
4-67	Application of Incombustible Insulation Requirements and Identification of Approved Materials
8-67	Fixed Mud Ballast; procedures and standards for its use
3-68	Tensile Fasteners
4-68	Protective equipment required for fireman's outfits
7-68	Notes on Inspection and Repair of Steel Hulls
8-68	Classification of Vessels as Self-Propelled
1-69	Automated Main and Auxiliary Machinery
2-69	Submission of reports for the shipment and discharge of seamen not shipped or discharged before a shipping commissioner; information concerning
3-69	Z Nomograph Method of Calculating Available GM
4-69	Inclusion of Social Security numbers on Certificates of Discharge and Discharges for Masters
5-69	Carriage of Flammable and Combustible Liquids in Portable Tanks
6-69	Hazardous Cargoes; Literature Concerning
7-69 CH-2	Hydraulic Releases with Primary Lifesaving Equipment and Alternate Float-Free Arrangements
8-69	Impulse-Projected Rocket Type Line-Throwing Appliances
11-69	Statement of Claims for Specially Exempted Water-ballast Spaces in Tonnage Calculations
12-69	Special Examination in Lieu of Drydocking for Large Mobile Drilling Units
2-70	Acceptance of Pressure Vessels used as Decompression Chambers or for other purposes related to diving
4-70	Powder Loads for Lyle Type Line Throwing Guns
6-70	Fixed Fire Extinguishing Systems for Use in Galley Ventilating Equipment

Navigation and Circulars

7-70	Marine Type Portable Fire Extinguishers
1-71	Repair of Boiler Safety Valves
2-71	Pipe Stress Analysis Calculations; Procedure for Submission of
4-71	Valves employing resilient material
5-71	Index to 46 CFR Part 151 (Certain Bulk Dangerous Cargoes on Unmanned Tank Barges), Subchapter O
6-71	Monitoring carbon monoxide (CO) in ship's cargo spaces
2-72	Coast Guard Approval of Hull Structural Plans
3-72	Portable Radio Apparatus, training in use of
4-72	Definition of Paraffinic Hydrocarbon Commodities
6-72 CH-1	Guide to Fixed Fire-Fighting Equipment Aboard Merchant Vessels
1-73	Pilot ladders used aboard merchant vessels
3-73	Intact Stability Criteria For Passenger and Cargo Ships Under 100 Meters In Length
4-73	American Bureau of Shipping Approval of Machinery and Electrical Plans
6-73	Interim Regulations for Foreign Vessels Carrying Certain Bulk Dangerous Cargoes in U.S. Ports
7-73	Main Propulsion Boiler Automation
8-73	Alternate means of determining the weight of CO_2 in fire extinguishing systems
9-73 CH-1	Implementation of the Pollution Prevention Regulations (33 CFR, Subchapter O and amendments to 46 CFR, Subchapter D)
2-74	Change in Administration of Ships' Stores and Supplies of a Dangerous Nature
3-74	Implementation of the Regulations Concerning Licenses for Operation of Uninspected Towing Vessels (46 CFR, Subpart 10.16 and Sections 157.10-83, 157.10-85, 157.30-45)
4-74	Stability Information Required on Inspected and Uninspected U.S. Vessels Receiving a Load Line Certificate and Foreign Vessels Receiving Form B Load Line Certificates
6-74	Elimination of Unsafe Conditions on Board Tank Barges
7-74	Oil-water Separators; acceptance of
1-75	Fire Safety Standards for Foreign Passenger Vessels
2-75	Alteration of Existing Rafts to Comply with Improved Inflation Standards
3-75	Bulk Grain Cargoes
4-75	Bulk Liquid Cargoes; Guide to Compatibility of Chemicals
1-76	Bulk Grain Cargo Calculations
2-76	Damage Stability Calculations for Tank Vessels
3-76	Stability of Fishing Vessels
1-77	Unified Interpretations of the 1966 International Convention on Load Lines
2-77	American Bureau of Shipping Acceptance of Structural Fire Protection Approval
3-77	Code of Safe Practice for Ships Carrying Timber Deck Cargoes
4-77	Shifting Weights or Counter Flooding During Emergency Situations
5-77	Inspection of Hydraulic Starting Systems for Lifeboats and Survival Capsules
1-78	Automation of Offshore Supply Vessels of 100 Gross Tons or Over
2-78	Bulk Grain Cargo Regulations (46 CFR 31.10-33, 46-CFR 74.10-12, and 46 CFR 93.20)
3-78	Cross-Reference List Between the IMCO Chemical Code and 46 CFR, Part 153
4-78	Inspection and Certification of Existing Mobile Offshore Drilling Units

New Merchant Ship Search and Rescue Manual (MERSAR) Issued

The second edition of the Merchant Ship Search and Rescue Manual has been issued by the Intergovernmental Maritime Consultative Organization (IMCO). It revises and updates the procedures published in the first edition, which was published by the Coast Guard as Part 1 to CG-421. A consequential revision of this publication has been delayed and may not be re-issued. The following sources of supply are available for those wishing to purchase copies of the new edition:

New York Nautical Instrument
and Service Corporation
140 West Broadway
New York NY 10013
(212) 962-4522
Price: $7.50 plus postage

Southwest Instrument Company
235 West 7th St.
San Pedro, CA 90731
(213) 832-0358
Price: $4.70 plus postage

The publication may also be ordered directly from IMCO at the following address:

Intergovernmental Maritime
Consultative Organization
101-104 Picadilly
London W1V OAE
England
Price: 1 Pound 50 Pence
(Approx. $2.50)
plus airmail postage

REPORT
OIL OR CHEMICAL SPILL
TO THE COAST GUARD
TOLL FREE NUMBER
ANYTIME
800-424-8802

Communications on the Great Lakes

By LCDR James R. Comerford, USCG

One of the loneliest events in the life of the early mariner was witnessing the last mooring line being thrown clear from the dock. In essence, all effective communication with society was terminated. The vessel log served as the silent record for the voyage which terminated after months at sea. The log books of many vessels, unfortunately, became the permanent property of the sea with the fate of the vessel never to he known.

This solemn situation is no longer existent in the life of the mariner. The merchant vessels of this century are equipped with a variety of sophisticated electronic devices that assist in vessel navigation and provide immediate communication with shore statlons. This communication capability has played a vital part in promoting safety of life and property at sea.

The Great Lakes Shipping Industry has historically proven to be a leader in the field of communication systems. The safety record established by the vessels engaged in the commerce of the Great Lakes is enviable and unsurpassed on the navigable waters of the world. The innovations that have transpired on the lakes has led and will continue to lead the industry. This article will trace the history of communications on the Great Lakes and relate how it has played an intricate part in the promotion of safety.

EARLY HISTORY OF SHIP-TO-SHORE COMMUNICATIONS

The turn of the century marked the arrival of commercial radio service. In 1898, a 24-year-old Italian, Guglielmo Marconi, installed the first commercial radio service. The user was Lloyds of London, which employed the service off the Irish coast for ship arrival information. The development and acceptance of the wireless telegraph, however, was thwarted due to the general attitude that the radio was only an expensive luxury.

On the evening of January 23, 1909, the Italiau vessel FLORIDA collided with the White Star Liner REPUBLIC in a fog 26 miles off the coast of Massachusetts. The REPUBLIC sent a distress call via the wireless (radio telegraph), and within minutes other ships were proceeding to the scene. There were more than 1,500 persons aboard the two vessels and all but 6 persons were rescued. The FLORIDA was not equipped with a wireless. Three years later the world was to witness one of the worst tragedies at sea, the sinking of the TITANIC. The vessel struck an iceberg and sank in less than 3 hours in a position approximately 1,300 miles from New York. The wireless was again credited with saving many lives. The radio operator managed to contact the CARPATHIA for assistance. Of the 2,224 persons on board the TITANIC, 710 persons were rescued.

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Possibly more lives would have been saved if the wireless operator on the CALIFORNIA, only a short distance away, had not gone off duty for the night.

These two casualties were among many that aided in arresting the doubts of the marine industry as to the usefulness of communication capability at sea. This, in effect, marked the birth of a new industry that would prove to be invaluable to the safety of the men and ships at sea.

During the period 1910 to 1912, the United States, Great Britain and other maritime countries made it mandatory for all ships over a certain tonnage to be equipped with a radio telegraph. Additionally, the United States passed legislation requiring a 24-hour watch on certain class vessels. By 1918, 5,700 ships were equipped with a wireless telegraph.

COMMUNICATIONS ON THE GREAT LAKES

Although the radio telegraph was not required equipment on board Great Lakes vessels, a number of vessels were so equipped. As of June 30, 1935, approximately 1,975 lakers were equipped with a wireless--which was the only long-range means of communication available. The radio telegraph, however, was destined to become a thing of the past with the introduction of radio telephone communications.

The SS WILLIAM ATWATER, owned by the Wilson Transport Company in Cleveland, Ohio, was the first lakes vessel to be equipped with a radio telephone. The equipment was installed by Lorain County Radio Corporation, a newly-formed company operating under an experimental license issued by the Federal Communications Commission (FCC) in Washington, DC. The ship-to-shore radio telephone station was established in Lorain and within one year became WMI, a public service coastal harbor station.

Only three months after the radio telephone was installed aboard the SS ATWATER, the device proved itself as a tool of safety. On August 27, 1934, an emergency call from Lake Superior to WMI Lorain was placed by the crew to seek medical instructions for first aid treatment. The Captain had fallen down a companionway and was knocked unconscious. The physician's instructions were followed and the vessel called at the nearest port where the Captain was removed to a hospital. This incident demonstrated that radio telephone communications were rapid, with improved accuracy through personal voice contact. Additionally, the need for an operator, as required for the radio telegraph, was eliminated.

In the year 1936, the Lake Carriers' Association chose to develop the radio telephone system rather than equipping the vessels with radio telegraph equipment. There were a number of bills developed by Congress to require radio telegraph aboard all Great Lakes vessels, but all attempts were defeated. The Lake Carriers' Association retained the firm of Jansky and Bailey to devise a radio telephone system for the Great Lakes. By the close of the year 1939, a common and integrated system for marine communications had been established. The system established channel 51 (2182 KHz) as the common contact and safety distress calling channel, along with additional channels for ship-to-shore and ship-to-ship communications. This was accomplished through the cooperative efforts of both the Canadian and United States governmental agencies, marine industry and Lake Carriers' Association.

The year of 1940 recorded a number of violent storms on the Great Lakes. The loss of life and vessel loss was great. In an attempt to give the mariner as much notice as possible, the United States Weather Bureau began utilizing the radio telephone for weather broadcasts in 1941. This service has proven to be of great value to the mariner in the safe navigation of vessels.

The unfortunate events that transpired during the day of April 27, 1944 resulted in yet another safety broadcast that has contributed greatly to the safety record of the lakes. Lake Erie was blauketed with fog, which is common on the lakes during the early mouths after the opeuing of navigation. The SS JAMES H. REED and Canadian vessel ASHCRAFT collided approximately 20 miles north of Conneant, Ohio. The REED sank almost immediately with the loss of 10 lives and injury to 3 crewmembers. Approximately two hours later, the SS PHILIP MINCH and SS FRANK VIGOR collided under cover of the same fog near Pelee Passage. The VIGOR sank with no loss of life. These two casualties prompted innovative

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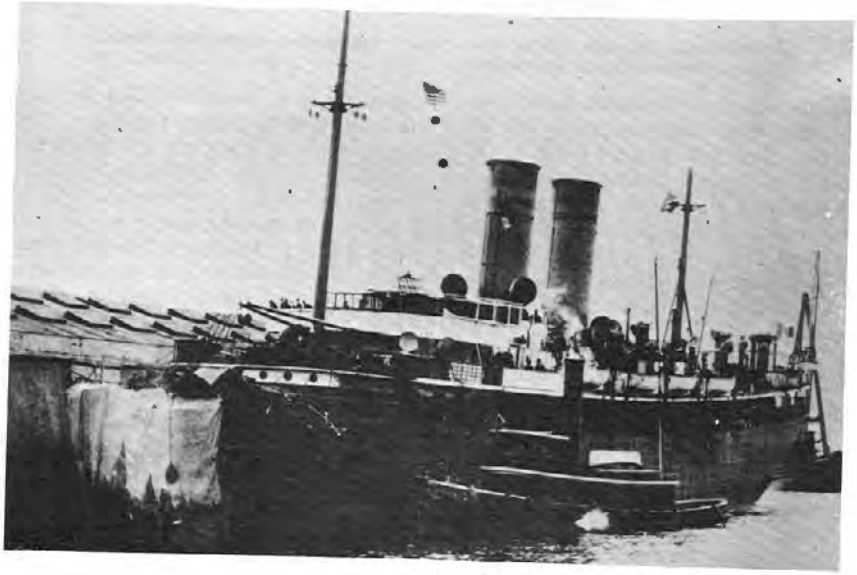
The FLORIDA as she looked in 1905. Credit: Princeton University Library Collection, Steamship Historical Society Library, University of Baltimore.



thinking on the part of certain members of the marine community. The FCC was petitioned to allow a safety broadcast of "Security, security, security---" on channel 51. The broadcast was to be made blindly on channel 51 advising all vessels in the immediate area of the broadcasting vessel's location and anticipated movement. The petition was approved and the broadcast has developed into a vital safety tool on the Great Lakes.

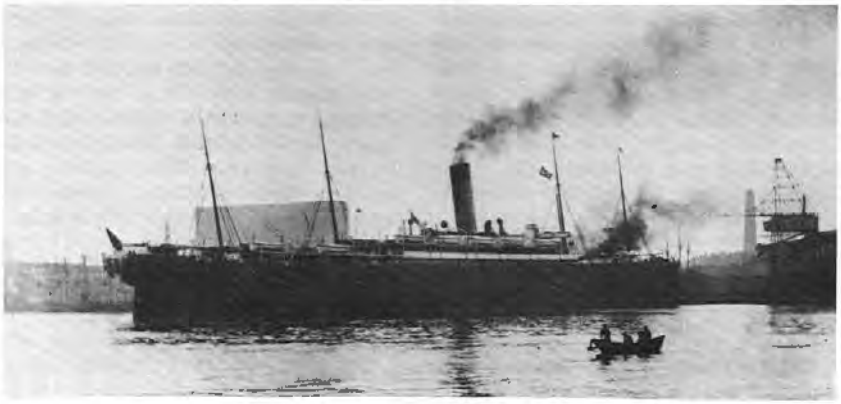
By 1950, every Great Lakes vessel was equipped with a radio telephone and use was widespread. The waters of the Great Lakes are international, with Lake Michigan being the only lake having total U.S. shoreline.

To ensure the proper use of the radio telephone, especially from a safety standpoint, a treaty between Canada and the United States was signed on November 13, 1954. The treaty, commonly referred to as the Great Lakes Agreement, requires that all vessels of 500 gross tons or over, or over 65 feet in length and carrying passengers, or engaged in towing, be equipped with a multi-channel medium frequency radio telephone with controls located on the bridge. It was required that the phone be FCC approved, capable of monitoring channel 51 (2182 KHz) and operating on channel 52 (2002 KHz), plus additional channels, to handle public correspondence. The signing of this treaty officially marked the radio telephone as the primary means of marine communication on the Great Lakes. (This treaty was amended on May 6, 1975 to require VHF rather than MF capabilities.)

By 1946, it had become apparent that projected user needs would be so great that the existing MF-HF system would not be able to meet the demand. Additionally, in 1947 the Atlantic City Radio Conference adopted channel 51 (2182 KHz) for world-wide use as a safety distress channel. These factors prompted the Lake Carriers' Association to examine the feasibility of employing VHF (very high frequency) in range of 156-162 MHz, as a means of relieving the burden placed on MF and HF.

VHF COMMUNICATIONS ON THE GREAT LAKES

The studies initiated by Lake Carriers' Association rendered positive results in favor of FM/VHF. The study revealed that approximately 70 percent of all communications were 50 miles or less and primarily ship-to-ship. The major advantages of VHF are that it is highly reliable, static free, good for distances up to 50 miles and fades rapidly at greater distances. It also offers a number of channels for marine use. The FCC was petitioned to allow the establishment of a multi-channel VHF system. In 1951, the proposal was approved with 156-162 MHz as the frequency range. Channel 16 (156.8 MHz) was established as the common contact and safety distress calling channel. The use of VHF (FM) spread rapidly both for shipboard and Great Lakes shore station use.



A 1903 photo of the REPUBLIC. Credit: Steamship Historical Society Library, University of Baltimore.

On May 6, 1975 it became law, through treaty between Canada and the United States, that every vessel of 65 feet or longer navigating on the Great Lakes, every vessel engaged in towing, and vessels carrying more than six passengers for hire, be equipped with a multi-channel VHF radio telephone operating in the frequency range 156-162 MHz with monitoring capabilities on channel 16 (156.8 MHz).

The importance of the radio telephone becomes readily apparent to an observer on the bridge of a vessel navigating the Great Lakes. The ship's officer normally positions himself at "the front window" while piloting the vessel. From this position he can easily reach the whistle control, engine order telegraph bow thruster control, observe the radar, and reach the multi-channel VHF radio. Prior to getting underway, the Captain will give a "security" broadcast on channel 16. While underway, safety/distress channel 16 is constantly monitored. Communications between the company and vessel are immediate. Position reports, personnel changes, supply requirements, dispatching information are just a few of the information items passed. The vessel transmits on-scene weather conditions to the National Weather Service where it is compiled and broadcast to all vessels. The radio provides the medium by which Notice to Mariners and Safety Broadcast are disseminated immediately. The Soo Lock, Welland Canal, and St. Lawrence Seaway rely on the radio telephone for communication between control centers and vessels. The radio telephone and the manner in which it is employed on the Great Lakes virtually forms a network for all vessels to be made aware of marine activities in the vicinity. The geographical makeup of the area, with miles of narrow rivers and blind turns coupled with the frequency of transits, makes the lakes one of the most difficult bodies of water to navigate in the world. The officer positioned in "the front window" is aware and anticipates the meeting situation that is blinded by the bend in

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the river. Rules of the Road dictate that whistle signals must be exchanged in meeting and overtaking situations. However, if any element of uncertainty exists both vessels will normally reach agreement via radio telephone long before whistle signals are sounded.

During the 1977 navigational season there were over 11,000 passages in the Detroit River System alone. The use of the radio telephone along with the experience and skill of the Great Lakes mariner produced a combination resulting in a commendable safety record. The Automated Commercial Vessel Casualty file maintained by the Office of Mariue Safety, Information and Analysis Staff, in Washington, DC reveals that for the entire Great Lakes there were only 18 collisions where both vessels were underway for the period of fiscal years 1972 through 1977. In eight of the investigations, the radio telephone was mentioned as being incorrectly employed. Additionally, 9 of the 18 casualties involved foreign vessels (other than Canadian).

it is apparent that the radio telephone has played a major role in establishing the safety record on the Great Lakes. The Great Lakes marine industry, through dedication to safety, has proven to be a leader in marine communications and continues to maintain the recognition by ever seeking to improve upon the existing system.

THE FUTURE IS NOW

The provisions of the 1967 World Administrative Radio Conference which led to the Federal Communication Rules requiring the conversion of MH/FH radio telephone from double sideband to aingle sideband technique and VHF channels fromwideband to narrowband, would eventually lead to the demise of the manually operated system on the Great Lakes. The separately owned and operated MF/HF/VHF radio telephone shore stations on the Great Lakes are dependent on revenue from the number of calls handled. The fewer number of operating vessels, combined with required replacement of equipment as a result of the FCC Rules, introduced an additional financial burden to the stations. Shipping companies were also faced with the problem of replacing shipboard MF/HF and VHF equipment.

In 1968 and 1969, the Lake Carriers' Association sponsored a study conducted by Advanced Technology System, Arlington, Virginia to determine the practicality of a centrally operated All-VHF System. The findings of the study were favorable. Additionally, in 1972 the Maritime Administration sponsored a Domestic Shipping Research conference which established the need for an improved lakes-wide VHF communication system. The conference resulted in the Maritime Administration awarding Lorain Electronics Corporation a contract to develop a proto-type system, which was completed in 1974 and refined during the 1975 and 1976 shipping season. The system was completed early in 1978 and consists of 16 unmanned stations serving Lakes Superior, Michigan, Huron, Erie, and Ontario.

The system introduces three basic new features: full duplex voice transmission; an on-line computer system for registration and processing data; and facsimile or teletype transmission of data.

The system allows the seaman to dial directly from a vessel to any telephone dialable through land network. Conversely, a caller ashore can dial a ship directly if the vessel's location and address code are known. In the event the location or address code is not known, the system operator will make the connection through the systems control center. The full duplex voice transmission feature eliminates the disadvantage of having to push-to-talk.

The system employs a Varian V-72 computer and has the capability of gathering position and weather reports from all ships operating on the Great Lakes within seven minutes. This is accomplished by the mate entering the pertinent data in the periodic Report Register. The register is rectangular in shape and is auxiliary to the radio telephone unit. A touch-tone dial pad, similar to the telephone touch-tone, is utilized to enter the vessel's data alpha-numerically into the on board memory which is digitally displayed. Message headings are determined by turning a thumbwheel on the register. Up to 14 different types of data can be entered for automatic polling by the shore-based computer. When the data has been entered by the mate, the thumbwheel is turned in poaition "ready." At specified times during the day the system computer collects the register information and triggers the "data sent" on digital read-out. The National Weather Service can then query the computer and get a dump of current weather data which is

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The CARPATHIA, seen here in 1903, responded to a radio call for help from the TITANIC. E. Viez Collection, Steamship Historical Society Library.

compiled into a timely and accurate weather broadcast. The position reports received from the vessels are sorted by the computer and transmitted automatically to the teleprinters in the respective shipping companies' offices. The information gathered by the computer is available to the system operator, located at the control center in Lorain, Ohio. The operator can query the computer concerning a particular vessel and obtain a CRT displaying a read-out of the vessel's data. The display will give the ship's expected position derived from a program employing an algorithm to compute the position. The operator, with the aid of the computer, can also complete manually-handled calls by remote control of the shore station switching functions.

The application of the facsimile capabilities of the system are numerous. Among the applications are transmission of personnel listings, typed pages, sketches and pictures. This capability was utilized during winter navigations for the years 1974-75 and 1975-76 for transmission of ice charts. The charts that are transmitted are timely and provide a great service to the navigator in directing the vessel's movements through the ice.

CONCLUSION

The Great Lakes has entered into a new generation of communication capability in the establishment of automated telecommunications. The capabilities of the system are numerous. Just as in the past, the system will be fully developed to maximize the utilization safety aspect of the radio telephone.

About the Author

LCDR Comerford was commissioned an Ensign upon graduation from the Coast Guard's Officer Candidate School, Yorktown, Virginia in 1967. He served aboard the USCG Cutter ACACIA as Operations Officer and in the Maritime Operation off the coast of Vietnam aboard a Coast Guard patrol boat, where he was awarded the Navy Commendation Medal with Combat V. His assignments have included marine inspectiou duties in the Eighth Coast Guard District and a 4-year tour with the office of Merchant Marine Safety iu Washington, DC. He is presently serving as Executive Officer, Marine Safety Office, Detroit, Michigan.

LCDR Comerford holds a Bachelor's degree in mathematics and a Master's degree in accounting. He also recently completed the Industrial Training Program with Lake Carriers' Association.

AVAILABILITY OF MERCHANT MARINE SAFETY MANUAL

In recognition of the public's right to have unencumbered access to public information originated by the Coast Guard, the Commandant has made provisions for establishing a consistent method of communicating the Coast Guard's marine safety policy to the interested public and maritime industry.

The Marine Safety Manual, CG-495, as the primary policy statement concerning the marine safety functions performed by Coast Guard Captains of the Port and Officers in Charge, Marine Inspection could, until recently, be purchased over-the-counter at any Government Printing Office bookstore. It is now available on a subscription basis only.

The subscription period will run for an "indefinite" period of time (no less than one year) during which subscribers will receive the basic manual(s) and all subsequent changes. Renewal notices will be sent to subscribers by the GPO at the end of the one year period along with any notice of price increase/decrease for the service. As an added convenience, individual volumes and/or changes may be subscribed to separately. Requests for the service should he addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Subscription fees for the basic manual(s) and subsequent changes, as issued, for an indefinite period are:

VOL	STOCK #	DOMESTIC	FOREIGN
I	050-012-00127-8	$11.00	$13.75
II		7.50	9.40
III		7.00	8.75
V		7.00	8.75
VI		6.00	7.50
		$38.50	$48.15

Subscriptions to the changes only, for current holders of the basic manuals, will be:

CHANGES TO VOLUME	DOMESTIC	FOREIGN
I	$ 9.00	$11.25
II	6.00	7.50
III	5.00	6.25
V	4.25	5.35
VI	4.25	5.35
	$28.50	$35.70

Changes are intended to be issued quarterly beginning July 1979, or sooner.

MERCHANT MARINE PERSONNEL STATISTICS

FY 1978

Merchant Marine Officer Licenses Issued

Engineer

Grade	Original	Renewal
STEAM		
Chief Engineer:		
Unlimited	112	1,100
Limited	8	76
1st Assistant:		
Unlimited	147	403
Limited	3	36
2nd Assistant:		
Unlimited	316	587
Limited	3	13
3rd Assistant		
Unlimited	656	887
Limited	0	8
Total	1,245	3,110
MOTOR		
Chief Engineer:		
Unlimited	113	284
Limited	47	268
1st Assistant:		
Unlimited	40	81
Limited	9	106
2nd Assistant:		
Unlimited	63	117
Limited	5	19
3rd Assistant:		
Unlimited	581	1,118
Limited	4	21
Total	862	2,014
Uninspected Vessels:		
Chief Engineer	224	183
Assistant	80	50
Total	304	233
Grand Total		7,768

Merchant Marine Officer Licenses Issued

Deck

Grade	Original	Renewal
Master:		
Ocean	273	1,192
Coastwise	15	38
Great Lakes	15	124
Bays, sounds, and lakes	39	151
Rivers	29	177
Chief Mate:		
Ocean	163	256
Coastwise	1	4
Great Lakes	0	2
Bays, sounds and lakes	0	3
Rivers	0	2
2nd Mate:		
Ocean	262	316
Coastwise	0	2
3rd Mate:		
Ocean	479	430
Coastwise	24	22
Pilots:		
Great Lakes	55	157
Bays, sounds and lakes	458	443
Rivers	303	489
Master (uninspected vessels)	465	658
Mate (uninspected vessels)	220	47
Motorboat Operator	4,501	4,029
Radio Officer	80	302
Total	7,382	8,871
Grand Total	16,253	

Original Certificates of Registry as Staff Officers Issued

	Atlantic Coast	Great Lakes Region	Pacific Coast	Gulf Coast	Total
Chief Purser	2	0	8	2	12
Purser	1	0	3	2	6
Senior Assistant Purser	1	0	2	0	3
Junior Assistant Purser	6	1	6	0	13
Surgeon	0	3	6	0	9
Radio Officer	0	0	16	0	16
Professional Nurse	0	0	1	1	2
Marine Physician	1	0	0	0	1
Totals	11	4	42	5	62

Original Merchant Mariners Documents Issued

	Atlantic Coast	Great Lakes Region	Pacific Coast	Gulf Coast	Total
October - December	1,037	405	614	1,654	3,710
January - March	1,172	434	673	1,986	4,265
April - June	1,324	621	763	2,208	4,916
July - September	1,366	673	798	2,085	4,922
Totals	4,899	2,133	2,848	7,933	17,813

Original and Additional Endorsements Issued

	Atlantic Coast	Great Lakes Region	Pacific Coast	Gulf Coast	Total
AB - any waters, unlimited	226	51	136	480	893
AB - any waters, 12 months	349	65	136	377	927
AB - Great Lakes, 18 months	19	23	82	6	130
AB - other	97	23	105	225	450
Lifeboatman	1,025	87	160	308	1,580
Electrician	43	1	58	13	115
Oiler	364	61	148	129	702
Fireman-watertender	334	54	81	87	556
Other QMED ratings	457	43	360	97	957
Tankerman	349	679	254	839	2,121
Entry-steward	8,064	931	3,604	6,448	19,047
Totals	11,327	2,018	5,124	9,009	27,678

Towboat Operators Licenses Issued

	Candidates	Passed
Operator	1,566	857
2nd class operator	438	319
Endorsements	267	195
Total	2,271	1,371

Total licenses including renewals: 25,392

Nautical Queries

The following items are examples of questions included in the Chief Engineer and Third Mate through Master examinations.

DECK

1. The name "contraguide" is usually associated with a

A. bow thruster.
B. type of cargo gear.
C. steering engine.
D. rudder.

2. Maximum cargo gear stresses for a set rig will normally be determined by the

A. weight of the load being handled.
B. cargo winch strength and characteristics.
C. runner breaking strength.
D. boom strength.

3. The radiotelegraphy safety messages for conditions indicating distress, urgency and safety, respectively, are:

A. SOS, ZZZ, XXX
B. SOS, UUU, SSS
C. SOS, XXX, TTT
D. SOS, TTT, UUU

4. New water light batteries must be installed every

A. 6 months.
B. 12 months.
C. 2 years.
D. 3 years.

5. Which certificate is always issued by the Coast Guard?

A. Load line certificate
B. Safety equipment certificate
C. Safety construction certificate
D. Register of cargo gear

ENGINEER

1. The presence of sulphur in fuel oil will most likely cause

A. a decrease in the ability of the oil to be properly atomized.
B. au excessive heat content per unit volume.
C. heavy slag formation ou refractory.
D. corrosion ou the firesides of the boiler.

2. In a self-acting controller, power to control a system medium comes from

A. compressed air.
B. spring tension.
C. the medium itself.
D. spring compression.

3. The actual volume of air from the outlet of a reciprocating air compressor is divided by the compressor displacement to determine compressor

A. air capacity.
B. total displacement.
C. volumetric efficiency.
D. total pressure.

4. The purpose of the reverse power relay in a ship's service alternator panel is to trip the circuit in event of

A. main circuit overload.
B. high power transfer.
C. generator overspeeding.
D. generator motorization.

5. Which method is used to induce turbulence in the combustion chambers of a diesel engine?

A. Delayed ignition.
B. Increased clearance volume.
C. Multiorificed fuel nozzles.
D. Combustion chamber design.

ANSWERS

Deck
1. D, 2. B, 3. C, 4. B, 5. B

Engineer
1. D, 2. C, 3. C, 4. D, 5. D

MERCHANT MARINE SAFETY PUBLICATIONS

The following publications may be obtained from the nearest marine safety office or marine inspection office of U.S. Coast Guard. Because changes to the rules and regulations are made from time to time, these publications can be kept current between revisions only by referring to the Federal Register. (Official changes to all federal regulations are published in the Federal Register, printed daily except Saturday, Sunday, and holidays.) Following the title of each publication in the table below are the date of the most recent edition and the dates of the Federal Registers affecting each.

The Federal Register may be obtained by subscription ($5 per month or $50 per year) or by individual copy (75 cents each) from SupDocs, U.S. Government Printing Office, Washington D.C. 20402.

CG No.	TITLE OF PUBLICATION
101-1	Specimen Examinations for Merchant Marine Deck Officers (2d and 3d Mate) (4-1-77).
101-2	Specimen Examinations for Merchant Marine Deck Officers (Master and Chief Mate) (4-1-76).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (4-1-72). F.R. 7-21-72, 12-1-72, 6-18-75.
115	Marine Engineering Regulations (8-1-77). F.R. 9-26-77, 12-4-78.
123	Rules and Regulations for Tank Vessels (8-1-77). Ch-1, 4-28-78). F.R. 8-17-77, 9-12-77, 10-25-77, 12-19-77.
169	Navigation Rules - International - Inland (5-1-77). F.R. 7-11-77, 7-14-77, 9-26-77, 10-12-77, 11-3-77, 12-6-77, 12-15-77, 3-16-78.
*172	Rules of the Road - Great Lakes (7-1-72). F.R. 10-6-72, 11-4-72, 1-16-73, 1-29-73, 5-8-73, 3-29-74, 6-3-74, 11-27-74, 4-16-75, 4-28-75, 10-22-75, 2-5-76, 1-13-77, 11-3-77, 12-6-77.
174	A Manual for the Safe Handling of Flammable and Combustible Liquids and Other Hazardous Products (9-1-76).
176	Load Line Regulations (2-1-71). F.R. 10-1-71, 5-10-73, 7-10-74, 10-14-75, 12-8-75, 1-8-76.
182-1	Specimen Examinations for Merchant Marine Engineer Licenses (2d and 3d Assistant) (2-1-78).
182-2	" " " " " " (First Assistant) (3-1-78).
182-3	" " " " " " (Chief Engineer) (3-1-78).
184	Rules of the Road - Western Rivers (8-1-72). F.R. 9-12-72, 12-28-72, 3-8-74, 3-29-74, 6-3-74, 11-27-74, 4-16-75, 4-28-75, 10-22-75, 2-5-76, 3-1-76, 6-10-76, 7-11-77, 12-6-77, 12-15-77.
190	Equipment Lists (5-1-75). F.R. 5-7-75, 6-2-75, 6-25-75, 7-22-75, 7-24-75, 8-1-75, 8-20-75, 9-23-75, 10-8-75, 11-21-75, 12-11-75, 12-15-75, 2-5-76, 2-23-76, 3-18-76, 4-5-76, 5-6-76, 6-10-76, 6-21-76, 6-24-76, 9-2-76, 9-13-76, 9-16-76, 10-12-76, 11-1-76, 11-4-76, 11-11-76, 12-2-76, 12-23-77, 4-4-77, 4-11-77, 4-21-77, 5-19-77, 5-26-77, 6-9-77.
191	Rules and Regulations for Licensing and Certification of Merchant Marine Personnel (11-1-76). F.R. 3-3-77, 8-8-77.
227	Laws Governing Marine Inspection (7-1-75).
239	Security of Vessels and Waterfront Facilities (5-1-74). F.R. 5-15-74, 5-24-74, 8-15-74, 9-5-74, 9-9-74, 12-3-74, 1-6-75, 1-29-75, 4-22-75, 7-2-75, 7-7-75, 7-24-75, 10-1-75, 10-8-75, 6-3-76, 9-27-76, 2-3-77, 3-31-77, 7-14-77, 7-28-77, 9-22-77, 9-26-77, 12-19-77, 1-6-78, 1-16-78, 3-2-78, 11-16-78.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (9-1-77). F.R. 9-26-77, 9-29-77, 12-19-77.
258	Rules and Regulations for Uninspected Vessels (4-1-77); Ch-1, 3-17-78). F.R. 9-26-77.
259	Electrical Engineering Regulations (7-1-77). F.R. 9-26-77, 12-4-78.
260	Rules and Regulations for Manning of Vessels (7-1-77).
293	Miscellaneous Electrical Equipment List (7-2-73).
323	Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (7-1-77). Ch-1, 3-17-78). F.R. 9-26-77, 12-15-77, 12-19-77, 7-17-78.
329	Fire Fighting Manual for Tank Vessels (1-1-74).
439	Bridge-to-Bridge Radiotelephone Communications (12-1-72). F.R. 12-28-72, 3-8-74, 5-5-75, 7-11-77.
467	Specimen Examinations for Uninspected Towing Vessel Operators (10-1-74).
497	Rules and Regulations for Recreational Boating (7-1-77). F.R. 7-14-77, 8-18-77, 3-9-78, 12-4-78.

*Temporarily out of stock.

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