

MARINE CASUALTY REPORT

SS OCEAN EAGLE (LIB.)
GROUNDING AND BREAKING UP
WITH NO LOSS OF LIFE
SAN JUAN HARBOR, 3 MARCH 1968

U.S. COAST GUARD
MARINE BOARD of INVESTIGATION REPORT
and COMMANDANT'S ACTION

ACTION BY
NATIONAL TRANSPORTATION SAFETY BOARD

DEPARTMENT OF TRANSPORTATION
WASHINGTON D.C. 20591

RELEASED: FEB 27 1989

GROUNDING AND BREAKING UP OF LIBERIAN SS OCEAN EAGLE
AT ENTRANCE OF SAN JUAN HARBOR, PUERTO RICO, MARCH 3, 1968

ACTION BY NATIONAL TRANSPORTATION SAFETY BOARD

This casualty was investigated by the United States Coast Guard under the authority of R.S. 4450 (46 USC 239) and the regulations prescribed by 46 CFR 136. The Marine Board of Investigation convened at San Juan, Puerto Rico, beginning March 11, 1968. A Member of the National Transportation Safety Board attended the proceedings. The Marine Board's report and the Commandant's Action thereon are included in and made a part of this report. The National Transportation Safety Board has considered only those facts in the Coast Guard report which are pertinent to the Board's statutory responsibility to make a determination of cause.

PROBABLE CAUSE

The National Transportation Safety Board finds that the cause of this casualty was faulty navigation on the part of the master in that he failed to utilize properly the aids to navigation which were available to him and navigated his vessel into shoal water while approaching the entrance to San Juan Harbor, Puerto Rico. A contributing cause was insufficient capability of the pilot boat, insofar as it concerns size, to enable the pilot to board the vessel under the existing conditions. Further, it is apparent that the pilot communication facilities were inadequate and that the misunderstanding of the pilot's shouts and the lack of an understandable system of hand signals were factors in this casualty.

Causal factors contributing to the breaking in half and loss of the vessel were the effect of the surge of the sea on the grounded vessel, and the overloading and improper distribution of the cargo.

RECOMMENDATIONS

The Safety Board concurs with the Commandant relative to the recommendations of the Marine Board. In addition the Board recommends that the Coast Guard, in its research and development program, give consideration to the design of equipment which could be quickly and easily rigged and would provide a safer and more efficient means for boarding a vessel from small craft during unfavorable sea conditions, and that information on a successful design be forwarded to the Maritime Safety Committee of the Intergovernmental Maritime Consultative Organization for their consideration.

It is further recommended that the Coast Guard study the development of internationally recognized hand signals, for backup communications between ships and pilots. It may be expected that hand signals will be attempted to be used in similar situations in the future, and this accident demonstrates that the results of misunderstanding are a positive hazard.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD:

Adopted this 16th day of January, 1969:

[REDACTED]
Chairman

[REDACTED]
, Member

[REDACTED]
Member

[REDACTED]

[REDACTED]
, Member //

[REDACTED]
, Member



DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

Address reply to
COMMANDANT (MVI-3)
U.S. COAST GUARD
WASHINGTON, D.C.
20591

18 OCT 1968
5943/OCEAN EAGLE
C-7 Bd

Commandant's Action

on

The Marine Board of Investigation convened to inquire into the circumstances surrounding the grounding and breaking up of the Liberian Tankship SS OCEAN EAGLE at the entrance of San Juan Harbor, Puerto Rico on 3 March 1968

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 and the final determination of the cause of the casualty by the National Transportation Safety Board.

Synopsis of Investigative Report Findings of Fact

1. In approaching the entrance to San Juan Harbor on the morning of 3 March 1968 the Liberian Tankship SS OCEAN EAGLE was navigated into shoal waters to the west of the channel extension where it struck bottom. The vessel sagged amidships and subsequently broke in half, causing extensive pollution of the adjacent waters.
2. The pilot who was unsuccessful in several attempts to board the SS OCEAN EAGLE from a small pilot boat, observed the vessel when it was standing into danger but, due to lack of means of communication, he was unable to warn the Master. The Master, failing to understand the pilot's shouts and hand motions to stop, continued ahead until he finally became aware that he was approaching shallow water when he backed his engines and dropped the starboard anchor. The pilot was then finally able to board the vessel but shortly thereafter, with the anchor down but with some way on with the engines ahead, the SS OCEAN EAGLE struck bottom at or about 0659. The vessel sagged amidships with oil flowing from the vicinity of #6 cargo tanks. At or about 0945 the two sections of the SS OCEAN EAGLE separated. The bow section remained at anchor and the stern section drifted ashore. Both halves were later towed to sea and sunk.


3. At the time of the grounding the SS OCEAN EAGLE was subjected to additional stresses due to overloading and improper cargo distribution. Laden with a cargo of 19,233 tons of crude oil the vessel had a mean draft of approximately 31 feet with the applicable load line mark submerged. The loading manual which had been recently prepared for the SS OCEAN EAGLE had not been used in loading the vessel at Puerto La Cruz, Venezuela and #2 and #10 wing tanks remained empty. All other cargo tanks were essentially full with the exception of #6 wing tanks which were only partly full.

Remarks

1. The circumstances surrounding the casualty, including the causes to the extent determinable, are set forth in considerable detail in the report of the Marine Board of Investigation. It is clear that the SS OCEAN EAGLE was navigated into shoal water, notwithstanding the absence of fixes and the conflicting evidence in the record concerning her exact position at the time of the casualty. Although the charted depth of water 450-500 yards north of Buoy #2 is considerably greater than the vessel's draft of 31 feet there are several areas within two ship lengths of that position with charted depths of 31 feet or less.

Action Concerning the Recommendations

1. In accordance with Recommendation #1 of the Marine Board of Investigation a copy of this Report of Investigation will be forwarded to the Commonwealth of Puerto Rico for consideration of the proposals concerning changes of pilotage procedures in entering San Juan Harbor. This case clearly indicates the need for adequate means of communication and the capability to board incoming vessels at a sufficient distance from the entrance buoys to enable them to make a proper approach under adverse weather conditions.
2. A copy of this Report of Investigation will be forwarded through appropriate channels to the Government of Liberia in accordance with Recommendation #2.


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



DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

Address reply to:
COMMANDER (d1)
Seventh Coast Guard District
Room 1203, Federal Bldg.
51 SW. 1st Ave.
Miami, Fla. 33130

.5943
19 June 1968

From: Marine Board of Investigation
To: Commandant (MVI)

Subj: SS OCEAN EAGLE, O.N. 319 (Liberian Registry); breaking in half at the entrance of San Juan Harbor, Puerto Rico on 3 March 1968, without loss of life

FINDINGS OF FACT

1. On 3 March 1968, the Liberian tankship SS OCEAN EAGLE laden with a cargo of crude oil from Puerto La Cruz, Venezuela, was navigated into hazardous waters while approaching the entrance buoys of San Juan Harbor without a pilot. Because of sea conditions and the speed of the vessel, the pilot was unsuccessful in several attempts to board OCEAN EAGLE from the starboard side. He realized that she was standing into danger but, because of lack of communications, was unable to warn the Master. The pilot's shouts and hand motions to stop were not heard or were not understood. However, the Master realized that he was standing into danger and dropped the starboard anchor. The pilot was then finally able to board the vessel from the port side. Shortly thereafter, at about 0659 (+4 zone time), with the anchor down, but with engines ahead and some way on, OCEAN EAGLE struck and broke in half. The bow section remained at anchor and the stern section drifted ashore. Both halves were later towed to sea and sunk. Spillage of the cargo caused extensive pollution to the harbor and adjacent beaches of Puerto Rico. There were no injuries or loss of life as a result of this casualty.

2. Vessel Data:

Name: OCEAN EAGLE
Former Names: OCEAN TRADER - 1956
MARITIME TRADER - 1954
Official No.: 319
Home Port: Monrovia, Liberia
Call Sign: ELIP
Type: Tankship, machinery aft with 30 cargo tanks comprised of 10 wing tanks, port and starboard, and 10 center tanks.
Where built: Hoboken, Belgium
Date built: 1953
Ship builders: John Cockerill, SA
Gross tons: 12,065
Net tons: 7,244

Marine Board of Investigation - OCEAN EAGLE Findings of Fact con't.

2. con't.

Summer Deadweight: 18,524
Length: 579'0"
Breadth: 70'4"
Moulded depth: 39'9"
Moulded draft: 29'11 3/4"
Summer Loadline: Freeboard 9'11 3/4"
Draft 29'11 3/4"
Tropical Loadline: Freeboard 9'4 1/4"
Draft 30'7 1/4"
Speed loaded to moulded draft: 15 knots
Propulsion: Single screw, right handed 4 blade, fixed
pitch propeller. Pitch 4.915 meters.
Three Parsons-Cockerill steam turbines,
double reduction geared to shaft. 8000 shp.
Two oil fired watertube Babcock and Wilcox
boilers. Design pressure 500 lbs per square
inch.
Owners: Transocean Tankers Corp. (60%) and Northern
Transatlantic Carriers Corp. (40%).
Agent: Norland Shipping and Trading Corp.
29 Broadway, New York, N.Y.
Charterer: Kupan Transport Co., New York, N.Y.
(Subsidiary of Gulf Oil Corp.)
Cargo consignee: Caribbean Gulf Refining
Corp., San Juan, Puerto Rico
Navigational Equipment: Gyro and Magnetic Compasses
(Gyro error 0.5° East)
Radar
Fathometer
Radio Direction Finder
Sextant
Chronometer

The Radar had been used for navigational purposes during the approach but was not being utilized at the time of the casualty.

The Cargo Ship Safety Construction Certificate was issued on 17 April 1967. The Cargo Ship Safety Equipment Certificate and Load Line Certificate were endorsed while the vessel was dry-docked in Liverpool, England in September 1967. These certificates were issued by the American Bureau of Shipping which also classed the vessel.

Marine Board of Investigation - OCEAN EAGLE Findings of Fact con't.

3. Weather at the time of the casualty was partly cloudy, good visibility and a northeasterly wind force 4-5. There was a heavy north-northeasterly swell in excess of 15 feet. The distance between crests was one ship's length or slightly less.

The weather forecast by the U.S. Weather Bureau, San Juan for 3 March 1968 was: "Smallcraft Warnings at 0030, 3 March 1968, for northwest and east coast. Swells will be increasing during the night to 7 to 12 feet. These swells caused by North Atlantic storm."

Sea water temperature at San Juan Harbor entrance was 85°F. Sunrise was at 0641.

Predicted tide at San Juan Harbor entrance 3 March 1968 (Tide Tables): Low 0554 - Height (-0.1'); High 1130 - Height (0.6'); Height of tide at 0700 (-0.1').

Tidal Current Tables 1968, Atlantic Coast of North America includes the following information: "At San Juan Harbor entrance current normally weak and variable, but winds may cause heavy swells."

The current at the time of the casualty was reported to be insignificant.

4. OCEAN EAGLE, under voyage charter of the Kupan Transport Co., departed on voyage #168 from Puerto La Cruz, Venezuela at 1450 on 1 March 1968 enroute to San Juan, Puerto Rico, loaded with a cargo of 19,233 tons of Leona crude oil. The recorded mean draft of 31'2" was 6 3/4" above the assigned tropical load line. At 1545, 1 March, OCEAN EAGLE was abeam Morro Pelotas and set course at 358°T. The course recorder tape corresponds with this entry except the time was 2145 indicating that the tape times were exactly 6 hours late. The change of course to 274°T. at 0235, 3 March, which was plotted, corroborates this fact. The voyage across the Caribbean Sea and thru the Virgin Passage was uneventful. At about 0235 on 3 March, the vessels's course was changed to 274°T. with Culebra light abeam to port distant 8 miles. This course would closely parallel the north coast of Puerto Rico. Speed made good from 0235 to 0500 was 14.1 knots. The Master, who had been on the bridge since 2100, 2 March, testified that he had unsuccessfully tried to raise the pilot station on radio (2182 kcs) from 0400 to 0530 at which time he shifted to radio telephone on VHF. The Porto Rico Lighterage Co. received the transmission and, after checking with the pilot station, advised him that a pilot was on the way. The pilot station and the pilot boats are not radio equipped. At about 0600, the Chief Mate logged "End of Voyage," secured the automatic pilot and the helmsman took over with hand-telemotor. The Master, Chief Mate and the helmsman were the only persons on the bridge at that time. Speed was reduced to half ahead at 0608 and to slow ahead at 0612. Course varied between 285°T. and 270°T. from 0606 until 0613, at which time course was changed to 195°T. to make the approach. The Bar Channel range, marked by range lights, is 188°T. Based on logged courses and speeds, the 0606 DR position would have placed buoy #2, at the entrance to the channel, bearing 199°T. distant 3.2 miles. The

4. con't.

Master estimated that he was "about two miles off San Juan" at 0613, when he turned to approach the channel. At that time he said the vessel was a little to the east of the range. At 0628 speed was increased from slow to half ahead and at 0631 engines were stopped. The last entry in the bridge bell log was at 0633, indicating that the engines were placed at half ahead at that time. The engine room bell log was never found. The Master and Chief Engineer testified that various speed changes were made after 0633, with only slow ahead, dead slow ahead, and stop being used. Some sluggishness in steering was reported by the helmsman while steering a course of 195°T. which is attributed to the slow speed and following sea. The course recorder tape showed the course to have varied from 192°T. to 202°T. between 0633 and 0651. The vessel was not being steered on the Bar Channel range (188°T.).

5. As OCEAN EAGLE approached the harbor entrance buoys, the pilot, Captain [REDACTED], made several attempts to board her on the starboard side but failed to do so because of the high following sea and the way on the vessel, which was about 4 knots. He did, however, determine that the vessel was standing into danger and attempted to contact the Porto Rico Lighterage Co. tugs on his walkie-talkie radio. Being unable to raise them directly, he, at about 0645, contacted Pilot [REDACTED], who was standing by on another pilot boat near channel buoy #4 awaiting the arrival of the vessel STELLA OCEANIC. Pilot [REDACTED] told him that the OCEAN EAGLE was standing into danger and would probably need a tug. Immediately, Pilot [REDACTED] proceeded down the channel to the vicinity of LaPuntilla point and alerted the tugs CATANO and BORINQUEN. At about 0650, both tugs responded to the call.

6. By approximately 0650, OCEAN EAGLE had approached to an estimated position of about 700 yards north of buoy #2, west of the centerline of the entrance channel extended and was headed slightly out of the channel on a heading of about 202°T. At that time the Master sent the Chief Mate down to the forecandle to drop the starboard anchor and placed the engines full astern. Approximately 0651: the starboard anchor was dropped and the anchor ball raised; buoy #2 is estimated to have been 600 yards about 5-10° off the port bow; the vessel had headway which caused the chain to tend aft and take such a strain that additional chain had to be veered until 4 or 5 shots of chain were out. The brake was alternately applied and released to ease the heavy strain on the chain. The effects of the pull of the star--

6. con't.

board anchor chain caused by the residual way on the vessel, the backing down of the single screw, and the forces of the sea and wind on the starboard quarter caused the vessel's bow to swing to starboard, first slowly then more rapidly.

7. At approximately 0655, after the vessel was anchored and headed southwesterly with little way on, Pilot [REDACTED] managed to board her on the port side. When he reached the bridge, the engines were still going astern. He recommended "left rudder" followed quickly by "all left rudder" and engines "ahead dead slow." The Master suggested the speed should be increased to "ahead slow" which was done. The vessel responded and by approximately 0657, the swing to starboard was checked at a heading of 263°T. The vessel then began to swing to port very slowly until it reached a heading of 258°T. The vessel was rising and falling in the sea which was then coming from three points abaft the starboard beam.

8. During this period (about 0659), the vessel struck the bottom at least one time and probably three times in quick succession. Three times the vessel reportedly vibrated and trembled and a noise was heard. On the third occasion the vessel sagged amidships and oil began to flow from the deck in the vicinity of #6 cargo tanks. The engine spaces were inspected by the Second Engineer and no damage was noted. The vessel continued to float freely and swung slowly to starboard. Intending to ground the vessel to minimize damages, the Master ordered an "ahead full" bell at about 0702. The vessel continued to swing to starboard to about 286°T. then back to port to about 270°T. at 0706. Upon realizing that the turning propeller would be hazardous to the crew in the lifeboat aft, which was about to be lowered, the Master decided that it was not practical to carry out this course of action. He stopped the engine and ordered the Chief Engineer to secure the engine room for abandoning ship. The Master then gave the order to abandon ship. He did not transmit or display a distress signal. At about 0706, the vessel began to swing to starboard first slowly, then rapidly. After the vessel stopped its swing to starboard, it oscillated and settled on a generally northerly heading into the sea with the starboard anchor chain tending forward. The vessel continued to float freely. The midship section surged up and down approximately 8 to 10 feet in motion with the sea. Oil poured out of the hull as the deck rose and fell.

Marine Board of Investigation - OCEAN EAGLE Findings of Fact con't.

12. con't.

major structural alterations since it was built.

Hull Construction: Butts of all shell plating were welded. Seams of shell plates beginning with "D" strake up to the sheer strake were riveted. Frames were riveted. There was a riveted gunwale angle installed between the sheer plate and the deck stringer plate.

Scantlings:

Thickness of Shell Plating Amidships:

Deck Plating: 22mm or 0.86614 inches

Deck Stringer: 23mm or 0.90551 inches

Sheer Strake: 29mm or 1.14173 inches

Strakes F,G,H,J: 19 1/2mm or 0.767715 inches

Strakes A,B,C,E: 21mm or 0.82677 inches

Strake D: 22mm or 0.86614 inches

Keel Plate: 28 1/2mm or 1.122045 inches

Spacing Longitudinals:

Deck and Bottom: 30" apart

Upper side girder: 132" or 11'0" below the deck.

Middle side girder: 117" or 9'9" below upper side girder.

Lower side girder: 87" or 7'3" below middle and 33" above

#15 bottom longitudinal.

Spacing Frames: (forward to aft)

#211 to #197 - 24", #197 to #185 - 27", #185 to #176 - 32",

#176 to #175 - 36", #175 to #55 - 33 1/2", #55 to #54 - 36",

#54 to #15 - 30", #15 to #0 - 24"

Steel: Mild steel in accordance with Lloyd's classification of 1950.

Framing of the vessel was numbered from aft to forward with the fore and aft center located at frame 106. The midship frame 106 was 8'4" forward of the bulkhead between cargo tanks 6 & 7. Inspection after the casualty was inconclusive as to the exact location of the origin of the separation (due to sea conditions and the fact that the bottoms of the halves were working against the rocky bottom and the tops were grinding together until separation). However, it appeared that the start of the separation was at or very near to frame 106 at the fore and aft center of the vessel. The Board received an affidavit, sworn to on the 15th of April 1968 by Mr. [REDACTED], who dived in March 1968 for Murphy Pacific Salvage to examine the stern section of the OCEAN EAGLE. He stated that he observed a 30' gash in the bottom of the stern section approximately 4' wide which ran from the break amidships aft. The edges of the gash were pushed into the hull. He stated that he actually entered the gash at one point. Visibility under the water was about 10 feet.

Marine Board of Investigation - OCEAN EAGLE Findings of Fact con't.

9. In her anchored position the OCEAN EAGLE lay just west of the northern extension of the line of buoys #2, #4 and #6, with her stern about 300 yards north of buoy #2. When a Coast Guard helicopter arrived on the scene at 0738, there were two OCEAN EAGLE lifeboats, two tugs, two pilot boats and a Coast Guard utility boat in the vicinity of OCEAN EAGLE. At that time, the Master went forward and dropped the port anchor, then returned to the bridge and raised the international signal "Not Under Command." The pilot had abandoned ship with the rest of the crew but later reboarded the vessel to talk to the Master, who was collecting ship's records, documents, papers, money and personal belongings prior to abandoning ship.

10. At approximately 0945, the two sections of OCEAN EAGLE separated. The stern section then drifted southerly toward shore and grounded in a position about 300 feet west of the Bar Channel between buoys #2 and #4. The bow section remained anchored in position about 450 yards to the north of buoy #2 just west of the line marking the western boundary of Bar Channel extension. At 1045, the tug CATANO put a hawser on the bow section and pulled in a WNW direction until about 1300, but the bow section was not moved appreciably from her original position. A lighted wreck buoy was established by the Coast Guard Cutter SAGEBRUSH at 1630 approximately 150 yards north of the bow section in line with buoys #2, #4 and #6 in position $18^{\circ} 28.7'N - 66^{\circ} 07.7'W$. This buoy was removed on 13 March 1968. On 9 March 1968, a U. S. Naval Salvage team tried to tow the bow to sea but managed only to move it about 600 yards to the westward. The bow finally grounded just west of buoy #2 on a southwesterly heading outside of Bar Channel. Extensive surveys, removal of the cargo, de-ballasting and salvage were made by the U. S. Navy on the bow half and by Murphy Pacific Salvage, on behalf of the U. S. Army Corps of Engineers, on the stern section. The bow half was towed to sea by the Navy on 4 April 1968 and sunk in position $18^{\circ} 36.3'N - 66^{\circ} 08.7'W$. The stern half was towed to sea on 11 April 1968 and sunk in position $18^{\circ} 36.9'N - 66^{\circ} 11.3'W$. The two halves which constituted hazards to navigation were considered complete losses and beyond economical salvage. An estimated 3,500,000 gallons of crude oil were discharged into the sea resulting in severe pollution of the harbor and adjacent areas. The oil pollution extended to the east of San Juan Harbor entrance for a distance of about 7 miles and to the west for a distance of about 9 miles. On 15 May 1968, the Puerto Rican Public Works Department reported that the clean up of the beaches had been completed in all major areas and only minor clean up operations in a very minor scale continues in places where the sand is saturated with oil-emulsifier mixture to a considerable depth necessitating physical removal of

10. cont.

sand and pollutant. Approximately 2,200,000 gallons were salvaged from the bow and stern sections. The U. S. Army Corps of Engineers reported that approximately \$1.2 million were expended to remove the two halves of the hull from the harbor. The Commonwealth of Puerto Rico estimates that the total loss would be in the hundreds of millions of dollars, because of loss of tourism revenue, claims from damage caused by the oil, and notoriety, causing future cancellation of tourist reservations.

11. Upon departure from Puerto La Cruz, Venezuela for San Juan, OCEAN EAGLE loaded 19,233 long tons (135,464 barrels) (5,689,488 gallons) of Leona crude oil and 290 long tons of Bunker "C" fuel oil at Berth #1, Mene Grande Oil Co. All cargo tanks were essentially full except: #2 wing tanks and #10 wing tanks which were empty; #6 wing tanks were partially filled. The fuel and water tanks forward of cargo tanks #1 were empty. The water tanks in the double bottoms aft were partially empty. Peak tanks were empty. The cargo was consigned to Caribbean Gulf Refining Co., in San Juan. Some 65 to 75 tons of fresh water were pumped overboard in Puerto La Cruz because it was found that the vessel was overloaded. On sailing for San Juan the logged draft readings were 31'1" forward, 31'3" aft with a mean draft of 31'2". The International Load Line Certificate issued under the authority of the Republic of Liberia under the provisions of the International Load Line Convention of 1930 authorized a freeboard from the deck line to the tropical load line of 9'4 1/4". This is equivalent to a draft of 30'7 1/4". The tropical load line was submerged 6 3/4" on departure from Puerto La Cruz. Puerto La Cruz is an open roadstead exposed to the Caribbean. There is no fresh water allowance. The deadweight scale reveals that at the departure draft the vessel had an immersion factor of 80.3 tons/inch. (Sea water temperature at Puerto La Cruz on 1 March 1968 was 78°F.) After 80 to 85 tons of fuel and water were consumed on the trip from Puerto La Cruz to San Juan, the vessel arrived off San Juan about 5 1/2" over the tropical load line.

12. There have been no structural damages sustained or structural repairs made to the OCEAN EAGLE in the last 2 years. The vessel has been in severe weather in the North Atlantic without incident. No structural repairs were made to the hull and no structural defects or excessive deterioration in the hull were noted during the dry-docking in Liverpool in September 1967. There were no known cracks in the hull or piping amidships or elsewhere on the OCEAN EAGLE prior to the casualty on 3 March 1968. There is no history of fractures or structural weaknesses. The vessel has never undergone

13. The Guidance Manual for Loading OCEAN EAGLE prepared by Panagopoulos & Associates in December 1967 and approved by the American Bureau of Shipping dated February 1968 was not being used by personnel aboard OCEAN EAGLE prior to the casualty. With permission of the owners, pertinent information was obtained from the American Bureau of Shipping in order for Coast Guard personnel to compute estimated sag, stresses and bending moments for OCEAN EAGLE as reportedly loaded and under conditions existing at the time of the casualty. The report from Chief, Merchant Marine Technical Division, U.S. Coast Guard Headquarters shows OCEAN EAGLE to have been in a sagged condition with a calculated Sag Numeral of 111.46. The report states that "the stresses calculated in the 'best estimate' wave condition are NOT high enough to categorically state that the ship fractured due to being stressed beyond the yield point of the metal. However, the vessel must be considered overstressed by improper loading as well as overloading. This conclusion is supported by the high Sag Numeral in the Loading Manual Calculations and by the independent calculation showing that, if the ship had been in a 'standard' wave condition, stresses would have been dangerously close to the yield point." (Standard wave condition is 26.25 feet.) "When a vessel is stressed to 25,000 psi or more there is a distinct danger that any minor structural detail which is normally a mild stress raiser will reach yield, fail, and transfer its load to adjacent structure, thereby opening the possibility of progressive failure." On 9 May 1968, the attorney for the charterer forwarded to the Board a copy of a preliminary report of the examination of both halves of OCEAN EAGLE made by H. M. Tiedemann & Co. of 74 Trinity Place, New York, which indicated that the vessel separated at the Plimsoll mark and gave micrometer readings of the plate thickness in the way of the break. On 17 June 1968, Mr. [REDACTED] and Mr. [REDACTED] of H. M. Tiedemann & Co. advised the Recorder of the Board by telephone that in their examination of the bow section of OCEAN EAGLE on 29 March 1968, they found no evidence of grounding forward of the bridge, such as scrape marks, rips, or indentations. About 50 to 60 feet of the bottom of the bow section, forward of the break, was under sand and could not be examined. The only indication of grounding noted to the bow section was an elongated indented area in the starboard side at the turn of the bilge extending forward from the break, which was about 13" in diameter and about 30' long. This indenture did not match any damage noted on the stern section.

14. The only current records rescued from OCEAN EAGLE were the ship's rough log and bridge bell book, neither of which had any entries at the time of or immediately prior to the casualty. The only pertinent navigational chart available which was used by the ship was C&GS #904 which has pertinent navigational fixes recorded from 0235 to 0500, 3 March 1968. Important records, such as the bearing book, Captain's night order book, azimuth book, compass log, Engineer's bell book, engineering log, charts C&GS #906 & #908, and the oil record book were not recovered.

Marine Board of Investigation - OCEAN EAGLE Findings of Fact con't.

15. No one was assigned to take soundings by leadline, nor was anyone assigned to observe the fathometer on the approach or at the time of the casualty. At the time of the casualty there was no person on the vessel whose sole duty was that of lookout.

16. Buoys #2, #4 & #6 were checked after the casualty by the Coast Guard Cutter SAGEBRUSH and found to be on station.

17. The Master, [REDACTED], a [REDACTED] year old Greek, holds a Liberian Master's license for any tonnage, any ocean and a Greek First Mate's license (which permits him to serve as master of vessels not over 450 tons). He had served in OCEAN EAGLE since 1964 in the capacity of Chief Mate, except for the period of 2 1/2 months in 1966 when he acted as Master, and since December 1967 he had served as Master. He had never entered San Juan Harbor prior to the casualty.

18. The Chief Mate, [REDACTED], a [REDACTED] year old Greek, has held a Greek Chief Mate's license since 4 December 1967. He has sailed OCEAN EAGLE as Chief Mate under Greek license since 23 February 1968. He previously sailed OCEAN EAGLE as Chief Mate under Temporary Liberian Chief Mate license October 1966 - May 1967. He submitted papers 23 February 1968 for a Liberian Chief Mate license which has not yet been received.

19. The pilot, [REDACTED], a [REDACTED] year old American citizen, holds a United States Master's license for steam and motor vessels, any tonnage, any ocean. He has been a pilot in San Juan since 1966. He has been going to sea for 33 years.

20. After reviewing the trace of the course recorder, the Master, by affidavit dated 6 April 1968 in Athens, Greece, admitted that some of his statements to the Board were not correct. The Master, contra to his testimony before the Board, stated that when the pilot came aboard: the engines were going full speed astern; the heading was westerly; the starboard anchor was down; part of the vessel was outside the channel to the west. He also admitted that his previous testimony to the Board as to dropping the anchor one shot then raising it to the water's edge after the pilot boarded and dropping it again after the casualty was all incorrect.

21. After reviewing the trace of the course recorder, the Chief Mate, by affidavit dated 6 April 1968 in Athens, Greece, admitted that he had given incorrect testimony as to first dropping only one shot of anchor chain, then heaving it up again just to the surface and dropping it finally after the casualty. He also made admissions as to other incorrect testimony that he had given before the Board as to the vessel's heading and position when the anchor was dropped.

22. General Description of Pilot Boats used by San Juan pilots: 30' to 35' in length; 8' beam; diesel powered; single screw; one man crew.

CONCLUSIONS

1. That the casualty was caused by faulty navigation, in that the vessel was not conned on the Bar Channel range and was navigated to the west of the western edge of the channel extension.
2. That at the time of the casualty the vessel was anchored with engines ahead and some way on, heading in a general westerly direction (258°T.) just west of the channel line extended about 450-500 yards north of buoy #2. That the sea condition contributed to the casualty in that the vertical component of the surge of the sea caused the vessel to come in contact with the bottom in an area where the average depth of water was greater than the vessel's draft.
3. That the breaking in two was caused by three contributing factors: (1) overloading, (2) improper loading, (3) grounding. It is concluded that the vessel was overloaded with improper load distribution which, together with the vessel's striking the sea bed, caused the vessel to sag and break in half.
4. That there was no evidence of damage, fractures or structural defects prior to the casualty which might have caused the vessel to break in half. Had the vessel not been overloaded and improperly loaded at the time of grounding, it is believed that total failure of the hull girder might not have occurred.
5. That there is no evidence that any act of misconduct, inattention to duty, negligence or incompetence or any willful violation of any law or regulation by personnel licensed or certificated by the Coast Guard contributed to the casualty. The OCEAN EAGLE was of foreign registry and the Master and crew were not serving under the authority of licenses or documents issued by the U. S. Coast Guard. The pilot was not serving under the authority of his federal license. In view of the position of the vessel when the pilot boarded, there is no evidence of actionable negligence on the part of the pilot.
6. That there is evidence of violation of the Load Line Act of 1930 (46 USC 85g), in that the vessel's applicable load line was submerged 5 1/2 inches arriving in San Juan. (A report of violation will be forwarded to the Commander, Seventh Coast Guard District for his evaluation.)

Marine Board of Investigation - OCEAN EAGLE Conclusions con't.

7. That there is no evidence that any personnel of the Coast Guard or any other government agency contributed to the casualty.
8. That there is no evidence that any aid to navigation contributed to the casualty.
9. That there is no evidence that any charted or uncharted object contributed to the casualty.
10. That the casualty could have been averted by prudent seamanship on the part of the Master by remaining a safe distance at sea until his vessel was lined up with the channel for a proper approach. The pilot undoubtedly would have been of assistance had he been able to board the OCEAN EAGLE at a greater distance from the entrance buoys. The pilot may have been able to board the vessel earlier had she been stopped or slowed sufficiently. A pilot boat of sufficient design and capability may have also enabled the pilot to board the OCEAN EAGLE under the prevailing conditions. The effects of the casualty might have been minimized by loading only to the allowable draft and by proper load distribution.
11. That there was insufficient evidence before the Board to determine whether or not the gash in the bottom of the stern section, reported by the diver in his affidavit, was caused by the vessel striking the bottom at the time of the casualty or occurred when the stern section broke loose from the bow and was driven aground by wind and wave action onto a coral outcropping. Similarly, there was insufficient evidence adduced to determine whether the indenture in the starboard turn of the bilge of the bow section was caused before or after the casualty.

RECOMMENDATIONS

1. That a copy of this report be forwarded to the Commonwealth of Puerto Rico for consideration of the following recommendations:

a. Vessels should be boarded at least two miles from the entrance buoys to provide sufficient time to allow pilots to make a proper approach to the harbor.

b. Pilot boats and the pilot station should be adequately equipped with radio telephone to communicate with vessels requiring pilots.

c. Pilot boats should be of adequate size and speed to enable pilots to board incoming vessels under adverse weather conditions.

d. The pilotage rules of the Commonwealth of Puerto Rico should be amended to show the above changes.

2. That a copy of this report be forwarded to the Government of Liberia for information and consideration of appropriate action concerning the license of the Master of SS OCEAN EAGLE for his part in the casualty.

[REDACTED]
P. G. PRINS
Rear Admiral, U. S. Coast Guard
Chairman;

[REDACTED]
J. S. LIPUSCEK
Commander, U. S. Coast Guard
Member;

[REDACTED]
EDWIN H. DANIELS
Commander, U. S. Coast Guard
Member and Recorder.

