PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

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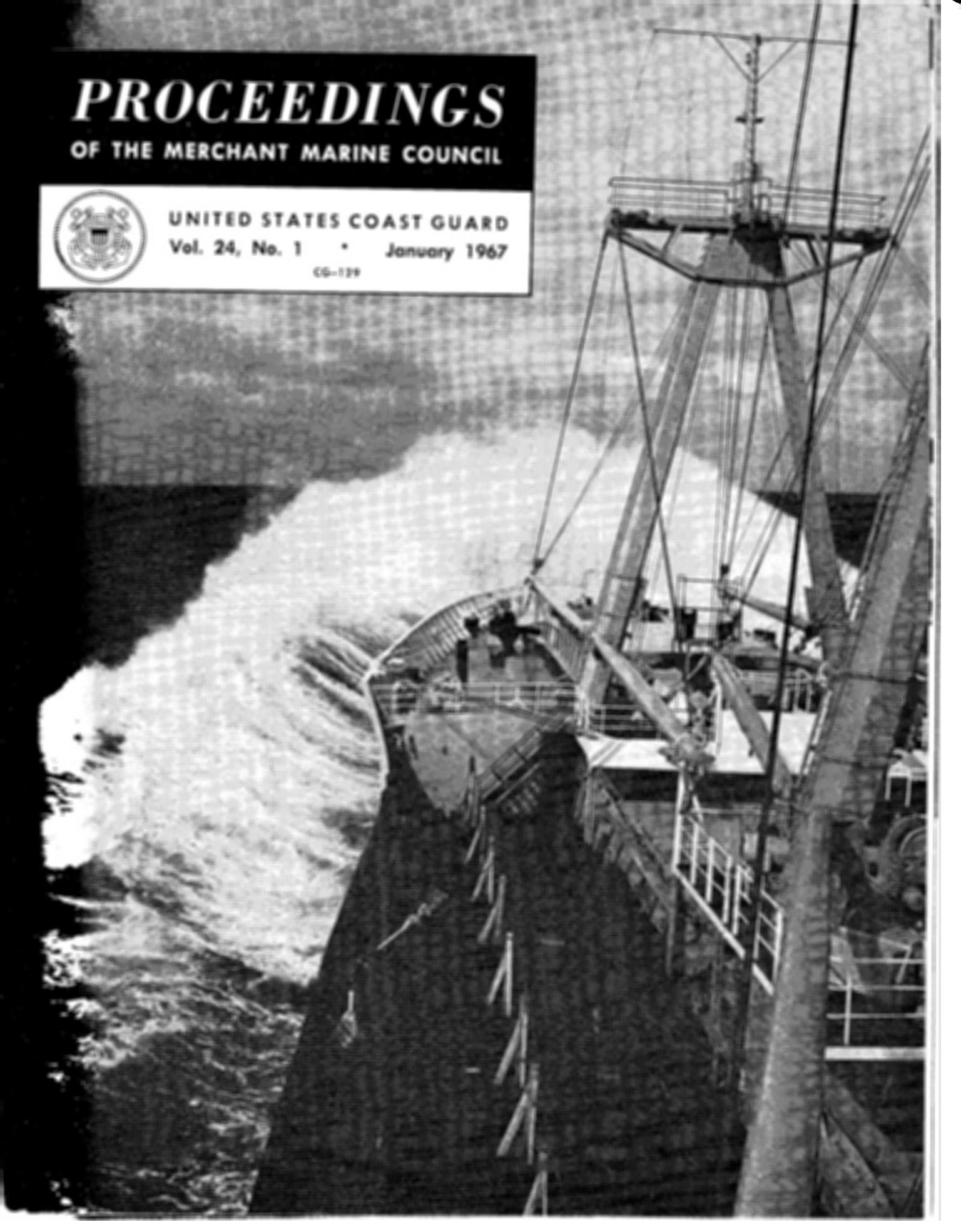

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FRONT: The *Japan Mail* taking a bite of sea. Courtesy Merry Calvo, Love & Baker, Inc., P.R., Seattle.

BACK: A Coast Guard 44-foot lifesaving boat plows a crest in heavy weather trials.

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PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

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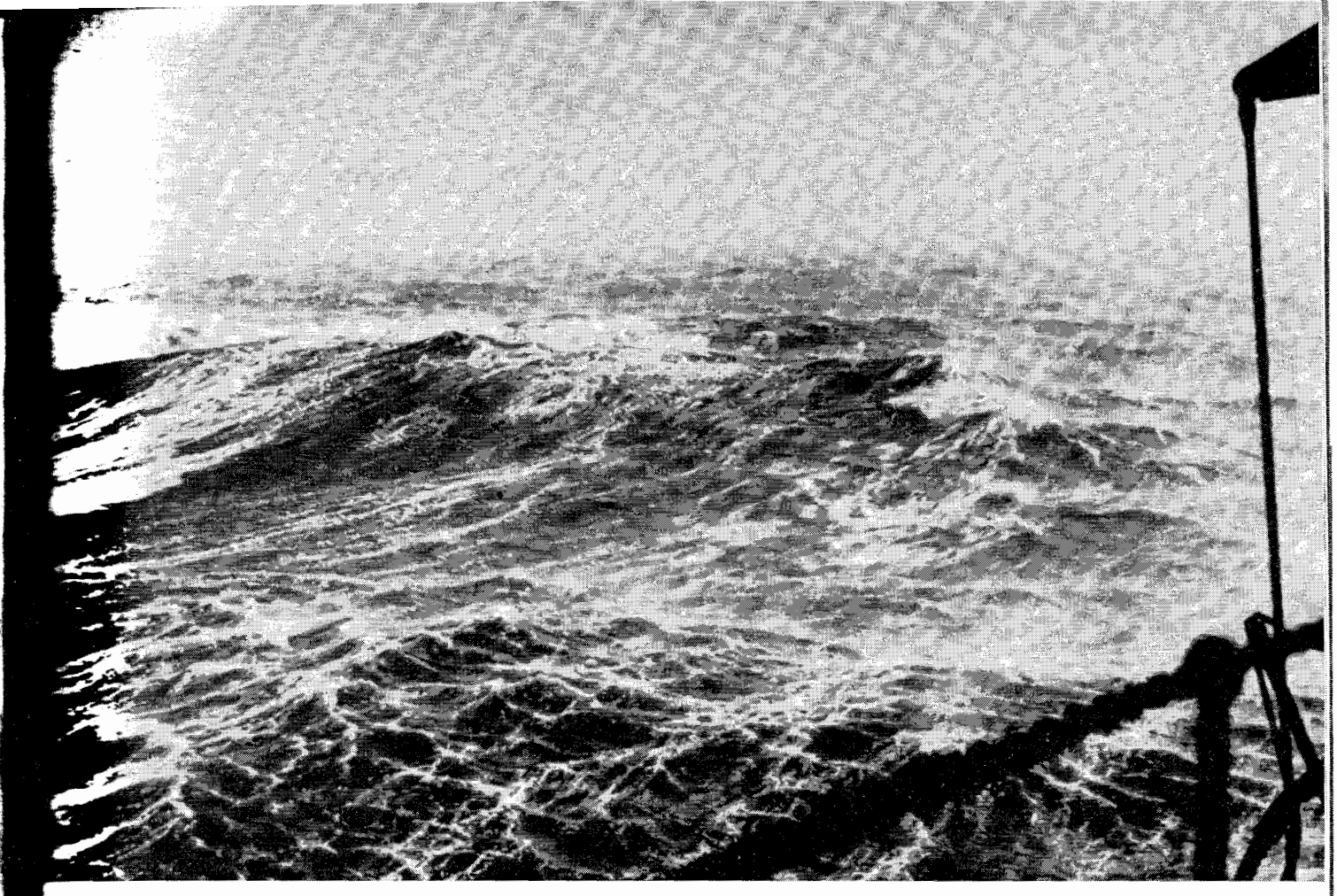

Weather Routing

Commander C. E. N. Frankcom

Marine Superintendent

The British Meteorological Office

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WEATHER ROUTING, in its widest sense, can be defined as the art of taking advantage of all available meteorological and oceanographic information in order to get the safest and most favorable passage for a ship.

There is nothing new about weather routing—in some form or other it has been practiced by mariners as long as there have been ships. Before radio came into the picture, weather routing was based entirely on the climatological aspect, in other words, upon knowledge and experience of seasonal winds and ocean currents. The recommended routes in the Indian Ocean and China Sea, with their monsoon winds and reversing currents give the most striking example of this. During the 19th century the sailing ship master practiced it extensively on a worldwide basis. The modern Admiralty publication *Ocean Passages of the World* reminds us of the weather routes that sailing ships were advised to take in the various oceans and similarly recommended routes for

steamers, based on climatological considerations which still hold good are shown. As another example we have the "concise rules for the avoidance of tropical storms," which have been practiced by mariners since about 1840. The modern form of weather routing involves synoptic meteorology as well as climatology.

Since about 1920 (except during the war years) radio bulletins for shipping have included enough ship reports to enable shipmasters to construct their own crude weather maps. It was not infrequent in those days for a master to alter course as a result of some such map, combined with information given in the written bulletin, to avoid the worst of a particular depression. Since 1948 most meteorological services have issued by radio coded analysis whereby the shipmaster can reconstruct the weather map for any particular time, as drawn in the meteorological office. To assist in completing the picture, a number of ship reports and land station reports are added to the bulletin, which also contains a written statement of the general weather situation and a forecast for the next 24 hours in that area. In the Atlantic, for example, the U.K. bulletins cover the area north of 35° N. and out to about 40° W., whereas the United States of America and Canada cover the western part of the ocean and there is an overlap between the two areas. The analysis message also contains data for drawing a prognostic map.

The study of meteorology, including the plotting of a coded analysis, form not only a part of the Board of Trade exams for masters and mates but of Coast Guard exams in the United States, as well. Unfortunately, it takes about a half an hour for an experienced officer to plot an analysis and there is the disadvantage, for example, in the middle of the North Atlantic, where the overlap occurs between the analyses issued by the United States of America and the United Kingdom, and the two analyses have to be married, which adds to the burden of the job on the part of the officers concerned. Nevertheless, many ships plot these bulletins and it is not unusual for the course or speed of the ship to be adjusted in order to avoid the worst of the weather on occasions when it is fairly obvious, from a study of the map, that such action is likely to be useful.

A recent improvement in communication, from the viewpoint of the shipmaster, which has not yet been fully exploited, by British shipping, is the use of facsimile. By this system, complete weather maps of oceanic areas are broadcast by radio by meteorological services throughout the world on a fixed schedule. The United Kingdom, for example, broadcast every 6 hours an analysis and 24 hour prognostic for most of the Atlantic and once a day they issue a 48- and 72-hour prognostic map for the same area and ice maps for the Northern Hemisphere. The United States of America and Canada issue similar maps as well as actual and forecast maps showing the height, period and direction of waves.

All these facsimile maps are transmitted on such frequencies that they can be received aboard any ship with a suitable radio receiver. At present facsimile equipment combined with a specially designed radio receiver are obtainable either on purchase or on hire maintenance.

If a ship is fitted with facsimile, it means that the master has before him a more or less constant picture of the weather situation on the ocean in which his ship is located and to assist him in interpreting this, he has the ship reports broadcast in the radio bulletin together with the written statement of the weather and the forecast. These prognostic and analysis maps show isobars and fronts, centers of highs and lows and certain coded information from the International Analysis Code. Facsimile does away with the necessity of the ship's officer having to do the laborious business of plotting the map and for various practical reasons it presents a much truer picture of the weather as seen by the meteorologist than the officer could really draw from the coded analysis message.

If he has kept his meteorology reasonably up to date any master mariner should be able to understand and make use of all these facsimile maps.

The days of the 10–12-knot ship are rapidly passing into history; the speed of the average oceangoing cargo ship nowadays seems to be about 15 knots and speeds of from 18 to 20 knots are by no means unusual. It seems, as a result of this increase in the speed of the average ship, combined with advances in meteorological technique and, hence, the accuracy of forecasts, that synoptic weather routing has become a practical proposition. Synoptic weather routing implies nothing more than making a continuous study of the wind and wave situation throughout the passage of the ship and making whatever adjustments to course and speed as are considered prudent, in order to get the safest and most favorable passage. The most favorable passage does not necessarily mean the shortest one but it may well mean the smoothest, with the result that the ship suffers the least damage to herself or her cargo and enables the most work to be done aboard the ship during the passage and the fuel consumption is kept reasonable and that although she may steam a slightly greater distance, her arrival in port is no later (or perhaps a little earlier) than if she had proceeded on the shortest route.

The modern theory (which has probably been always recognized by seamen) is that waves are the element which have the most adverse effect on the ship's movement through the water—and this applies whether the waves be sea or swell. The aim of weather routing, therefore, is to avoid the areas where the waves are highest.

The conventional form of synoptic weather routing of ships as it is understood at present means that, at the request of a shipowner a meteorological service or a commercial meteorological organization provides the master of the ship with daily advice, by radio, as to the route he should take during a particular passage across an ocean, to avoid, whenever practicable, waves in excess of (say) 12 feet in height. Meteorologists in the United States have been the pioneers of this form of weather routing and since 1954 the U.S. naval authorities, have regularly provided this facility for their military sea transport ships. These vessels provided ideal guinea pigs for the experiment and in the early days, some ships were deliberately routed by the shore authorities in this way, while other ships were left to their own devices. A study of the results claims that, in general, the routed ships did somewhat shorter and more economical passages, burned less fuel and suffered less damage to ship and cargo than those which were not routed. The weather routing technique is to ascertain the distribution of waves for as long as possible into the future along the normal route of the ship from the point of departure to the destination. First of all 3 to 5 day forecast and prognostic surface weather maps and wave maps along the anticipated track are constructed. An estimate is then made of the reduction in the ship's speed likely to occur due to meeting waves of different heights,

based upon the estimated performance of the ship from actual experience during service. A map is then drawn for each day of the period showing isopleths of ship speed on various courses through the anticipated waves. By continuing this process, the least time track is computed and the master is advised as to the initial track on which he should proceed. From time to time during the passage, the meteorologist will recommend to the master any amendment to the track that he considers desirable—alternatively a reduction or increase in speed may be recommended and this process continues throughout the voyage. In order to get the best out of weather routing, it seems desirable to have a facsimile received aboard the ship so that the master can have before him some of the maps that the meteorologist has consulted. The U.S. naval authorities provide this facility only for vessels operated by the U.S. Government. Commercial meteorologist organizations in the United States provide weather routing to merchant ships of any nation on repayment. (See "Proceedings" of February 1965.) In 1960, the Netherlands Meteorological Institute, at the request of the Holland-America Line, started a ship routing program, based upon the U.S. procedure.

The general tendency of these weather routing techniques seems to be that the resultant ships tracks is a combination of rhumb-lines and a great circle; the diversions do not necessarily have to be very drastic.

So far the British Meteorological Office has not been asked by any shipowner to provide weather routing facilities, but we have studied the technique in some detail and no doubt we would be able to provide it on repayment if requested.

Weather routing advice from the shore has to be tailor made for the ship concerned—the shore authorities need to know quite a lot about the particular ship's behavior in a seaway and as this is a personal service the shipowner has to pay for the facility. I understand that the cost is not very high. When routed from the shore it is only guidance and advice that the meteorologist can give—the responsibility as to whether he accepts the routing advice must rest with the master and he must be free to accept or disregard it if he thinks it right to do so. It seems desirable for various practical reasons, that the routing officer should be, or be advised by, a master mariner. It seems to me that weather routing across the North Atlantic can be of limited value to passenger ships on certain trades which are restricted to the North Atlantic lane routes.

The success of synoptic weather routing depends largely upon the available network of meteorological observations and this is largely the reason why, in my opinion, weather routing from the shore is only likely to be successful, for many years to come, for certain North Atlantic trades, where there is always a good network of ships observations and to a limited extent in the North Pacific.

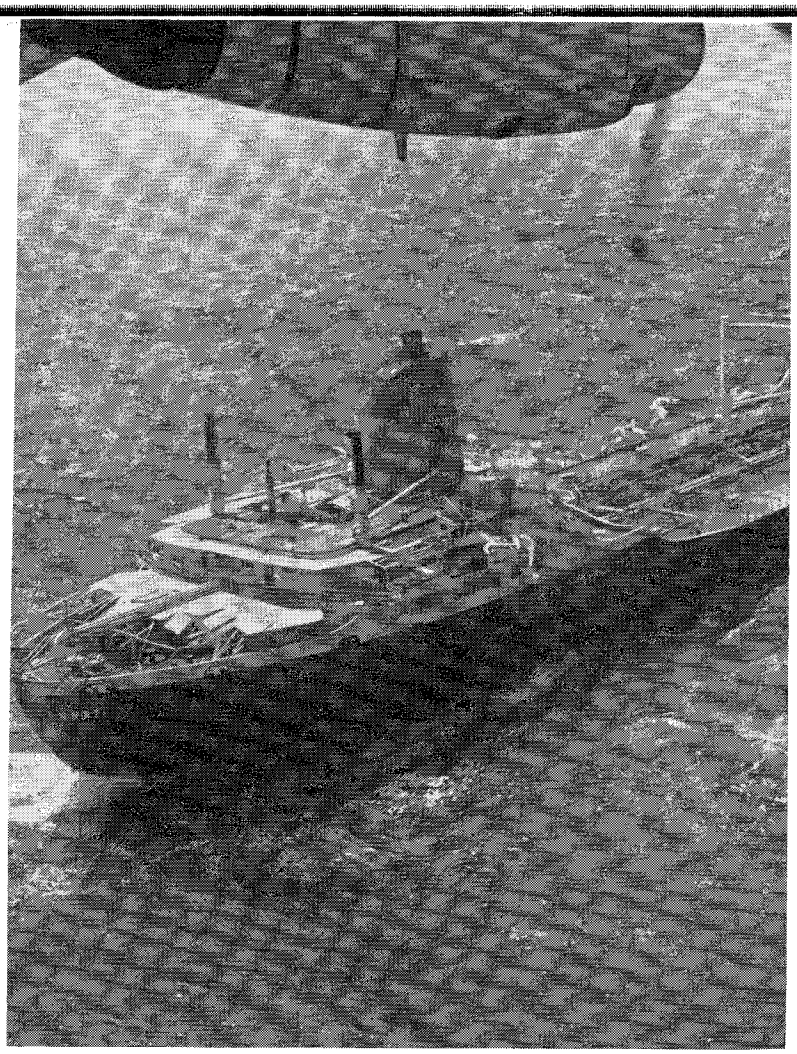
My personal view is that, although weather routing from the shore can be beneficial for certain regular North Atlantic traders, the master of a ship provided with a facsimile receiver can get quite a lot of success in doing his own somewhat rudimentary weather routing, consulting the meteorologist by radio when he is in any doubt or difficulty. With practice he might become quite proficient at it. The radiotelephone should be of great assistance to him in this for he can, thereby, speak directly to the duty forecaster at almost any meteorological service at any time of the day or night and seek his advice in this way for the mere cost of the telephone mesage and I think there is no doubt that almost all meteorological services would cooperate. Weather routing by the master himself has the advantage of being worldwide in its application, because of the worldwide network of facsimile broadcasts and radio weather bulletins covering most oceanic areas which are now available. Nobody knows as much about the behavior of his ship in a seaway than her master. Although the average British master mariner, if he has kept reasonably up to date, should be able to interpret any of the facsimile maps that are likely to be of interest to him, *if he does decide to try his hand at weather routing,* it might be desirable for him to have a short training course in this.

I have already mentioned the value of wave maps. It is fairly obvious that the sea wave situation is allied to the wind force—dependent upon the fetch and the length of time the wind has been blowing. If you superimpose the map of actual wave conditions on a synoptic map of the North Atlantic for example in its normal stormy condition, it will be found that, to a large extent, the highest wave contours are in the vicinity of the steepest barometric gradient. It seems to me that the shipmaster might perhaps find it useful if he had, in addition to the analysis map, a map showing the wind field—in other words the isotachs or lines of equal wind force.

I don't think there is any need, at present, to provide much in the way of *special* facsimile maps for mariners, but it might be useful to show the direction of movement of weather systems in the analyses and to include daily wind field maps. Those maps which are already broadcast form part of the general international facsimile network and it is more economical to take advantage of these than to substitute any special facsimile service for shipping, because the cost of such a service would be appreciable. The snag is that the schedules for these facsimile transmissions are fairly tight at present because of the amount of information, which has to be broadcast in order to satisfy international meteorological needs. When using facsimile there is only need to switch on for the particular maps that the mariner is interested in; the exact time at which the various maps begin transmission are published and kept up to date.

Facsimile maps are normally on the conical projection. It seems that the easiest way for the master to use them is for the ship's position and course line to be plotted on each facsimile map he needs to consult. This is a small task compared with plotting an analysis. One of the advantages of facsimile reception is that it is independent of the radio officer's watches in a "single operator" ship.

To summarize, it is my opinion that weather routing from shore is of value to ships regularly engaged in certain trades in the North Atlantic and perhaps in the North Pacific, particularly if those ships are on fixed schedules. The benefits are somewhat marginal, but any time in port that can be saved due to less time at sea and thereby minimizing stevedoring overtime and anything that can be done to minimize damage to cargo due to heavy weather and to economize in fuel is all to the good. For ships in trades other than the North Atlantic it seems preferable that the master of the ship should do his own weather routing, aided by the facilities I have mentioned. Similarly, the masters of regular North Atlantic traders who don't wish to be routed from shore, can do some rudimentary but quite useful weather routing themselves. ⚓



The storm battered stern of the tankship Alberto Bennati *as viewed from Coast Guard rescue aircraft.*

The Master Routes

Captain F. D. Glover

Marine Superintendent,
Sugar Line Ltd.

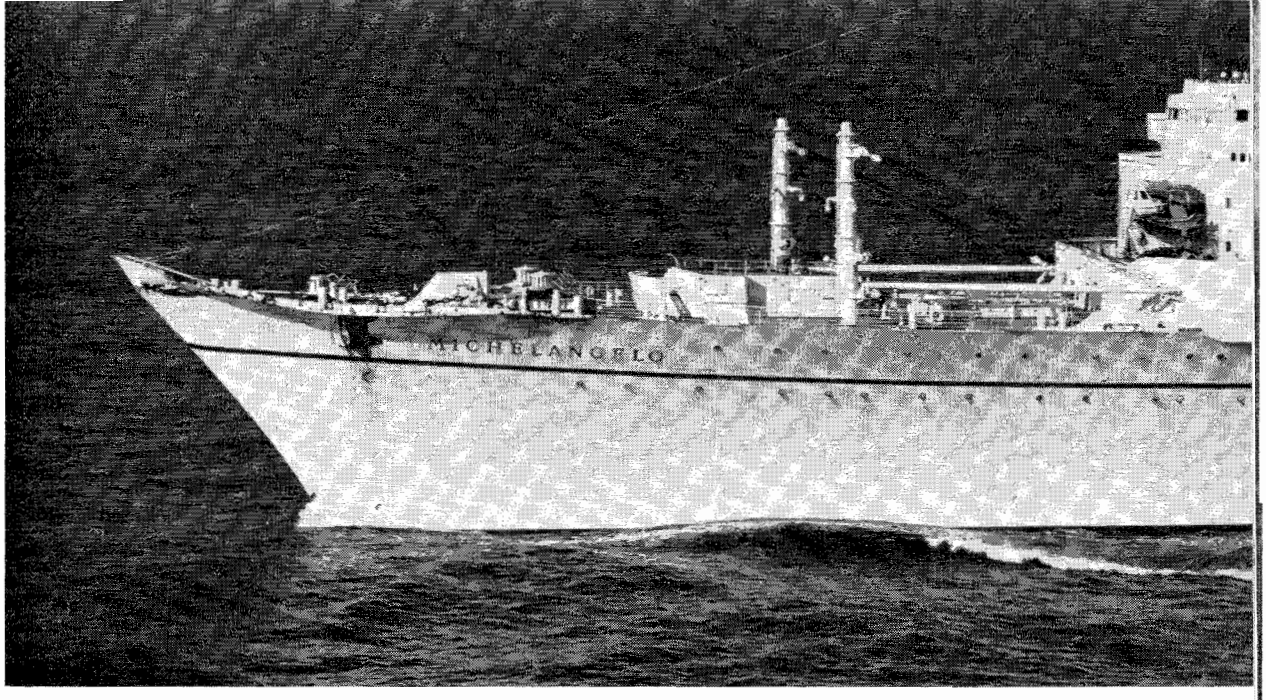
EXPERIMENTING WITH improved weather routing of cargo vessels goes forward. The experiences of one company doing such experimenting should prove instructive and beneficial.

The fleet in question comprises twelve ships, ranging in size from just over 5,000 gross tons to just under 12,000 gross tons and trading mainly between the United Kingdom and the West Indies and between the United Kingdom and Canada, and between the West Indies and Canada. Only one of the vessels is capable of a speed in excess of 15 knots, the rest being relatively low-powered ships, and both loaded and ballast passages are made.

All masters have complete freedom as to which course to take and adjust their courses according to the weather they expect to experience. However, the meteorological information available to them from radio weather reports is considered insufficient to weather route effectively. Often, due to atmospherics, weather reports are not received at all. At other times atmospherics interfere with radio signals and make the accurate reception of the numerical codes difficult. Even then, to cover the North Atlantic many reports are required and the decoding and plotting of these is a long and arduous job requiring considerable skill.

I say *all* the North Atlantic because to weather route ships requires a knowledge of the whole of the North Atlantic weather system and its trends. It was decided therefore to look for ways and means of giving the master fuller and more up-to-date meteorological information and the only satisfactory way of providing this information appeared to be by using facsimile equipment to receive weather charts.

This equipment was in extensive use ashore and it was found that it could also be used aboard ship. Many of the countries bordering the North Atlantic make weather transmissions and it is possible therefore to receive regular and up-to-date weather charts aboard ship. With these charts the master can study his



Heavy weather damage shows on the Italian Line Michelangelo.

weather and watch the movement and development of depressions, then carefully plan ahead his best course, avoiding heavy seas and swells on the bow and keeping clear of steep pressure gradients.

Manufacturers of facsimile equipment, supplied an eighteen inch model and a receiver to feed the radio signals into the facsimile receiver. The radio is required to have a great deal of stability and once tuned to the station must hold on to the signal during the whole of the transmission, which can take as long as 20 minutes.

The first installation was made early in 1964 in the fastest ship in the fleet, and, as this is a bulk carrier with engines and bridge aft, precautions were taken to see that vibration did not affect the equipment, particularly in the ballast condition. However, experience has shown that neither the radio receiver nor the facsimile set is seriously affected by vibration, and eventually both were bolted directly to the table top.

The first voyage to the West Indies was used as a shakedown trip, none of the officers or the radio officer having ever sailed with this equipment before. From the start it was intended that this set should be part of the navigational equipment of the ship, and, as such, the navigating officers would operate it.

Even on the first trip, when everyone concerned was inexperienced, usable charts were obtained and were of assistance to the master. It might be pointed out here that one of the great benefits of receiving facsimile weather charts is that even under severe atmospheric conditions a chart is usually received, although parts of it may be dark and unreadable. As the picture is scribed horizontally this interference appears as lines across the chart, but it is usually possible to interpolate from that part of the picture received the part which is unreadable and, providing just one of the isobars can be identified, interpolation can be made to find out the value of the other isobars. Steep pressure gradients show up particularly well and as these are areas to be avoided if possible this is especially valuable information. The charts are, of course, completely international and Russian, American, German, British, French, or, in fact, any other country's charts, are equally useful.

It was thought originally that on courses from the United Kingdom to the West Indies, having Washington and Halifax, two of the stations used, on the beam, and Bracknell, the United Kingdom station, either ahead or astern, several aerials were required. It was finally proved, however, that sophisticated aerial systems were not necessary and that initial difficulties were, in fact, due to the inexperience of the operators. A 40-foot length of aerial wire has been found to be all that is required.

It became apparent that to tune in a manual tuning radio receiver took some time and interfered with watchkeeping duties. It was therefore decided to investigate the potential of a pretuned set. At the same time, as the 18-inch picture was large, a 9-inch facsimile receiver was also supplied to the ship. For several voyages it was possible to connect the manual tuning radio receiver or the pretuned crystal receiver to either the 18-inch or the 9-inch facsimile receiver. It was found that with the pretuned set it was a simple matter to switch to the channel required and then make the final adjustment, the officer then returning to the bridge and leaving the machine to receive the picture on its

own. Later experience shows, however, that a pretuned set should have the facility to offtune up to 15 kilocycles in order to avoid jamming by the numerous commercial stations on the American coast.

Using the 3 stations, Washington, Halifax, and Bracknell, and also taking pictures from the Miami Weather Center via New York, 10 crystals were required. With these, adequate weather charts could be received at any time of the day or night and usually not more than 6 hours old. One great advantage of this method of weather routing is that the master receiving a weather chart is able to verify that the weather at ship agrees with the charted weather and, if different, he can adjust his own forecast of the weather accordingly.

It was found that a 9-inch picture was adequate and, in fact, in many cases gave better definition than a larger picture, and a complete set, all in one cabinet, consisting of a pretuned crystal receiver and a 9-inch facsimile receiver, together with power packs was developed and a prototype has been installed in the largest ship in the fleet.

While the receiver has facilities for 51 channels, only 17 channels are being used. These, however, cover the vessel for trading not only in the North Atlantic, but also in the South Atlantic, the Indian Ocean, the Mediterranean, the Pacific and around the Australian coast. The North Atlantic still, however, produces the most varied, fast-moving and intense weather and offers the greatest scope for the weather routing of ships.

A compact transistorized 15-channel 10-inch picture set is also under test on one of the company's ships.

While this facsimile equipment is normally used to avoid bad weather, this is not true in all cases. A good actual example is a ship which was homeward bound from Trinidad and started off on a great circle course, and then, noticing a severe depression developing to the east, adjusted course more toward the Azores. After steaming for another day it was seen that the depression was beginning to move more rapidly in a northeasterly direction and so course was again adjusted to a great circle one for the United Kingdom, the ship riding on the southeast edge of the depression with following seas.

Another case which helps to illustrate the usefulness of this equipment is that of another vessel outward bound from the United Kingdom, which experienced a severe southwesterly gale in the entrance of the channel. Without facsimile equipment the master would probably have shaped his course to the southward towards the Azores in order to avoid any bad weather, but with the facsimile equipment he was able to see that this was a single depression with none following up behind and, after a few hours of bad weather, the depression passed clear and he was able to continue his great circle course in good weather all the way.

The question of waves—both sea and swell waves—is very important in weather routing, although all transmitting countries do not appear to appreciate this fully. The stations transmitting from the eastern seaboard of the American continent do, in fact, send out wave charts and, as it is very often the case that deep depressions leave a legacy of heavy swells behind them, this information is very helpful to a master when plotting his best course, as without it he could steer into an area of high swells which would retard his progress and perhaps damage the ship.

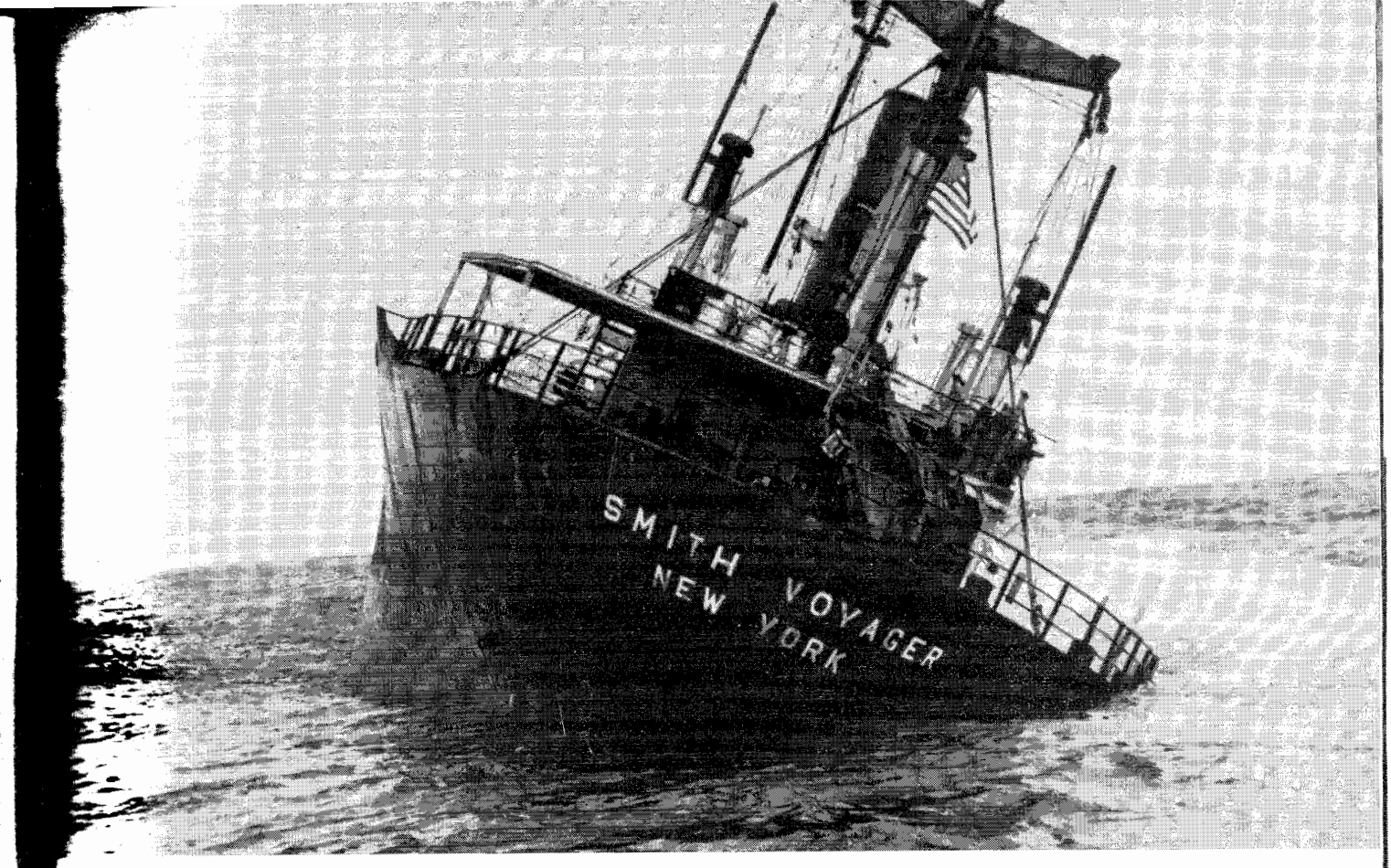
Facsimile ice charts are also transmitted and have proved extremely worthwhile. They are particularly useful for ships bound to Canada when the ice is starting to spread southwards.

From all this you will note that ships in the North Atlantic can gain a great deal of benefit from these weather charts. When weather routing, it is absolutely essential, particularly when westbound, that the weather for the next 4 or 5 days ahead is accurately forecast by the master if he is to make the best courses possible. It is true that weather may develop more rapidly or more slowly than expected, but this usually shows up when comparing actual weather with the charts, and it is this ability to compare actual weather with forecast weather on the spot that makes this method of weather routing suitable for our type of fleet. In the main, efficient weather routing, particularly for low-powered vessels, depends on accurate long-range forecasts, frequently verified and amended as necessary.

During the sugar season the company's vessels are engaged regularly trading backwards and forwards to the West Indies, with a turnround at each end of 48 hours and the masters remain in constant contact with the weather systems and their developments. As at each end of the passage the ships are serving either the company's plantations or refineries, accurate E.T.A.'s are essential and accuracy is improved by weather chart reception on board ship.

In the hurricane season tropical revolving storms can be carefully watched and their progress followed after they recurve and head across the Atlantic in a northeasterly direction. During last year, when hurricane "Betsy" struck New Orleans, four of the company's vessels were in the vicinity. The largest ship, with the commodore master, had the new combined installation for the first time and he spoke glowingly of his ability to track the hurricane at all stages of its development. In fact he was able to forecast its movement with a certain amount of accuracy. Another of the company's vessels had a master who had had "Fax" equipment for some time, and he likewise reported that he was able to keep track of hurricane "Betsy." A third ship, proceeding down the American coast, had a master who had served for some time with "Fax" equipment, although this ship was without it, and he stated that he would have been happier to have had the benefit of these weather charts. The fourth ship had a master who had no experience and was without the equipment and so had to rely solely on "Fax" radio reports, although as he was in port at the time the local radio stations gave a very full and complete picture of the hurricane.

One other point which I would like to mention concerns meteorology in general and the younger officers today. It is felt that, with satellites and other modern innovations, meteorology has taken great strides forward, but as modern vessels are not so seriously disturbed by bad weather meteorology among the junior officers is not practiced as much, or as fully, as it should be. However, all the officers who have served with facsimile equipment have shown the greatest interest not only in the equipment, but in the charts received and the development of the weather, and, by watching their superiors interpret this weather, have become better seamen and officers. Indeed, this greater awareness of meteorology in itself has improved the weather routing of those ships fitted with facsimile equipment and again, when these officers are transferred to serve in other vessels not fitted, then their increased meteorological knowledge is put to good use on these vessels also. ⚓



SS Smith Voyager Investigation

Commandant's Action

on

The Marine Board of Investigation convened to inquire into the facts and circumstances surrounding the sinking of the SS *Smith Voyager* in the Atlantic Ocean on 27 December 1964 while under tow following abandonment on 20 December 1964 with the loss of life of four crewmembers during rescue operations

ACTIONS CONCERNING THE RECOMMENDATIONS

RECOMMENDATION 1 concerning the amending of the grain cargo regulations to require shifting boards extending the complete length of each hatch, including the feeder, has been under active study since 1963. Regulations concerning U.S. vessels have been amended to require implementation of this recommendation. Additionally, this matter has been a subject of discussion in the Intergovernmental Maritime Consultative Organization working groups dealing with stability and other aspects of the carriage of grain. It will be given further consideration leading to possible amendment of the International Convention on Safety of Life at Sea, 1960, provisions relative to the carriage of grain.

RECOMMENDATION 2 concerning a proposed requirement for watertight doors on the main deck will not be acted on since had the vessel not been prematurely abandoned, it appears there would have been more than adequate pumping facilities available to dewater the vessel.

RECOMMENDATION 3 concerning a regulation that the radio operator's chair be secured to the deck will not be acted upon since it appears that the need or desirability of such a requirement varies with the physical arrangement of each vessel's radio room and the need of each radio operator for mobility in operating and adjusting his equipment. In addition, if such an alteration appears to be desirable on a particular vessel, its accomplishment is within the vessel's capability.

RECOMMENDATION 4 concerning a proposed requirement that vessels transmit their noon positions is concurred in; however, it is considered that the final responsibility in this regard rests with each vessel's management. The Coast Guard presently provides adequate position reporting and vessel locator facilities for those vessels participating in the Atlantic and Pacific Merchant Vessel Reporting Systems.

RECOMMENDATION 5 concerning further studies to determine the feasibility of consideration of the submersion of a vessel's load line marks not only in relation to the midship freeboard but the vessel's draft forward and aft has been studied. This subject and its attendant recognition

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of hog and sag, particularly of an older vessel, was discussed at the 1966 International Load Line Conference. The Conference concluded that it was technically impracticable to give consideration to possible hog or sag in implementing the Load Line Convention's freeboard requirements.

RECOMMENDATION 6 concerning the possible overloading of fully laden vessels at major bunkering ports has been taken under active study. Efforts to ascertain how widespread this practice may be have been instituted by a more critical review of the official logbooks of American vessels which are submitted to the Coast Guard at the conclusion of each voyage.

RECOMMENDATION 7 concerning further action under the suspension and revocation proceedings in the case of Frederick W. Mohle, the master of the SS *Smith Voyager* has been initiated.

RECOMMENDATION 8 concerning the evidence of violations of 46 U.S.C. 658 will not be acted upon for the reasons previously stated. Concerning the evidence of violation on the part of the master of the vessel, Frederick W. Mohle, it is considered that further action within the remedial and administrative procedures as provided by the suspension and revocation proceedings is adequate. Referral of this case to the U.S. attorney having jurisdiction for possible criminal prosecution is not indicated at this time.

W. J. SMITH,
Admiral, U.S. Coast Guard,
Commandant.

22 September 1966

1. The record of the Marine Board of Investigation convened to investigate subject casualty has been reviewed and the record, including the findings of fact, conclusions, and recommendations, is approved subject to the following comments.

2. On 20 December 1964 the SS *Smith Voyager,* O.N. 248787, while on a voyage from Houston, Tex., to India with a cargo of wheat developed a severe starboard list in heavy weather and was abandoned at 29–45 N., 48–50 W. The ship had stopped for fuel and water at Freeport, Grand Bahama Island, B.W.I., on 15 December 1964 and was en route to Ceuta, Spanish Morocco, its next scheduled fueling port. The master, the third mate, and two able seamen remained on board the SS *Smith Voyager.* The other 38 crewmembers abandoned the *Smith Voyager* in the starboard lifeboat which was soon filled with water from seas breaking over it. Approximately 3 hours after the abandonment, the German M/S *Mathilde Bolten,* responding to an SOS, arrived alongside the lifeboat. Four persons in the lifeboat lost their lives during rescue operations by being caught between the surging lifeboat and the side of the *Mathilde Bolten* after the lifeboat capsized as the occupants attempted to leave it by cargo nets, ladders, and lines on the side of the *Mathilde Bolten.* The following day, the master and remaining three crewmembers were removed by the USCGC *Rockaway.* At or about 0723 on 27 December 1964 the SS *Smith Voyager* sank in position 28–30 N., 50–48 W., while in tow of a commercial tug.

REMARKS

1. Concurring with the Board's conclusion that the casualty might have been prevented had the engineering plant been maintained in operation, it is concluded that the primary cause of the loss of the *Smith Voyager* was the premature abandonment of the engineering plant and the vessel. The premature abandonment with the tacit approval of the master indicates evidence of failure of the master to exercise command responsibility. This precluded attempts to keep the vessel on a favorable course and speed, to secure the hull openings, to dewater the vessel, and attempt to reduce the list. The testimony indicates that the leaking main steam line joint for which the plant was secured had loose nuts on the flange. These were taken up and tightened and yet no effort was made to pass steam through the joint in order to ascertain if this would correct the steam leak. Once the vessel was abandoned it was an expectable sequence that an overloaded vessel listing about 30° would take on water through the portholes and the weathertight doors, and continue to flood through the rudder packing gland. Without means of pumping out, without means of easing the load on the vessel, without means of shifting ballast or fuel to minimize the list, the vessel was doomed.

2. In accordance with the rules and regulations for bulk grain cargoes appearing in 46 CFR, part 144, the vessel was equipped with a detailed loading plan. The plan outlined the cargo that could be carried and its distribution in each compartment. Taking into consideration the season of the year and the applicable loadline zones in which the vessel was to travel, it listed the amount of fuel and water that was to be aboard, the metacentric height and the mean draft on sailing and arrival at the port of loading and each subsequent bunkering port. The plan stated that the vessel's evaporator would be used to maintain the necessary water tonnage and that the deep tank covers in No. 4 hatch were to be closed prior to continuing loading of grain in No. 4 lower 'tween deck. The plan does not indicate the presence of 200 tons of grain that were stowed in the aft part of the foc'sle 'tween deck of No. 1 hatch. The record clearly indicates that the master was provided with this six-page set of plans; that he signed each page, and that he made no remarks or suggestions for corrections, modifications, additions, or errors which might exist. In the absence of clear-cut, compelling, and emergent circumstances, the master was duty-bound to see that the crew and all persons servicing and husbanding the vessel complied with this prestow loading plan.

3. The conclusion that the cargo of wheat was inadequately and improperly stowed thereby permitting the cargo to shift and resulting in an initial heel of 10° to starboard, is concurred in with the qualification that the inadequate and improper stowage is only evidence in the record in the apparent failure to cover No. 4 deep tanks and the apparent loading of No. 1 port and starboard bins so that they became part of the feeder system of No. 1. This method of loading resulted in insufficient feeder volume serving No. 4 hold and excess feeder volume serving the lower decks of No. 1 and introduced a larger element of free surface than otherwise would have existed or been allowed. Based upon subsequent studies of grain loading in other ships, it appears likely that the initial heel which developed was due not only to grain shift made possible by these deficiencies in stowage, but also to grain shift to starboard in underdeck voids throughout the ship.

4. The Board, in its investigation and study of the voluminous record of the witnesses, the exhibits, and all the facts concerning this unfortunate casualty, has concluded that there is evidence of a number of acts of misconduct and negligence on the part of the master of the vessel. These conclusions will be heard in accordance with the suspension and revocation proceedings regulations in a separate proceeding and, therefore, will not be commented upon.

5. Conclusion 8 is not concurred in concerning evidence of violations of 46 U.S.C. 658 on the part of John F. Fitzsimmons, Vice President in Charge of Operations, and

George W. MacLeod, Marine Superintendent, Earl J. Smith & Co. The statute 46 U.S.C. 658 prohibits *knowingly* sending or attempting to send, or being a party to sending, an American ship to sea in such an unseaworthy state that the life of any person is likely to be endangered. Without considering the premise that this statute covers all persons including owners, marine superintendents and port engineers of vessels, who knowingly sent or attempted to send an unseaworthy vessel to sea, the record does not indicate that these persons had knowledge that these deficiencies were sufficient to warrant the vessel to be considered unseaworthy. The first and primary responsibility for the safety and seaworthiness of an American flag vessel must rest with the master and the vessel's officers. In addition, the Board's conclusion of the meaning and significance of the letter of 27 November 1964, directing the master to be "on proper marks and not overloaded" on arrival at Vizagapatam or Madras is not concurred in. The expression "on proper marks and not overloaded" must be accepted for what it states and no more. Examination of the testimony in the Record of Investigation fails to allow any broader implication. The primary responsibility for compliance with the Load Line Act rests with the master of the vessel and the negative evidence that instructions regarding drafts at other ports of call were not given cannot alone lead to the conclusion that this was tantamount to authorizing the overloading of the vessel.

6. The Secretary of Commerce, with the Secretary of Treasury concurring, has approved the award of a Gallant Ship Citation and Plaque to the German freighter *Mathilde Bolten,* and ribbon bars to each person serving on board at the time of the rescue of the crewmembers of the SS *Smith Voyager.* Additionally, Mr. Donald Covert, able seaman of the SS *Smith Voyager,* who assisted in the rescue of three of his shipmates after the lifeboat capsized, was awarded the Silver Lifesaving Medal by the Secretary of Treasury.

FINDINGS OF FACT

1. On 20 December 1964 the SS *Smith Voyager,* O.N. 248787, while on a voyage from Houston, Tex., to India with a cargo of wheat developed a severe starboard list in heavy weather and was abandoned at 29–45 N., 48–50 W. The ship had stopped for fuel and water at Freeport, Grand Bahama Island, B.W.I., on 15 December 1964 and was en route to Ceuta, Spanish Morocco, its next scheduled fueling port. The master, the third mate, and two able seamen remained on board the SS *Smith Voyager.* The other 38 crewmembers abandoned the *Smith Voyager* in the starboard lifeboat which was soon filled with water from seas breaking over it. Approximately 3 hours after the abandonment the German M/S *Mathilde Bolten,* responding to an SOS, arrived alongside the lifeboat. Four persons in the lifeboat lost their lives during rescue operations by being caught between the surging lifeboat and the side of the *Mathilde Bolten* after the lifeboat capsized as the occupants attempted to leave it by cargo nets, ladders, and lines on the side of the *Mathilde Bolten.* At or about 0723 on 27 December 1964 the SS *Smith Voyager* sank in position 28–30 N., 50–48 W., while in tow of a commercial tug.

2. The vessel involved was the SS *Smith Voyager,* O.N. 248787, a steam-screw freight vessel of 7,606 gross tons, 4,549 net tons; length, 439.1 feet; breadth, 62.1 feet; depth, 34.5 feet; built in 1945 at Portland, Oreg.; 8,500 horsepower; home port, New York, N.Y.; owned by Sumner A. Long, 375 Park Avenue, New York, N.Y.; bareboat chartered to the Ann Quinn Corp., 17 Battery Place, New York, N.Y.; and operated by Earl J. Smith & Co., Inc., 17 Battery Place, New York, N.Y. The master of the vessel was Frederick W. Mohle, 148–31 10th Avenue, Whitestone 57, Long Island, N.Y., who was the holder of a license as master, any gross tons.

3. The crewmembers who lost their lives were:

Cornelius D. J. Veenstra, Z–75785–D1, license No. 281062, chief engineer;
George L. Davis, Z–244140–D1, oiler;
Eli Jones, Z–275076–D1, third cook;
Vernon M. Brown, Z–335873–D4, steward utility.

4. Weather conditions at the time the SS *Smith Voyager* was abandoned were: Wind north, force 8; sea 6; overcast; barometer 1016 m.b.; air temperature 66° F.; water temperature 71° F.

5. Grain fittings were installed in the SS *Smith Voyager* on 2 December 1964 while lying at the San Jacinto Terminal, Houston, Tex., by the Southern Stevedoring & Contracting Co. Feeders were installed in the squares of No. 2 and No. 3 hatches between the main deck and the upper 'tween deck, and in the square of No. 1 hatch between the forecastle deck and the upper 'tween deck. Two bins were installed in the upper 'tween deck of No. 1 hatch. Centerline shifting boards were installed aft of the square of the hatch in No. 1 upper 'tween deck, No. 1 lower 'tween deck, and No. 1 lower hold; aft of the square of the hatch in No. 2 lower 'tween deck, and No. 2 lower hold; forward and aft of the square of the hatch in No. 3 lower 'tween deck and No. 3 lower hold; and for the entire length of the hatch in No. 4 and No. 5 upper 'tween decks. Number 4 and 5 hatches were to be common loaded with the covers of No. 4 deep tanks to be secured before loading in No. 4 hold. The grain fittings of the SS *Smith Voyager* were erected by a crew of approximately 50 men in charge of Mr. Edward Kingcaid, Southern Stevedoring & Contracting Co. The erection of the grain fittings required approximately 10 hours.

The centerline shifting boards were constructed of rough 2- by 12-inch lumber with 2 by 12 uprights. The feeders were constructed of 4 by 6 uprights placed on 18-inch centers or closer with the interior faced with ⅝-inch fir plywood. There were double uprights in way of the joints. There were no stiffeners installed along the horizontal seams. The plywood was fitted tightly to make it grain tight. The uprights were set in place and held by shores and by a whaler—a 2 by 12 piece of timber that ran the length of the bottom and top of the feeder box. Corner boards were placed in each corner of the feeder with the necessary length of burlap attached to insure a grain-tight fitting.

6. On 9 December 1964, the SS *Smith Voyager* shifted from San Jacinto Terminal to Goodpasture Grain Elevator. The pilot on board was Arthur Thomas Gibson, Houston pilot, holding a license as first class pilot, any gross tons, Houston Ship Channel. The ship was light and there was very little current in that section of the Houston Ship Channel. Two tugs were used in assisting the SS *Smith Voyager* from the dock where it had been docked starboard side to. One of the tugs was on a stern line and the other tug was made up to the port bow. After getting out of the slip at the San Jacinto Terminal the pilot let the tug go that was on the stern line pulling the stern out. He kept the tug on the bow until he had some movement on the ship in order to insure that the ship would not be blown down on the bank. The ship had cleared the dock at or about 0531, and after getting clear of the slip at or about 0555 it proceeded at full maneuvering speed (60 r.p.m.'s) for approximately 5 minutes. Upon

being ordered to take in its lines the bow tug advised the pilot that the *Smith Voyager* had too much way on and that it was unable to get any slack. From the port wing of the bridge the pilot shouted to the mate on watch to put the engine slow ahead. A few seconds thereafter the pilot instructed the helmsman to put his rudder to the left. The *Smith Voyager* veered to the right, after which the pilot ordered the helmsman to put the rudder hard left. The ship continued to go to the right, whereupon the pilot ordered the mate to put the engine full ahead in an attempt to make the ship answer the rudder. When the pilot saw that the ship was not going to turn left in time to keep from touching the bank, he placed the engine full astern. The bow of the SS *Smith Voyager* grounded on the north bank of the Houston Ship Channel at or about 0608 at latitude 29–44–22 N., longitude 95–07–00 W. in the vicinity of Houston Ship Channel Light No. 10. The ship was aground for approximately 1 hour. The angle of the ship in relation to the centerline of the channel, when it first contacted the bank, was approximately 45°. The bank at the position where the vessel grounded was more sloping than most of the other parts of the Houston Ship Channel. There was no noticeable change in the trim or heel of the ship as it grounded. The project depth of the channel was 36 feet. The bottom width of the channel was 300 feet.

After being freed by the two tugs in attendance the *Smith Voyager* proceeded down the channel and handled properly. The ship was secured at Goodpasture Elevator at 0848. At the elevator there was a channel side dock parallel to the bank with a water depth of 35 feet. The pilot examined the bellbook after arrival at Goodpasture Elevator and found a slow astern bell in the bellbook at the time that he had ordered the slow ahead bell. He found that following the slow astern bell there was another bell for slow ahead and then a bell for full ahead. The pilot was of the opinion that the slow astern bell caused the ship to veer over to the right. The engines had been on full ahead for approximately 5 minutes before the pilot ordered the slow ahead bell. The persons on the bridge were under the impression that the pilot had said slow astern when he gave the slow ahead order. The testimony of the pilot was to the effect that he did not order the engines directly astern from full ahead without a stop order between those bells, and that he had never given such an engine order. The bells noted by the pilot in the bellbook were: Full ahead, slow astern, slow ahead, full ahead, and full astern. The bells actually given, according to the pilot were: Full ahead, slow ahead, full ahead, full astern. The exact times that the bells were given are unknown, since the bellbook was lost with the ship; however, the time between the slow ahead bell and the slow astern bell noted in the bellbook was approximately 1½ minutes. The engine orders were being repeated to the pilot by the mate on watch; however, the pilot did not hear a slow astern bell order repeated.

At the time the vessel took the sheer to starboard Capt. Frederick W. Mohle, the master of the SS *Smith Voyager*, was at the wheel, having relieved the helmsman, Donald Covert, to allow him to go after two cups of coffee. The pilot, on the wing of the bridge, was not aware that the master was at the wheel. The helmsman was absent from the wheelhouse for approximately 7 or 8 minutes. When he returned the forward tug was being let go and the *Smith Voyager* was swinging to the starboard. Soon after he got on the wheel as helmsman the full astern order was given, while the vessel was still moving ahead and swinging.

The grounding of the SS *Smith Voyager* was reported to the owners by letter from the master, but neither he nor the owners reported it to the Officer in Charge, Marine Inspection, Houston, Tex.

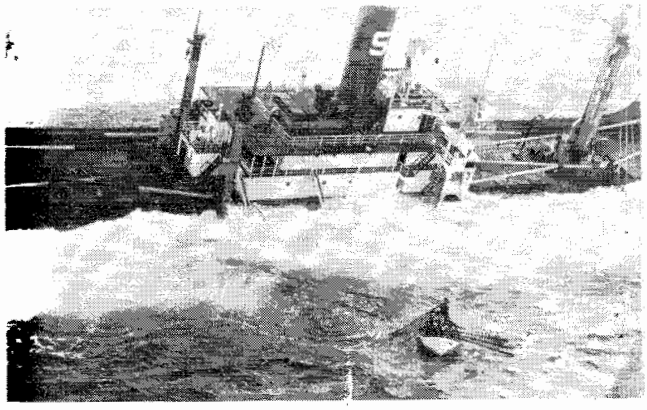
7. The SS *Smith Voyager* sailed from Goodpasture Grain Elevator, Houston, Tex., at 0555 on 12 December 1964 on a voyage to Calcutta, India, with a cargo of more than 10,200 tons of hard winter wheat. 10,127 tons of cargo were listed in the prestow plan and 10,204 tons of cargo were listed in the completion loading plan. The vessel had on board approximately 1,200 barrels of fuel and approximately 120 tons of water. The scheduled bunkering ports en route to Calcutta were: Freeport, Grand Bahama Island, B.W.I.; Ceuta, Spanish Morocco; Augusta, Sicily; and Port Said, U.A.R. The ship was to be lightened at Vizagapatam, India, before proceeding to Calcutta.

The completion loading plan indicated the stowage of 100.35 tons of cargo in No. 1 upper 'tween deck on the port side and 100.35 tons of cargo in the upper 'tween deck on the starboard side in bins. This cargo in the bins in the upper 'tween deck was not shown on the prestow plan prepared by Janes Nautical Service, Houston, Tex., for the master. Prior to sailing from Houston, Tex., this prestow plan was signed by the master of the SS *Smith Voyager* and a copy of the plan was furnished to the National Cargo Bureau. The National Cargo Bureau surveyor at Houston, Tex., was not advised of the 200.70 tons of cargo loaded in the bins located in No. 1 upper 'tween deck.

In making the stability computations and preparing the prestow plan, Janes Nautical Service utilized a messenger to obtain the lightship weight, and the weight of the stores, the fuel, and the water from the SS *Smith Voyager*, along with the ports at which the ship was to call. In making these computations the cubic capacity of the SS *Smith Voyager* was taken from the plans of a Victory ship in the files of Janes Nautical Service. The computations were made using a 25-percent fuel reserve. The stability calculations in the prestow plan presupposed that the evaporator of the SS *Smith Voyager* would be in good working condition. The deadweight carrying capacity of the SS *Smith Voyager* was 10,720. The instructions given to Janes Nautical Service were that the vessel desired to carry 10,220 to 10,250 tons of cargo. The figure 10,127 tons was used in the stability calculations since that was the limit that the SS *Smith Voyager* could lift and not be submerged over her marks.

The port log prepared by the vessel's agent in Houston shows that the loading of grain was completed at 0345 on 12 December 1964 but that the vessel did not sail until 0555, approximately 2 hours and 10 minutes after loading. At 0515 on 12 December 1964 Mr. Lloyd W. Cromwell was on deck awaiting his pay voucher for his services as night engineer. He noticed that grain was still being loaded and he could see grain going into No. 3 hatch forward of the bridge. One spout was still in place loading this grain. Mr. Cromwell was standing on the boat deck and he could see the dust coming up from the spout. The ship's sailing board was posted for 0600. John Lukens, able seaman, also noted that while the tugs were alongside and the ship was waiting to go, one pontoon was still off No. 3 hatch and loading operations continued in that hatch. There was one chute going through a crack in the forward part of No. 3 hatch. Lukens did not determine whether or not the chute was going inside or outside of the feeder in No. 3 upper 'tween deck.

During the loading operation, Mr. Charles L. Jackson, third officer, was stationed on the forward deck and Mr. Robert Coyne, third officer, was stationed on the after deck. The chief officer, Mr. Fred A. Bennett, was in charge



A lifeboat crew from the U.S. Coast Guard Cutter Rockaway *inches toward the doomed* Smith Voyager *to make a rescue.*

of the overall loading operation. The sequence in starting to load the hatches was No. 3, No. 1, No. 4, No. 5, and No. 2, however, No. 3 hatch was not loaded in a continuous operation. In loading, the spouts were shifted in and out of No. 3 hatch at various times.

John Lukens, able seaman, noted that loading started at approximately 0800 on the morning of the 11th and finished between 0200 and 0400 the next morning, the 12th of December 1964. Number 1 hatch was secured first, followed by No. 5 hatch, No. 2 hatch, No. 4 hatch and finally No. 3.

Capt. Ira S. Derrick, independent surveyor, who was conducting a draft survey to check the accuracy of the weight furnished by the Goodpasture Elevator, personally took the draft and freeboard of the SS *Smith Voyager* shortly after 0300 on 12 December 1964. Captain Derrick determined the draft amidships with a steel tape by measuring the distance from the water to the top of the deck line on the port and starboard sides. He was able to see the permanent deck lines marked on the sides of the ship. The summer freeboard from the deck line allowed by the *Smith Voyager's* loadline certificate was 9 feet 7 inches, with a fresh water allowance for all freeboards of 7½ inches. This allowed freeboard corresponds to a draft of 28 feet 6¾ inches. Captain Derrick's survey report shows the draft measured amidships was 28 feet 1.25 inches port, 30 feet 0.75 inch starboard, a mean draft of 29 feet 01.00 inch. By comparing the draft computed from the freeboard measurements amidships and the mean of the drafts taken forward and aft (29 feet 05.5 inches), Captain Derrick found the SS *Smith Voyager* to be hogged 4½ inches. Captain Derrick later computed the list by trigonometry and found that it was 1°49'' to starboard.

8. Assisting Capt. Ira S. Derrick in his draft survey was Mr. Vernon F. Sumner, his employee. The density of the water had been taken at midnight by Mr. Sumner and found to be 1.007 corrected for temperature to 1.006. A fresh water allowance of 6 inches was used by Capt. Derrick in his draft survey. Mr. Sumner boarded the SS *Smith Voyager* a little before midnight and left at 0030. Mr. Sumner did not recall the figures used for all tanks, but he was told that there was a total of 120 tons of water and 220 tons of fuel on board. The amount of fuel was given to him in barrels and he converted it into long tons by using the constant 6.6 barrels per long ton.

9. The draft and freeboard of the SS *Smith Voyager* were taken separately by Mr. Fred A. Bennett, chief officer, and Mr. Charles L. Jackson, third officer. Mr. Jackson reported his finding to Mr. Bennett. Mr. Bennett remarked to Mr. Jackson that "this is rather unusual, it's right on the mark." Mr. Jackson took that to mean the permissible draft with the fresh water allowance. Mr. Jackson estimated that the list of the *Smith Voyager* was no more than 1° at the time he took the port side draft reading at Goodpasture Elevator, which he remembered to be 27'08'' forward and 29'04'' aft at 0045. The freeboard measured by the chief officer, Mr. Bennett, was 9'01''.

10. Mr. Gilbert, the first assistant engineer, was told by the chief engineer that the SS *Smith Voyager* upon leaving Houston had 1,200 barrels of fuel. This fuel was located in No. 3 port, No. 3 center, No. 5 starboard and No. 5 center double bottom tanks, and in the settling tanks.

11. Upon arrival of the SS *Smith Voyager* at the anchorage off Freeport, Grand Bahama Island, B.W.I., at or about 0200 on 15 December 1964, Mr. Charles L. Jackson, third mate, used a small launch and took the draft readings. Mr. Jackson was able to take the draft after arrival at Freeport by taking the mean between the swells, which he estimated to be 2 feet in height. Mr. Jackson was, however, unable to remember the draft of the vessel that he took after arrival. The fuel hose was connected and the SS *Smith Voyager* started bunkering between 0330 and 0340 on Mr. Jackson's watch. Loading operations were completed at 0700 but the SS *Smith Voyager* did not sail from Freeport until 1200 noon on 15 December 1964 due to a failure of the turbine feed pump which required repairs.

12. The chief engineer advised Mr. Sidney G. Saha, the first assistant engineer, that the vessel also took on 195 tons of water. Mr. Saha had started to take on water at Freeport but was relieved by Mr. James R. Eidson, third assistant engineer, who completed the job. Mr. Eidson estimated the amount of water taken on at Freeport to be 200 tons. The ship was billed for 195 tons. Mr. Eidson filled the domestic tank, the afterpeak tank, and the port and starboard No. 4 double bottom tanks. There were approximately 20 tons of water in the distilled tanks upon departure from Freeport. No water was placed in the forepeak. No. 4 center double bottom was empty. The 195 tons of fresh water taken on at Freeport, according to Mr. Sidney G. Saha, the first assistant engineer, did not include the water in the distilled tank which was made by using the ship's starboard boiler as an evaporator. Mr. Saha knew that the port and starboard No. 4 double bottom tanks, the after peak tank and the potable water tank were full upon leaving Freeport.

Upon arrival in Freeport, Mr. Eidson estimated that the *Smith Voyager* had approximately 80 tons of water. There were approximately 20 tons of water in the potable tank and the port No. 4 double bottom tank contained some water. There was no water remaining in the starboard double bottom nor the center double bottom tanks. The distilled tank was empty upon arrival at Freeport. During the passage from Houston, Tex., to Freeport, some water from the No. 4 double bottom had been pumped to the forepeak since there were no pumps in operating condition on the evaporator and the forepeak could be used for gravity feed to fill the evaporator.

The SS *Smith Voyager* arrived at Freeport with approximately 322 barrels of fuel, loaded 4,103 barrels of fuel, and sailed with 4,400 barrels. Upon arrival in Freeport there was fuel only in No. 4 and No. 5 double bottom tanks. At Freeport the fuel was loaded into No. 3 port, No. 3 starboard and No. 3 center and No. 5 center double bottom tanks. The port and starboard settling tanks were filled at Freeport while the vessel was fueling. According to

Mr. Arthur P. Gilbert, the second assistant engineer, the consumption of fuel aboard the SS *Smith Voyager* en route from Houston to Freeport was about 340 to 350 barrels per day with the evaporator in operation.

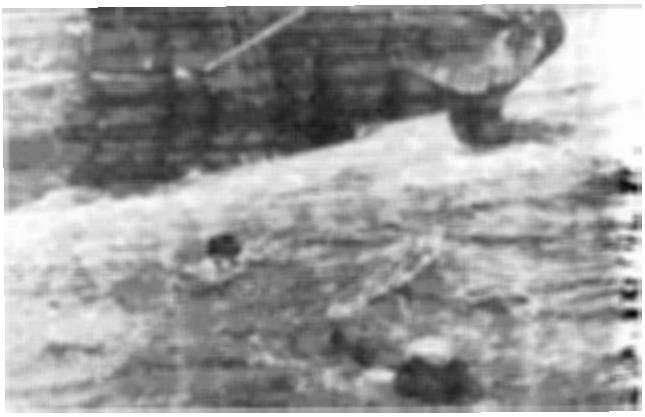
13. After loading at Freeport the chief mate, Mr. Fred A. Bennett, took a small boat from one of the shore facilities that was assisting the SS *Smith Voyager* and went around the ship to determine its freeboard. After the chief mated advised the master that he was unable to obtain an accurate reading, due to a prevailing swell, Captain Mohle instructed him to make a notation in the deck logbook that "Due to the sea conditions he was unable to read the draft." According to Mr. Bennett, the height of these swells was roughly three feet at the time attempts were made to take the draft reading. According to Mr. Charles L. Jackson, the third officer, the swell was considerably heavier when the ship left Freeport than when he took the draft readings upon arrival of the SS *Smith Voyager* at Freeport. He estimated the swell to be approximately 5 feet. According to John W. Kraine, electrician, the weather was calm for approximately 6 hours before the *Smith Voyager* departed from Freeport. According to Mr. Coyne, the wind velocity, after loading was completed, was approximately 6 or 7 knots and the swells, at the time the chief mate attempted to take the draft, were 4 to 5 feet. The U.S. Weather Bureau, Miami, Fla., reported that a forecast of the weather from Miami to Grand Bahamas on 14 and 15 December 1964 was as follows:

1100 e.s.t. (14 December), winds NE. 10 to 18 knots, seas 2 to 4 feet, scattered showers.
0500 e.s.t. (15 December), winds NNE. 12 to 20 knots, seas 3 to 5 feet.
1100 e.s.t. (15 December), winds NE. 15 to 20 knots, seas 3 to 5 feet.
1700 e.s.t. (15 December), winds NE. 20 to 25 knots, seas 3 to 5 feet. Rough off shore.

At 1900 e.s.t. (15 December 1964) a report was received by the U.S. Weather Bureau, Miami, Fla., that winds were 35 knots at west end of Grand Bahamas.

14. It was the opinion of Capt. John C. Morgan, National Cargo Bureau surveyor, Houston, Tex., when checking the cargo prestow plan for the National Cargo Bureau, that in order to carry out the proposed bunkering program, the SS *Smith Voyager* would have to sail from Houston, Tex. light of her marks, in order to be at the proper draft upon departing from Freeport, Grand Bahama Island, B.W.I. A warning to this effect was given by Captain Morgan to the master, Capt. Frederick W. Mohle, on 2 December 1964 while the SS *Smith Voyager* was at San Jacinto Terminal, and this warning was subsequently repeated to the loading personnel at Goodpasture Elevator, Houston, Tex. The prestow plan called for the SS *Smith Voyager* to have 463 tons of fuel on board when it departed from Freeport.

15. As to the submergence of the loadline mark, Mr. John F. Fitzsimmons, the vice president in charge of operations of Earl J. Smith Co., testified that the captain "had all the latitude in the world" and that he leaves the loading to the captain's discretion. In a letter to Captain Mohle dated 27 November 1964, however, Mr. Fitzsimmons stated that upon *arrival* at his lightening port of Vizagapatam or Madras his vessel must be "on proper marks" and said nothing about overloading upon sailing from the previous port. This letter scheduled the *Smith Voyager* to its discharge port in India via Freeport, Ceuta, Suez Canal, and Djibouti. Although the letter scheduled the *Smith Voyager* to go directly from Freeport to Ceuta, Mr. Fitzsimmons, in a subsequent telephone conversation with Captain Mohle while the SS *Smith Voyager* was in Houston, Tex., told the captain that if he felt that after loading the vessel he could not proceed in accordance with the instructions, he would proceed to the Azores for replenishment. The *Smith Voyager* was bound from Freeport to Ceuta at the time the list developed and there is no indication that the course was changed to the Azores.



As heavy seas batter the SS Smith Voyager, *Able Seaman John Lukens (foreground), Third Mate Charles L. Jackson, and Captain Frederick W. Mohle (sharing life ring with Jackson), bob in the chilling ocean, battling for their lives.*

16. Mr. Roy L. Perkins, the radio officer, who had been sailing on the *Smith Voyager,* for some time, testified that on a previous voyage a former master, Captain Groves, had loaded less cargo than the company desired. The captain had sent a telegram upon departure from the loading port to New York relating that 10,100 tons of cargo had been loaded. Captain Groves received a message from the Earl J. Smith Co. telling him to send an explanation as the ship was supposed to have loaded 10,200 tons.

17. Although Frederick W. Mohle, the master of the SS *Smith Voyager,* testified that on the passage from Houston to Freeport he ordered the chief engineer to pump out any water that he did not need and that water was in fact "dumped" on 13 or 14 December 1964, the evaporator was not operating satisfactorily and the vessel was short of fresh water during this passage. Mr. James R. Eidson, the third assistant engineer, was normally in charge of the water and to his knowledge there was no water pumped over the side of the SS *Smith Voyager* at any time after departing from Houston. To the knowledge of Mr. Fred A. Bennett, chief officer, nothing was dumped overboard between Houston and Freeport other than the ship's garbage and he had no information of any orders or instructions that water would be dumped overboard. Mr. Robert Coyne, the third officer, was also able to state that no fresh water had been pumped overboard between Houston and Freeport on his watch or at any other time to his knowledge. No fresh water was pumped overboard on the passage between Houston and Freeport to the knowledge of the radio operator, Mr. Roy L. Perkins. On the passage between Houston and Freeport no fresh water was pumped out to the knowledge of Mr. Sidney G. Saha, the first assistant engineer. The boilers were placed on a raw feed for approximately 2 hours on the passage of the SS *Smith Voyager* from Houston to Freeport.

18. After leaving Freeport, Grand Bahama Island, B.W.I., on 15 December 1964 a continuous leak through the rudder stock packing gland was noted. The gland was

tightened as much as possible but this did not stop the leak. The steering engineroom of the SS *Smith Voyager* was found to be flooded on the morning of 16 December 1964. The night before the flooding occurred the oiler on watch had attempted to enter the steering engineroom but the weather was too bad and he was unable to get into the steering engineroom from deck. After the flooding was discovered the first assistant engineer, Mr. Sidney G. Saha, was relieved shortly after 1000 by the chief engineer. Mr. Saha went back into the steering engineroom where he found 12 to 15 inches of water that was being bailed out by bucket brigade. To drain the remainder of the water from the steering engineroom, Mr. Saha burned a hole about 12 inches by 12 inches square, a distance of approximately 18 inches above the deck. The hole was burned at this level because Mr. Saha was unable to burn below the water. After siphoning the water from the steering engineroom through the large hole, a smaller hole, approximately 2 inches in diameter, was burned in the bulkhead near the deck. The first assistant engineer planned to weld a 2-inch nipple in this hole and cap it off, however, neither hole was ever repaired. The 2-inch hole was sufficient to drain the water from the steering engineroom into the shaft alley. At the time of the flooding of the steering engineroom, the starboard steering engine motor was in use. The starboard motor was secured and attempts were made to start the port motor, however, when it was energized the motor started to burn and the port steering engine motor lost a coil. The *Smith Voyager* proceeded without steering from about 1000 to 1230 until the water had been removed from the steering engineroom. The starboard steering engine motor operated properly after the water had been removed from the steering engineroom. The flooded steering engineroom was reported to Kraine, the electrician, at 0900 on 16 December 1964. The electrician noted that the water level came up to the steering motors in the steering engineroom, which he estimated were mounted approximately 2½ feet above the deck. At the time Mr. Arthur P. Gilbert, second assistant engineer, observed the water in the steering engineroom, he found it to be approximately 2 or 3 feet in depth. The depth of the water in the steering engineroom, according to Mr. James R. Eidson, third assistant engineer, was 2½ feet.

19. Approximately 4 inches of water were noted in the steering engineroom by Kraine, the electrician, before the vessel arrived at Freeport. Mr. Bennett, the chief officer, had also noted on the passage from Houston to Freeport that there was a small amount of water in the steering room, approximately 2 or 3 inches, "sloshing about" due to the leak in the rudder stock gland.

20. After sailing from Freeport, Grand Bahama Island, B.W.I., on 15 December 1964, a slight starboard list was noticed by some crewmembers, however, the majority of the crew did not note an appreciable list developing until the morning of 20 December 1964. On the morning of 20 December 1964 the master got up at about 0700 and found that a north-northeast gale was blowing, about Force 5 or 6. The barometer was steady. The SS *Smith Voyager* at this time had a 2° to 5° list, which the master attributed to having a heavy wind and sea on the port side. The wind and sea increased rapidly. The vessel started rolling moderately taking an occasional heavy roll. The master changed course from 081° True to 135° True to place the wind on the quarter and allow some drums, lashed on the starboard side of the after deckhouse, to be resecured. One of the drums in a group, lashed together with manila, started to come adrift. Another group of the drums containing fish oil were secured with wires and turnbuckles. The drums were resecured between the hours of 1000 and 1115 by the boatswain, James Wright, and Per Johansen, able seaman. After the drums were resecured the master reduced the speed of the main engines from 73 revolutions per minute to 60 revolutions per minute and altered course again to his original course of 081° True. The captain then brought the SS *Smith Voyager* over to 060° True to ease the vessel. At 1150 the master brought the vessel over to a southerly course, about 160°, in a further effort to ease the strain on the vessel due to the wind and sea.

21. The chief mate, Mr. Fred A. Bennett, first noticed a list at or about 1000 on 20 December 1964. The wind and seas were on the port beam of the *Smith Voyager* and Mr. Bennett was not disturbed by the list because it was scarcely noticeable on the ship which was rolling 15° to 20°. He noted that the wind was then around Force 8 or 9. From 1000 to noon the starboard list of the SS *Smith Voyager* increased.

22. Mr. James C. Gilmore, the second officer, noted that after leaving Freeport, Grand Bahama Island, B.W.I., on 15 December 1964, the weather was mostly from ahead of the ship. The winds were Force 5 to 8 with some light spray coming over the bow and port side. Several days after leaving Freeport the wind shifted to the northeast and Mr Gilmore, the second officer, had his men go around the deck and turn the ventilators away from the windward side. During the night of 19 December 1964 the weather became considerably worse and when Mr. Gilmore went on watch at 0400 on 20 December 1964 he had his men make constant tours about the vessel, checking watertight doors, the doors leading into the quarters, the lifeboats, the oil drums and all heavy equipment that could shift. The ship was favoring the starboard side slightly as it rolled. The second mate attributed this slight starboard list to unsymmetrical weights on the ship, possibly caused by the use of fuel oil from the port tanks.

23. Mr. Robert Coyne, third officer, noted that several days out of Freeport, Grand Bahama Island, B.W.I., the SS *Smith Voyager*, proceeding on a course of 081° True at a speed of 73 revolutions per minute, ran into heavy weather and started taking heavy seas and spray over the port bow. He could recall no list on the SS *Smith Voyager* after leaving Freeport, until his 8 to 12 watch on the morning of 20 December 1964. On this watch he observed that the weather was overcast and the wind was Force 8 with gusts up to Force 10 from the north-northeast. The height of the seas was estimated by Mr. Coyne, the third officer, to be 20 feet. No soundings of the holds were made on the morning of 20 December 1964 due to water on the deck. On prior trips of the *Smith Voyager* it had been the practice for the soundings to be reported to the third mate, Mr. Robert Coyne, while he was on the bridge on his 8 to 12 watch. On the last trip of the *Smith Voyager*, however, no soundings were presented to Mr. Coyne on the bridge during his watches.

24. Sidney G. Saha, the first assistant engineer, went on watch at 0800 on 20 December 1964 and noted for the first time that the vessel was listing to the starboard but he did not determine the amount of list. It seemed to Mr. Saha that the wind and sea heeling the vessel to the starboard accounted for this list. At the time Mr. Saha relieved the second assistant engineer, Arthur P. Gilbert, he was warned to stay away from the log desk because of the water spilling from the condenser gooseneck vent as the ship was rolling fairly heavily. On the 8 to 12 watch on the morning of 20 December 1964 the sanitary pump was inoperative as its controller had grounded and burned out a wire. The electrician was engaged in the repair of

the sanitary pump and experienced some difficulty in removing the board from the controller box. At about 1130 the first assistant engineer discovered a leak in the main condenser. He called the chief engineer and the leak was stopped by the introduction of sawdust into the condenser. At or about 1207 a steam leak was detected in the main steam line between the throttle and the "wye" connection to the boilers. The insulation was removed and it was found that the gasket was leaking and that the nuts on the studs holding the flange were slightly loose. The steam was secured and the nuts tightened but the engineroom was abandoned before steam was placed back on the line.

25. The second assistant engineer, Arthur P. Gilbert, did not become aware of a list on the SS *Smith Voyager* until the morning of 20 December 1964. At 1130 or 1145 the chief engineer told the second assistant engineer that he had talked to the captain about the list and had advised him that it was not due to the fuel and water, since the tanks were even at that time. After the captain had noticed a permanent list of approximately 10°, the chief engineer, Mr. Cornelius D. J. Veenstra, told the captain that he did not shift anything down below. The captain ordered the water on the starboard side to be transferred to the port side, and that if necessary, to transfer fuel to the port side. The chief engineer suggested to the first assistant engineer that they try to pump water into the empty double bottom tanks on the port side. The No. 4 port double bottom tank was slack and water was transferred into this tank from the starboard double bottom tank. Fresh water was also transferred from the starboard No. 4 double bottom tank to the forepeak. The second assistant engineer started to pump ballast into No. 2 port double bottom at or about 1215, a few minutes after the ship had stopped. Soon after ballast was started into No. 2 port double bottom, the engineers were told to leave the engineroom. The bilge pumps were not utilized to pump the holds on the *Smith Voyager,* and no attempt was made to take a suction on the holds after the list had developed. The second assistant engineer noticed an increase in the list 15 or 20 minutes after the engines were stopped. Then, at 1230, the ship took a big roll and did not come back. This was noted by the second assistant engineer to be about 30 minutes after the engines were stopped.

26. Mr. James R. Eidson, third assistant engineer, had noticed a slight starboard list during his midnight to 0400 watch on the morning of 20 December 1964 by observing the clinometer forward of the log desk. When Mr. Eidson went back on watch at 12 noon on 20 December 1964, he noticed the vessel listed still more to starboard. After the leak developed in the main steam line and the engine was secured he noted that the list became much worse. While working in the engineroom on the 12 to 4 watch, John W. Kraine, the electrician, noticed smoke behind the main generator port distribution panel. He went behind the switchboard and found that water was running down the starboard bulkhead. The water appeared to be spraying from the starboard side of the ship in way of a frame with a force behind it, as if there were a crack in that area. The stream of water sprayed approximately 8 inches from the side of the ship. The spray emanated approximately 1 foot from the overhead. This spray was observed by Kraine between 1230 and 1300. One of the able seamen reported to the Master that there was water coming through the fidley door to the passageway. The Master went to the fidley and found that there was an overflow. The chief engineer advised the captain that this overflow came from the main condenser vent.

27. Mr. Roy L. Perkins, the radio officer, had noticed the list somewhat earlier than the captain and the other officers. On the late afternoon and evening of 19 December 1964, Mr. Perkins noticed that with the north-northeasterly winds, the vessel had a list more to the starboard than to the port. This list became more noticeable to Mr. Perkins on Sunday morning, the 20th of December 1964. At 0800 on the morning of 20 December 1964, while Mr. Perkins was eating, he noticed a very heavy roll of the SS *Smith Voyager* to the starboard. This roll was heavy enough to break loose a number of things in the radio room, including cans of paint that had been tied down. A 5-gallon jug of water was broken and all of the books and papers were tossed about the radio shack. At about 1000 Mr. Perkins noted that the ship experienced another heavy roll. Shortly after this Mr. Perkins went up to the bridge where Mr. Robert Coyne, the third officer, was on watch, and noted the engine speed indicator which showed the ship to be proceeding at 72 revolutions per minute. Mr. Perkins then returned to the radio room and again around 1100 the vessel took another heavy roll to starboard, which broke articles loose in the radio shack and threw Mr. Perkins and his chair against the starboard bulkhead. By this time a definite permanent list to starboard was noticeable by Mr. Perkins.

28. At approximately 1230 on 20 December 1964, Mr. Fred A. Bennett, the chief officer, and James Wright, the boatswain, inspected No. 1, No. 2, and No. 3 upper 'tween decks and found that there was no evidence of unusual shifting of grain. The feeders were apparently intact. This inspection was made with flashlights. First they went to No. 3 hold and opened the escape hatch while the chief officer went down into the 'tween deck and walked back and forth and looked around. The chief officer then inspected No. 2 and No. 1 holds by pushing aside the screening in the escape trunk vents and shining his light across the top of the grain. He found that everything appeared to be in proper order although the grain was approximately 2 feet from the overhead after settling. At the time of this inspection the grain had not run down to the starboard side to any extent. There was no evidence of damage to the bins or the feeders. The entryway to No. 1 and No. 2 upper 'tween decks is at the forward end of No. 2 hatch. There is an escape trunk located at the break of the forecastle on the port side. No grain was observed outside of the feeders and the grain fittings seemed to be in good order. The common loaded No. 4 and No. 5 hatches were inaccessible, since the escape trunks were filled with grain, so they could be checked only externally by observing the mast houses and the tarpaulins covering the hatches. After the chief officer and the boatswain inspected the cargo holds, the chief officer reported back to the captain that conditions were well in No. 1, No. 2 and No. 3 hatches and that nothing had shifted. After this inspection the vessel slowed down and lost its steerageway and was wallowing with her beam to the northerly swell. Mr. Charles L. Jackson, third mate, became aware of the list of the SS *Smith Voyager* when he went to the bridge at 1150 on the morning of 20 December 1964 to relieve Mr. Robert Coyne, the other third mate. The captain was on the bridge at this time and the list was observed by Mr. Jackson to be approximately 10°. Mr. Jackson observed the chief officer and the boatswain as they were checking the holds and he noted that the list of the SS *Smith Voyager* was still approximately 10°. Mr. Jackson answered the bridge telephone and one of the engineers told him that they would have to stop the engines due to a leak in the main steam line. The ship had

enough way on her to continue on course for some time before it stopped. While the ship was laying dead in the water and wallowing, the list increased rapidly to 20°. The list thereafter rapidly increased and remained at least 30° to starboard.

29. Mr. Coyne, the third officer, after being relieved at approximately 1150, filled in his logbook and left the bridge at about 1200. When he returned to the bridge at or about 1230, there was a tanker visible about 4 miles away on the starboard bow and the SS *Smith Voyager* was flying two black balls. Unsuccessful attempts were made to contact the tanker by flag signals and flashing light until it passed from view. The SS *Smith Voyager* was unable to identify the tanker or to see her stack marks with glasses. The radio officer, Mr. Roy L. Perkins, gave continual CQ calls to the tanker but it did not answer, although answers were received from several other ships. One answer, which the radio officer could remember, was received from an American ship, the SS *Edward Luckenbach,* which was told to stand by since the SS *Smith Voyager* may be in trouble. These calls continued for approximately 15 or 20 minutes. The radio officer returned to the radio shack later and gave out the XXX, or urgency signal. A reply was received from three or four ships which he could not later identify. These ships were told to stand by since the SS *Smith Voyager* might be in trouble. By this time the radio officer noticed the list had increased to 30° or 35° and that the ship was rolling more to starboard. At approximately 1300 the radio officer noted that the SS *Smith Voyager* took the heaviest roll to starboard yet. After talking to Captain Mohle the radio officer went back to the radio shack and told the ships in the vicinity to stand by for a possible SOS. The only ship that the radio officer was able to remember contacting at this time was the M/S *Mathilde Bolten.* Approximately 15 minutes later the SS *Smith Voyager* took another similar heavy roll to starboard after which the captain told Mr. Perkins that No. 4 hold had opened up and ordered him to call for help. At 1318 the automatic alarm was activated and an SOS was sent. At 1320 the ships standing by were told that the crew of the SS *Smith Voyager* was going over the side in a few seconds and that the radio operator would have to leave. At this time the M/S *Mathilde Bolten* was 7½ miles away and had the SS *Smith Voyager* in its radar. By this time the main power source had been lost and the radio messages were sent by using emergency power. The radio officer experienced difficulty in keying his radio messages due to the fact that his chair, which was not attached to the deck, slid to starboard due to the list and roll of the SS *Smith Voyager.* It was necessary for Mr. Coyne, the third officer, to hold his chair while he transmitted the distress message. Mr. Perkins recommended that the radio room chair be of a swivel type with arms and bolted to the deck.

30. The radio officer also experienced some difficulty in obtaining the noon position as the conditions of distress developed on board the SS *Smith Voyager.* When the noon position finally was given to the radio operator, he found that the longitude was given as east in lieu of west. This mistake, however, was noticed and corrected. The radio officer made a recommendation that a copy of the noon position report be furnished the radio room for ready reference each day as soon as it was obtained.

31. Due to the list and rolling of the SS *Smith Voyager,* the radio officer had also experienced difficulty in contacting a passing tanker by means of a hand held signal light. He recommended that a stationary signal light be installed

on the yard arm which would be visible to ships in the area without the necessity of aiming the light in the direction of the ship.

32. The general alarm had been rung by the chief officer at the master's command, with an intention to have everybody in lifejackets. The signal consisted of one constant ring of the general alarm for approximately 10 seconds. No. 1 lifeboat was still secured in place at the time the general alarm was sounded.

33. The captain, upon looking aft and finding No. 4 hatch cover bulging, assumed that No. 4 hatch had "let go." He ordered the chief officer to launch the starboard lifeboat and get it clear to prevent it from being damaged.

34. The chief officer and a fireman-watertender, John Keeler, went into the No. 1 boat to clear it away. At this time lifeboat No. 1 was receiving the force of the seas on the starboard side and was being lifted up into the davits. The boat was lowered down to the embarkation station at about 1320 so that the portable radio and other items could be placed aboard, and a sea painter attached. At this time the master gave the order to let No. 1 boat go and said, "Get the releasing gear." As the boat was violently jammed underneath the davits by the force of the seas before being released, it took on a quantity of water and the chief officer was considerably shaken.

35. After the boat was released on the sea painter, it at first drifted away from the side of the ship. While the lifeboat was approximately 50 to 100 feet from the side of the SS *Smith Voyager* the captain saw a number of men taking to the boat by means of the lifelines attached to the davit span. As the boat started to drift back toward the side of the SS *Smith Voyager,* the sea painter was lengthened and the boat drifted back toward the stern of the SS *Smith Voyager* where the remainder of the crewmembers who abandoned the ship took to the boat. The lifeboat continued to take water as the seas broke over it. The bailing and the use of the bilge pump were ineffective. As the lifeboat left the lee of the ship it broached and filled completely with water. The boat settled with its gunwales near the surface of the water. After it was found to be impractical or impossible to row the boat, many of the crewmembers allowed their oars to drift away.

36. As the radio officer took out the collapsible antenna and prepared to put it together and activate the radio, a wave broke directly over the boat and bent the antenna to such an extent that it could not be put together. By this time the boat was full of water and the transmitter, which was lashed to a thwart, was 4 to 6 inches underneath the water. The radio officer had advised the ship, which he had contacted, that he would be sending DR signals with the portable lifeboat radio. Since the antenna of the portable lifeboat radio was damaged beyond repair by the waves breaking over the lifeboat he was unable to transmit signals from the lifeboat. Mr. Perkins recommended that a permanent installation be fitted in lifeboats and that the transmitter should be of a waterproof type that could be placed overboard free of the boat and attached by a chain or other fastening device.

37. While the lifeboat was near the stern of the SS *Smith Voyager,* Buster Harris, ordinary seaman and Manuel Diaz, deck maintenance, jumped from the fantail but were swept away from the boat. James Wright, the boatswain, and Donald Covert, able seaman, assisted these persons in getting to the lifeboat. While awaiting the arrival of the M/S *Mathilde Bolten* several of the occupants of the lifeboat were washed out of the lifeboat but assisted back in by the other occupants. Mr. Gilbert, second assistant engineer, was washed out of the lifeboat three or four times after it swamped. John T. Gorey, machinist, was also washed out of the lifeboat four or five times.

38. When John T. Gorey reached the lifeboat he found that the water was nearly up to his knees and he had no place to sit, so he stood up in the after part of the lifeboat. There were other men standing at this time. These persons were finally able to arrange themselves so that they were able to sit down. The first assistant engineer, Mr. Sidney G. Saha, the third officer, Mr. Coyne, and John W. Kraine, the electrician, were the last persons to leave the *Smith Voyager* from amidships. The chief officer, Mr. Fred A. Bennett, gave the order to get the oars out and try to keep the lifeboat from smashing against the *Smith Voyager.* There were two or three oars out by the time Mr. Coyne reached the lifeboat; however, rowing had not been effective. Mr. Coyne, the third officer, grabbed a steering oar and attempt to work the boat away from the SS *Smith Voyager* when it appeared that the lifeboat was going under the counter. The sweep oar was used in an oarlock.

39. Before the lifeboat filled with water, the efforts of Mr. Coyne, the third officer, to steer the lifeboat with a sweep oar were somewhat successful. Approximately three oars were being used to row the boat at this time. The first officer was in the bow of the boat, the second officer was in the center of the boat and the third officer was in the stern of the boat. It was unknown whether or not the plug was in the lifeboat but Mr. Coyne had checked the plugs in Houston and found them to be clear and working properly. After the boat filled with water and swamped, Mr. Coyne, the third officer, suggested that the men who could swim should jump out and hold on to the side of the lifeboat. John T. Gorey, machinist, James Wright, the boatswain, John W. Kraine, the electrician, Herbert C. Tenney, able seaman, and Roy L. Perkins, the radio officer, got out of the lifeboat. After Gorey was outside the lifeboat in the water for approximately 1 hour, he became exhausted and was helped back into the boat.

40. The M/S *Mathilde Bolten* hove into view and approached the lifeboat very slowly, headed into the sea and swell. The *Mathilde Bolten* had lifelines, ladders, and cargo nets over the side and also a heavy nylon hawser stretched the length of her hull. The *Mathilde Bolten* had a light cargo of automobiles and was rolling considerably with a 27-foot freeboard. As the *Mathilde Bolten* approached the lifeboat, that vessel threw the boat a line. The boatswain, James Wright, who was in the water with Mr. Coyne, swam forward and went out to get the line. As the *Mathilde Bolten* came closer it threw another line and Mr. Coyne attempted to swim out and get that one and attach it to the stern of the lifeboat. During the last moments, while the lifeboat was broadside with the starboard side of the boat toward the *Mathilde Bolten*'s port side, a high swell caught the lifeboat and carried it rapidly alongside the *Mathilde Bolten.* Mr. Coyne turned around and saw that the lifeboat was coming at him, with him between the boat and the ship, so he started to swim aft of the lifeboat as fast as he could. Upon reaching the ship he hung on a hawser that was stretched along the side of the *Mathilde Bolten.*

No orders or instructions had been issued to the persons in the lifeboat and no advance preparations had been made in the lifeboat for transfer of personnel to the *Mathilde Bolten.* After the lifeboat was carried alongside the ship a few members of the crew immediately grabbed the ladders and cargo nets and began scrambling up. Then the lifeboat dropped down with the wave. The next time the

boat came up, some of the crewmembers again tried to grab the ladders and cargo nets but the combination of the angle of the sea hitting the side of the boat and the distribution of weight with a number of the crew on the inboard side of the lifeboat caused it to capsize. A few of the crewmembers were on the outboard side leaning back as far as they could attempting to balance the boat. Mr. Saha, the first assistant enginer, Mr. Gilbert, the second assistant engineer, Mr. Perkins, the radio officer, and one able seaman were some of the persons remaining on the port side of the lifeboat. After it capsized, some of the crewmembers righted the lifeboat by pulling on the keel and guard rail.

The *Mathilde Bolten* started taking the men on board at 1539. By 1627 all of the survivors and the four deceased had been taken on board the *Mathilde Bolten*. Some of the men were able to climb up the cargo nets and ladders to the deck of the *Mathilde Bolten*. Other occupants of the lifeboat were hoisted to the deck of the *Mathilde Bolten* by the means of lines. Several crewmembers of the *Mathilde Bolten* went down into the lifeboat and into the water to assist the survivors. Eckart Linke of 1120 Plateau Avenue, Santa Cruz, Calif., who was serving on board the M/S *Mathilde Bolten* as messboy, was one of the crewmembers who went down the side of the ship, held the heads of several survivors out of the water and attached lines to some of the persons in the lifeboat.

41. Mr. Cornelius D. J. Veenstra, the chief engineer, had been sitting very quietly in the after part of the boat before it capsized. He was observed to be crushed between the lifeboat and the side of the ship several times while hanging to a line from the *Mathilde Bolten*. After the boat was righted the first assistant engineer, Mr. Saha, observed the chief engineer's body floating face downward. The last time that Mr. Saha had seen the chief engineer was when he was sitting in the after end of the lifeboat. After the chief engineer's body was retrieved, he was lying on his back with blood coming from both sides of his mouth. Mr. Veenstra was buried at sea at 1349 on 23 December 1964 from the M/S *Mathilde Bolten* at 19°12′ N., 64°54′ W. at the request of his next of kin.

42. While Mr. Sidney Saha, the first assistant engineer, was assisting the other crewmembers in righting the boat, Mr. George L. Davis, oiler, came up under his arm, pulling on his lifejacket. Mr. Davis was mumbling incoherently and the first assistant engineer was unable to understand anything that he said. Mr. Saha tried to pull him up by his waist and get him on top of the boat but while doing this Mr. Davis collapsed in his arms, apparently dead. Mr. Davis had at one time been observed between the lifeboat and the side of the ship by Donald J. Covert, able seaman.

Mr. Eli Jones, third cook, was observed to fall between the lifeboat and the ship while hanging to a line or the cargo net on the side of the M/S *Mathilde Bolten* by Donald J. Covert, able seaman. Mr. Perkins, the radio officer, saw Mr. Eli Jones at some time after the boat capsized floating on his back with his face several inches under water. His eyes were open and there was no movement. Five or ten minutes before the boat capsized John T. Gorey, machinist, had observed Mr. Eli Jones, in the after part of the boat, praying.

Mr. Vernon M. Brown, steward-utility, was observed by John W. Kraine, electrician, between the lifeboat and the side of the ship as the boat came up against the ship several times. Donald J. Covert noted no visible crush marks on Mr. Brown and he was given respiration in one of the messhalls on board the *Mathilde Bolten*. It was reported to Mr. Perkins, radio officer, that Mr. Brown scrambled up to a ladder on the cargo net almost to the deck of the *Mathilde Bolten* when he suddenly let go and fell back into the water.

The bodies of Mr. George L. Davis, Mr. Eli Jones, and Mr. Vernon M. Brown were turned over to a mortuary at San Juan, P.R. The cause of their death as listed on the death certificate was "due to drowning".

43. Various members of the crew indicated that they had received cuts, bruises, lacerations, and abrasions. Three men were placed in the hospital of the *Mathilde Bolten*. They were Connie C. McCalla, messman; Alfred Ita, messman; and Joseph H. Charles, fireman/watertender. Joseph H. Charles did not have any specific visible injuries; however, he ran a temperature for a while and had chills and suffered from shock. Lester E. Carruth, able seaman, spent most of the time that he was on the *Mathilde Bolten* in a bunk in the carpenter's room. Alfred Ita was hospitalized as a result of an ulcerated leg condition after it was discovered on board the *Mathilde Bolten* that the man's legs were bandaged. Connie C. McCalla was hospitalized for a suspected broken collar bone and injuries to his wrist and chest. Soon after the crewmembers were in the lifeboat Captain Mohle slipped and fell on the bridge deck and sustained a cut on his forehead. First aid was administered by Mr. Jackson, the third officer.

44. After all persons were in the lifeboat, Mr. Jackson, the third mate, went into the engineroom and secured the watertight door between the engineroom and the shaft alley which he found to be open. There was no water in the engineroom. Mr. Jackson went to the messhall and found that one of the portholes was open and that the messhall was flooded. The weathertight door on the main deck starboard side, forward, had been disassembled several voyages prior to the last trip of the SS *Smith Voyager* but was reassembled without being repaired because the parts were not available on the ship. After the SS *Smith Voyager* listed on 20 December 1964, the door on the starboard side leading to the outside let water run through it. The dogs were secured but daylight was visible between the edges of the door. The weathertight door on the starboard side leading aft also leaked and permitted water to enter the midship house. On the morning of 25 December 1964, the third mate, Mr. Jackson, went into No. 2 and No. 3 hatches and observed that No. 2 and No. 3 feeders had carried away on the starboard side and that No. 2 feeder had collapsed inwardly on the port side. Grain was spilled out to the starboard side of the hold around the feeders. It appeared to Mr. Jackson that the feeder had disintegrated. The sheets of plywood had become dislodged allowing the wall on the feeder on the starboard side to collapse. All of the grain had spilled out in the upper 'tween deck and had gone to the starboard side. The list of the *Smith Voyager*, at the time of the inspection by Mr. Jackson, was 35° to 38° to starboard.

45. The U.S. Coast Guard Cutter *Rockaway* (WAVP–377) arrived in the vicinity of the *Smith Voyager* at or about 0910 on the morning of 21 December 1964 and the Norwegian vessel, M/S *Heoge Fulmar*, which had been standing by departed the scene. The captain, the third mate, and the two able seamen were removed from the SS *Smith Voyager* by the *Rockaway's* pulling boat on the afternoon of 21 December 1964 at 1700 or 1730. The transfer was accomplished by the *Rockaway's* boat, a 26-foot Monomoy, with a crew of 12 men. At the time of the transfer the wind was approximately 30 knots, the skies overcast, and the swells 20 to 25 feet. The SS *Smith Voyager* was lying in the trough, port side to windward, and heeling to starboard approximately 35°. Her main

deck gunwale was under water and her boat deck was going under periodically as the vessel wallowed. Air drops had been made by two airplanes the previous night but the rubber raft that the SS *Smith Voyager* received had carried away in the early afternoon. The raft had been kept run out to leeward about 30 feet from the *Smith Voyager*. The four survivors remained on the USCGC *Rockaway* until 23 December 1964 when they were transferred to the USCGC *Spencer*. On 24 December 1964 the weather subsided somewhat and a boarding party from the USCGC *Spencer* including the third mate and the two able seamen went aboard the SS *Smith Voyager*. The three crewmembers of the SS *Smith Voyager* remained aboard that vessel until 25 December 1964 when they transferred to the tug *Marinia* upon its arrival from Bermuda. The master was also transferred to the *Marinia*. The tug *Elbe* from the Azores arrived the following morning, 26 December 1964 and the SS *Smith Voyager* proceeded toward Bermuda in tow. At 0723 on 27 December 1964 the SS *Smith Voyager* sank in position 28–30 N., 50–48 W.

46. The crew of the SS *Smith Voyager* did not replace No. 4 deep tank covers prior to loading No. 4 hatch above them. It could not be determined if they were replaced by the stevedores. Approximately 4 hours are required for a gang of four or five men to replace and secure by bolting in place the four deep tank covers in No. 4 hold. The size of the openings to the deep tanks were approximately 20 by 20 feet. The covers were secured by bolts around the edge. The manholes were approximately 2½ feet in length and 1½ to 2 feet in width. During the loading operation, Mr. Coyne, third mate, inspected the trimming holes in the upper 'tween deck to insure that the covers had been removed. The covers had been slid to the side. The big opening cover to No. 4 deep tank had also been slid to the side. Mr. Coyne did not know whether or not the cover to the deep tanks was replaced after it had been loaded with grain. When Mr. Coyne, third mate, inspected No. 4 deep tanks prior to loading, he found a great deal of rust before the tanks were cleaned; but no signs of seepage or water and did not observe any indentations or buckling. No. 4 deep tanks were again inspected by the third mate, Mr. Coyne, after shifting boards had been installed and the tanks were cleaned. Burlap was placed around the bilge suctions in the deep tanks. Lukens, A.B., stuffed burlap up into the suction lines as far as possible prior to loading the cargo.

47. The logbooks and some of the officers' licenses were lost and were not retrieved. Mr. Saha, the first assistant engineer, had the engineers' licenses but he lost them during rescue operations. Some of the mates' licenses were given by Mr. Coyne, the third mate, to the captain who put them in his bag. The licenses were later returned by the owners. While the SS *Smith Voyager* was being abandoned on 20 December 1964, the captain was on the cabin deck and handed down to Mr. Coyne, on the boat deck, one big satchel and a black briefcase. He dropped the large satchel down to Mr. Coyne, and said, "This isn't too important," and Mr. Coyne handed that bag to an A.B. The captain then said that, "this is the important bag," meaning a black thick one. Mr. Coyne suggested that the captain tuck the black bag inside his belt. The satchel was placed in the lifeboat but was found to contain only some cigarettes and personal articles belonging to the captain. The master retained the briefcase which was about 4 inches thick. Before leaving the SS *Smith Voyager* and going to the USCGC *Rockaway's* boat on 21 December 1964, the captain placed one logbook in a package which was thrown overboard, attached to a ring buoy. This package became dislodged and the logbook came away from the package. The third mate, Mr. Jackson, had one of the logbooks in an attache case with his papers. He made it fast to a ring buoy and as the pulling boat from the USCGC *Rockaway* came alongside to take them off he threw it overboard. The *Rockaway's* boat at one time was near one of the logs but was unable to reach it with the boat hooks. The *Smith Voyager* was being set down on the *Rockaway's* boat rapidly and the boat had to move. Mr. Coyne, the third mate, took with him a thin small briefcase buckled in his belt, containing his personal papers. The second mate was able to take a sextant with him. The engineroom log remained in the log desk drawer. Mr. Perkins, the radio officer, was able to take with him the radio log sheets and copies of the messages transmitted by him.

48. Five lifejackets from the SS *Smith Voyager* were retrieved by the USCGC *Rockaway*. Three of these lifejackets bore the stencil marking *Smith Voyager* and two bore the stencil marking *Smith Crusader*. Four of these lifejackets were worn by the survivors removed from the *Smith Voyager* by the *Rockaway's* boat. The fifth lifejacket was wrapped around one of the packages picked up by the *Rockaway's* boat. One of the lifejackets marked *Smith Voyager* was last stamped in January 1961 and did not have vinyl protected kapok inserts.

Four more lifejackets were retained by crewmembers of the SS *Smith Voyager* and brought back to New York by them where they were given to the National Maritime Union and later produced before the Marine Board of Investigation. One of these lifejackets was marked *Smith Crusader* and the other lifejackets were marked *Smith Voyager*. The lifejacket marked *Smith Crusader* did not have vinyl protection over the kapok insert. This lifejacket was last stamped Tampa, Fla., in August 1964.

The lifejackets marked *Smith Crusader* had been transferred from that vessel to the SS *Smith Voyager* in Palermo, Sicily, in January 1964. The *Smith Crusader* was sold for scrap at Palermo, Sicily, and the vessel had on board some stores including lifejackets which were transferred to the SS *Smith Voyager* when the SS *Smith Voyager* stopped in Palermo for approximately 12 hours in the early part of 1964. Most of the *Smith Crusader's* lifejackets were stored in an after storeroom of the SS *Smith Voyager*. The SS *Smith Voyager* had a sufficient number of lifejackets for each crewmember without counting the lifejackets from the SS *Smith Crusader* placed in the storeroom and most of the lifejackets from the SS *Smith Crusader* were not stamped during the biannual inspection at Tampa, Fla., in August of 1964.

49. The evaporator of the SS *Smith Voyager* was not operating properly at the time the ship sailed from Houston, Tex., on 12 December 1964 and the engineers were unable to properly repair it during the trip. The evaporator had not operated properly on several prior voyages and was subject to continual trouble. In every port the SS *Smith Voyager* had to take on fresh water. On the previous trip of the SS *Smith Voyager*, the evaporator which is rated at 20 to 25 tons per day, was producing 10 tons per day. The evaporator was opened up by the engineers and the tubes were found to be badly salted. In attempting to break off the layer of salt, the engineers found that the tubes had previously been manually pulled and that some of the tubes on the bottom were bent and were not properly spaced. The improper spacing prevented the scale from falling from the tube nest when the tubes were shocked and cleaned. The SS *Smith Voyager* was using approximately 20 tons of water per day on its passage from Houston to Freeport. The evaporator was in opera-

tion in Houston but it did not make enough water to keep up with the consumption of water, even in port. Although the master of the SS *Smith Voyager* testified that he instructed the chief engineer, Mr. Veenstra, to dump any fresh water overboard on the passage from Houston to Freeport, that he did not need, there was no water "dumped overboard" to the knowledge of any of the surviving crewmembers of the SS *Smith Voyager*.

50. Before the SS *Smith Voyager* was abandoned on 20 December 1964, it was noticed that the tarpaulin covering No. 4 hatch was raised several inches. It could be seen that some of the hatch boards under the tarpaulin were dislodged to some extent. At first, it was assumed by the captain and some of the crewmembers that the bulging in the No. 4 hatch cover was due to a leak in No. 4 hold allowing water to enter and causing the grain to swell. The slight bulge in the hatch cover did not increase, however, and the bulkhead of No. 4 hold, which was clearly visible from the engineroom, was not bulged. There was no grain in the water around the SS *Smith Voyager* to indicate that a large rupture had occurred. Although No. 4 hold was covered with four tarpaulins some of these tarpaulins had small holes in them. The tarpaulins remained in place for 7 days while seas were washing over No. 4 hatch. There was no visible change in the position of the hatch boards and the grain showed no further evidence of expansion.

51. After the SS *Smith Voyager* grounded on 9 December 1964 while shifting from Jacinto Terminal to Goodpasture Elevator, water was found in the fuel oil settling tank on or about 10 December 1964 causing a loss of steam pressure in the boiler. The fuel in the settling tank had been pumped from No. 3 starboard double bottom tanks prior to finding water mixed with the fuel. After water was discovered in the starboard settler, Mr. Gilbert, second assistant engineer, waited 8 hours to determine if the tanks were leaking after the grounding, but found that there was no rise in level in either the starboard settling tanks on the double bottom from which the fuel had been pumped. The contents of the settling tank, approximately 400 barrels, were pumped into No. 5 starboard double bottom. Mr. Gilbert, the second assistant engineer, was of the opinion that the water got into the fuel system from the ballast system since the ballast pump had previously been used to pump the bilges. After the water was discovered, the chief engineer, Mr. Veenstra, directed that the bilge pump be used to pump the bilges instead of the ballast pump.

52. In the summer of 1963, a cargo of bagged flour had been damaged by water in No. 4 hold of the SS *Smith Voyager*. After the cargo damage, no leak could be found by inspection although the clapper valves in the drain lines leading overboard through No. 4 hold were replaced. In the earlier part of 1963, approximately 27 plates had been replaced on the bottom of the SS *Smith Voyager* while it was in dry dock in Galveston, Texas. Most of these plates were bottom plates in way of No. 2 and No. 3 holds.

53. On 3 December 1964, a fire occurred in the brushes on the outboard generator, so Mr. Cromwell, the night engineer, started the inboard generator and secured the outboard generator. After a few watches the inboard generator ceased to function properly. The governor failed to control the speed of the generator and the speed of the inboard generator was controlled manually for 2 days by the steam supply valve until the outboard generator was cleaned and the brushes were renewed. With the inboard generator on the line the circuit breaker tripped from overloading as winches were being used. Several blackouts occurred and the condition of the inboard generator was reported to the master by Mr. Cromwell, the night engineer. The inboard generator at one time overspeeded and blew out numerous light bulbs and damaged the condensate pump motor due to excessive voltage. The governor of the inboard generator was dismantled before the SS *Smith Voyager* sailed from Houston. Repairs to the inboard generator were started upon departure from Houston and were completed the day before arrival at Freeport.

CONCLUSIONS

1. That the cause of the casualty to the extent determinable was a combination of factors occurring in the following sequence:

(a) The ship was overloaded which reduced her reserve buoyancy and reduced her ability to survive the adverse sea conditions encountered.

(b) The cargo of wheat was inadequately and improperly stowed which permitted the cargo to shift due to the ship's rolling resulting in an initial list of approximately 10° to starboard.

(c) At this point the grain feeders in No. 2 and No. 3 holds which were apparently of inferior design and construction collapsed spilling grain to the low side of the ship causing an additional 10° of list.

(d) Due to the vessel's overload of cargo when the ship developed an approximate list of 20°, the weathertight doors and ports in the midship house were partially submerged and leaked which caused additional unsymmetrical weight to be added in the midship house on the main deck increasing the list to at least 30°.

(e) The water which came aboard through the weathertight doors and inadequately secured ports eventually found its way below the main deck and contributed to the sinking of the vessel by progressive flooding.

(f) The water which leaked into the ship through the rudder shaft packing gland due to the deep draft of the vessel flowed into the shaft alley because the watertight integrity of the steering engineroom and the ship had been compromised by the crew in effecting a temporary means of dewatering the steering engineroom. This water contributed to the progressive flooding of the ship and the eventual loss of the vessel.

2. That there is insufficient evidence to support a finding that cracks existed in the shell plating. Although one crewmember thought that some of the water running down the starboard shell plating in the engineroom, from the spaces above, appeared to be a spray of water emanating from a crack, there is insufficient evidence to show that a crack existed at that point. Although the slightly bulged cover of No. 4 hatch initially gave the crew of the *Smith Voyager* the impression that a crack had developed in way of No. 4 hold to cause a swelling of the grain, there is no evidence to support such a conclusion. The bulge did not subsequently increase. There was no evidence of any bulging of the forward bulkhead of No. 4 hatch, which was clearly visible from the engineroom, and no indication of any bulged shell plating. There was no grain in the water to indicate a rupture of sufficient size to allow swelling grain to fall from the No. 4 hold. It is probable that the bulge in No. 4 hatch cover was the result of the dynamic force of the grain against that portion of the cover as the ship listed and rolled.

3. That there is evidence that the failure of the joint in the main steam line was due to a blown gasket. This failure contributed to the casualty by preventing the ves-

sel from maintaining headway and proceeding on a favorable course to minimize the effects of the sea and the list. It is most probable that the blown steam joint was due, (*a*) to the nuts being loose on the studs; (*b*) to possible carryover of the boilers due to the excessive list; or (*c*) to abnormal stresses placed on the steam line by the severe list and rolls.

4. That there is evidence that the leakage of sea water through the portholes on the starboard side and the weathertight doors installed on the main deck, starboard side, greatly contributed to the casualty. It is believed that had these doors been watertight doors in good operating condition the effects of the list of the SS *Smith Voyager* would have been materially lessened and the ship would probably have been returned to port.

5. That there is evidence of misconduct on the part of Frederick W. Mohle, the master of the SS *Smith Voyager* (1) in that he wrongfully sailed from Freeport, Grand Bahama, B.W.I., on 15 December 1964, with the applicable loadline of the SS *Smith Voyager* submerged in sea water; (2) in that he, on 12 December 1964, at Houston, Tex., wrongfully failed to take reasonable care to prevent the SS *Smith Voyager* from departing from her loading port with such an amount of cargo that the vessel was unable to complete its intended voyage without submerging its applicable loadline when taking the necessary fuel; (3) in that he, on or about 9 December 1964, wrongfully failed to report the grounding of the SS *Smith Voyager* in Houston Ship Channel on 9 December 1964 to the Officer in Charge, Marine Inspection, U.S. Coast Guard, Houston, Tex.; (4) in that he, on 12 December 1964, wrongfully failed to take reasonable care to prevent the SS *Smith Voyager* from being loaded at Houston, Tex., with a hogged condition; (5) in that he, on 15 December 1964, wrongfully failed to enter the draft of the SS *Smith Voyager* in the vessel's log upon sailing from Freeport, Grand Bahama Island, B.W.I.; and (6) in that he, while testifying before this Marine Board of Investigation, on 5 January 1965, wrongfully made a false statement under oath, to the effect that he had fresh water dumped overboard at sea on the passage from Houston, Tex., to Freeport, Grand Bahama Island, B.W.I., on or about 14 December 1964.

6. That there is evidence of negligence on the part of Frederick W. Mohle, master of the SS *Smith Voyager,* (1) in that he, on 20 December 1964, while the SS *Smith Voyager* was at sea, failed to exercise proper command of that vessel by allowing the members of the crew to leave the vessel after a list developed; (2) in that he, on or about 20 December 1964, while said vessel was at sea, failed to require measures to be taken to maintain the engineering plant and to attempt to correct a list that had developed; (3) in that he, on or about 16 December 1964, while said vessel was at sea, failed to take reasonable care to maintain watertight integrity of the SS *Smith Voyager,* after a hole was burned between the steering engineroom and the shaft alley, thereby contributing to the sinking of the SS *Smith Voyager;* (4) in that he, on 20 December 1964, while said vessel was at sea, failed to take reasonable care to maintain all ports and weather deck doors properly secured, thereby contributing to the sinking of the SS *Smith Voyager* and the loss of life of four crewmembers; (5) in that he, on 12 December 1964, sailed from the Port of Houston, Tex., without taking reasonable care to ascertain that the necessary generators of the *Smith Voyager* were in proper operating condition; (6) in that he, on 15 December 1964, failed to determine and record the freeboard and draft of the SS *Smith Voyager* upon sailing from Freeport, Grand Bahama Island, B.W.I.; (7) in that he, on 12 December 1964 sailed from Houston, Tex., with incorrect stability calculations of the SS *Smith Voyage* said incorrect stability calculations resulting from his fa ure to include cargo that was loaded in the upper 'twe deck of No. 1 hold; and (8) in that he, on 9 Decemb 1964, while the SS *Smith Voyager* was underway in t Houston Ship Channel, maneuvered that vessel in such manner as to cause it to ground on the edge of the chann

Although there is evidence of a misunderstanding as whether the pilot ordered a slow ahead bell or a slo astern bell before the ship veered to starboard, the mast was in the wheelhouse and should have detected troub in the offing with a slow astern bell while releasing th tug. The master had excused the quartermaster and w himself at the wheel. He was in the best position to de tect improper orders relating to the rudder position an engine speed or incorrect responses to those orders.

7. That there is evidence of a violation of 46 U.S.C. by submerging the applicable loadline of the SS *Smit Voyager* in sea water approximately 9 inches at Freepor Grand Bahama Island, B.W.I., on 15 December 1964. report of violation has been prepared and submitted to th Commander, Third Coast Guard District (m).

8. That there is evidence of violations of 46 U.S.C. 6 by John F. Fitzsimmons, vice president in charge of opera tions, Earl J. Smith & Co., George W. MacLeod, marin superintendent, Earl J. Smith & Co., and Frederick W. Mohle, master of the SS *Smith Voyager,* by being partie to sending the SS *Smith Voyager* to sea in such an unsea worthy state that life of personnel was likely to be thereby endangered. The vessel was sent to sea in an overloaded hogged condition, with the inboard generator and several pumps inoperative, with the evaporator operating improperly, with insufficient distilled water for the boilers, with too much cargo to permit sufficient fuel to be carried for the intended voyage without submerging the loadline marks en route, with leaking airports and weather deck doors, with grain fittings unable to withstand the force to which they were subjected and without proper precautions being taken to insure that the covers to No. 4 deep tanks were secured in place. The instructions issued by John F. Fitzsimmons, vice president in charge of operations, in his letter to Captain Mohle, dated 27 November 1964, that upon *arrival* at Vizagapatam or Madras the vessel must be "on proper marks" with no instructions regarding the draft sailing from prior port is tantamount to authorizing the overloading of the *Smith Voyager* on departure.

9. That there is no evidence that any personnel of the Coast Guard or any other government agency or any other person contributed to the casualty.

10. The testimony of Donald J. Covert, A.B., to the effect that his lifejacket became completely watersoaked so that it weighed 25 pounds and immediately sank when he removed it is unreliable and of insufficient probative value to support a finding of fact. Although three lifejackets of the SS *Smith Voyager* that were recovered were not protected by the plastic covering and some of the lifejackets bore the marking "*Smith Crusader*" instead of "*Smith Voyager*", the lifejackets were in serviceable condition. Some of the lifejackets evidently suffered damage and wear during the abandonment and rescue operations when persons wearing them were hoisted from the water by their lifejackets. There was a sufficient number of lifejackets on board the SS *Smith Voyager* and some of the crewmembers wore two lifejackets.

11. That the absence of complete, grain-tight fore and aft shifting boards, or any requirement for them, throughout the entire length of all hatches, particularly in way of the hatch squares, contributed to the initial list by

allowing the cargo of bulk winter wheat, which was not completely trimmed and did not entirely fill all spaces to the overhead, to shift to a greater extent than would have been possible if the hatches had been so fitted.

12. That this casualty might have been prevented had the engineering plant and the main engine been maintained in operation to keep the SS *Smith Voyager* on a favorable course and speed and to pump water, fuel, and ballast. The one long ring of the general alarm bell evidently set in motion a chain of events which led to the engineering plant being prematurely secured and the vessel abandoned. No efforts were made to run the main engine even after the nuts on the leaking joint had been tightened.

13. That the loss of life of the four crewmembers after being caught between the lifeboat and the ship during the rescue operation might have been prevented if inflatable liferafts had been available and used for abandoning ship. Efforts to handle the lifeboat with three oars were unsuccessful. Lack of leadership prevented a reasonable attempt to manage the lifeboat.

14. That the rescue operations by the MS *Mathilde Bolten* were conducted in an efficient and creditable manner with many individual acts of heroism exhibited by the crewmembers who went down into the water to assist the survivors aboard. At least five of the crewmembers of the *Mathilde Bolten* were working on the net to assist the survivors. Some of them went down the net, held the heads of some of the survivors out of the water, and placed lines around some of the occupants of the lifeboat while the boat was surging against the side of the ship.

15. That the recommendations of Mr. Perkins, the radio officer, that the radio operator's chair should be fastened to the deck, that a stationary signal light in addition to the hand held signal light should be installed, and that a copy of the noon position report should be transmitted to the radio room for ready reference, have merit and should receive further consideration. In addition to the requirement that a copy of the noon position be furnished the radio room, it is considered that a requirement that the noon position be transmitted to some responsible person or agency such as the vessel's owner or the Coast Guard would be beneficial to the proper operation of ships and would promote safety of life and property at sea.

RECOMMENDATIONS

1. That consideration be given to amending the grain cargo regulations to require one or more shifting boards extending the complete length of each hatch, including the hatch square, when carrying grain cargo and to require that access to spaces outside the feeders be provided in order that the feeders may be inspected after loading.

2. That consideration be given to an amendment of the applicable regulations to require watertight doors on the main weatherdecks on seagoing cargo ships in the future, in lieu of weathertight doors now allowed.

3. That consideration be given to a requirement that the radio operator's chairs be secured to the deck.

4. That consideration be given to a requirement that the noon position of oceangoing ships be transmitted to a responsible person or agency as suggested in conclusion No. 15.

5. That further studies be made in regard to loadline marks to determine the feasibility of limiting the loading of a vessel by making both the loadline marks and the draft applicable.

6. That the information in this report be made the basis of further studies of the overloading situation in major bunkering ports with a view to the possible prevention of overloading by expanding enforcement facilities or additional statutes or international agreements.

7. That further investigation under the suspension and revocation proceedings be initiated in the case of Frederick W. Mohle, the master of the SS *Smith Voyager,* concerning his part in the casualty.

8. That a copy of this report be referred to the U.S. Department of Justice for action under 46 U.S.C. 658 against John F. Fitzsimmons, vice president in charge of operations, Earl J. Smith & Co., George W. MacLeod, marine superintendent, Earl J. Smith & Co., and Frederick W. Mohle, master of the SS *Smith Voyager,* who were parties to sending the SS *Smith Voyager* to sea in such an unseaworthy state that the life of personnel was likely to be thereby endangered. ⚓

AMENDMENTS TO REGULATIONS

STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from November 1, to November 30, 1966, inclusive, for use on board vessels in accordance with the provisions of part 147 of the regulations governing "Explosives or Other Dangerous Articles on Board Vessels" are as follows:

CERTIFIED

Octagon Process, Inc., 596 River Rd., Edgewater, N.J. 07020, Certificate No. 703, dated November 7, 1966, KLEARALL 96 DEGREASING SOLVENT.

DuBois Chemicals, Broadway at Seventh, Cincinnati, Ohio 45202, Certificate No. 704, dated November 8, 1966, DUBOIS SOLVENT CLEANER X–1.

Syncro-Mist Controls, 270 Madison Ave., New York, N.Y. 10016, Certificate No. 705, dated November 8, 1966, KONK INSECT KILLER.

Bull & Roberts, Inc., 117 Liberty St., New York, N.Y. 10006, Certificate No. 706, dated November 14, 1966, B&R ELECTRI-CLEANER.

AFFIDAVITS

The following affidavits were accepted during the period from October 15, 1966, to November 15, 1966:

Bath Iron Works, Bath, Maine 04530, FLANGES, VALVES, FITTINGS.

ITT Hammel-Dahl, 175 Post Rd., Warwick, R.I. 02888, VALVES.

U.S. GOVERNMENT PRINTING OFFICE: 1967