United States Coast Guard

Report of the Investigation

into the

FIRE ONBOARD PANAMA-FLAGGED CONTAINER SHIP STRIDE (IMO 9149835), BAYPORT CONTAINER TERMINAL IN HOUSTON, TX, RESULTING IN THE LOSS OF TWO LIVES ON JANUARY 8, 2024

MISLE Activity Number: 7847385 MISLE

U.S. Department of Homeland Security
United States Coast Guard

Commandant
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16732/IIA # 7847385
02 October 2025

EXPLOSION AND SUBSEQUENT FIRE ON BOARD THE PANAMANIAN-FLAGGED CONTAINER SHIP STRIDE (IMO# 9149835) RESULTING IN THE LOSS OF TWO LIVES WHILE CONDUCTING BUNKERING OPERATIONS AT THE BAYPORT CONTAINER TERMINAL IN HOUSTON, TEXAS ON JANUARY 8, 2024

ACTION BY THE COMMANDANT

The record and the report of the investigation completed for the subject casualty have been reviewed. The record and the report, including the findings of fact, analysis, conclusions, and recommendations, are approved subject to the following comments. This marine casualty investigation is closed.

ACTION ON RECOMMENDATIONS

Administrative Recommendation 1: Recommend Danaos Shipping Co. Ltd conduct mandatory training for all personnel involved in bunkering operations aboard all remaining vessels. The curriculum should critically review existing Safety Management System procedures pertaining to bunkering and solidify the consistent application of these protocols. Specific attention should be given to proper operational manning levels during bunkering operations.

Administrative Recommendation 2: Recommend Danaos Shipping Co. Ltd verify through an internal audit that the Safety Management System is being properly implemented regarding supply and maintenance procedures, ensuring that the crew is ordering the correct spare parts for the ship machinery systems and that those spare parts are properly installed.

> **Action**: I concur with the intent of administrative recommendations 1 and 2. This Report of Investigation and its associated safety recommendations will be sent to Danaos Shipping Co. Ltd for their consideration and potential action.

Administrative Recommendation 3: Recommend formal recognition for Baytown Fire Department Engine 2 for their unwavering assistance in the search and recovery of the three STRIDE crewmembers. Their rapid triage and assessment of the three crew members was instrumental in stabilizing the wiper and saving his life.

> **Action**: I note that U.S. Coast Guard Sector Houston-Galveston is in the process of pursuing formal recognition for Baytown Fire Department Engine 2.

[redacted]

E. B. SAMMS
Captain, U.S. Coast Guard
Chief, Office of Investigations & Casualty Analysis (CG-INV)

U.S. Department of Homeland Security

United States Coast Guard

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16732

FIRE ONBOARD PANAMA-FLAGGED CONTAINER SHIP STRIDE (IMO 9149835), BAYPORT CONTAINER TERMINAL IN HOUSTON, TX, RESULTING IN THE LOSS OF TWO LIVES ON JANUARY 8, 2024

ENDORSEMENT BY THE COMMANDER, COAST GUARD HEARTLAND DISTRICT

The record and the report of the investigation convened for the subject casualty have been reviewed. The record and the report, including the findings of fact, analysis, conclusions, and recommendations are approved. It is recommended that this marine casualty investigation be closed.

COMMENTS ON THE REPORT

1. The loss of the two mariners was a tragic and preventable accident. I offer my sincere condolences to the families of those who lost their lives.

2. The investigation and report contain valuable information which can be used to address the factors that contributed to this marine casualty and prevent similar incidents from occurring in the future.

ENDORSEMENT ON RECOMMENDATIONS

Administrative Recommendation 1. As a result of the findings from this investigation, I recommend Danaos Shipping Co. Ltd take the following proposals into consideration:

1.1 Conduct training on all remaining vessels focusing on bunkering procedures in accordance with Safety Management System procedures. The training should reinforce procedures during bunkering along with proper manning during bunkering operations.

1.2 To verify through an internal audit that the Safety Management System is being properly implemented regarding supply and maintenance procedures, ensuring that the crew is ordering the correct spare parts for the ship machinery systems and that those spare parts are properly installed.

Endorsement: I concur with this recommendation.

Administrative Recommendation 2. Formal recognition for Baytown Fire Department Engine 2 for their unwavering assistance in the search and recovery of the three STRIDE crewmembers. Their rapid triage and assessment of the three crewmembers resulted in them saving the life of the wiper.

Endorsement: I concur with this recommendation. The decisive and rapid response of Baytown Fire Department Engine 2 at the STRIDE incident was exemplary. Their expert triage directly contributed to the survival of the wiper. Formal recognition is fully supported.

[redacted]

J. B. WHELLER
Captain, U.S. Coast Guard
Chief of Prevention
Coast Guard Heartland (Eighth) District
By Direction

U.S. Department of Homeland Security
United States Coast Guard

Commander
United States Coast Guard
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16732
May 14, 2025

FIRE ONBOARD PANAMA-FLAGGED CONTAINER SHIP STRIDE (IMO 9149835), BAYPORT CONTAINER TERMINAL IN HOUSTON, TX, RESULTING IN THE LOSS OF TWO LIVES ON JANUARY 8, 2024

ENDORSEMENT BY THE OFFICER IN CHARGE, MARINE INSPECTION

The record and the report of the investigation convened for the subject casualty have been reviewed. The record and the report, including the findings of fact, analysis, conclusions, and recommendations are approved. It is recommended that this marine casualty investigation be closed.

ENDORSEMENT/ACTION ON RECOMMENDATIONS

Administrative Recommendation 1. As a result of the findings from this investigation recommend Danaos Shipping Co. Ltd take the following proposals into consideration:

1.1 Conduct training on all remaining vessels focusing on bunkering procedures in accordance with Safety Management System procedures. The training should reinforce procedures during bunkering along with proper manning during bunkering operations.

1.2 To verify through an internal audit that the Safety Management System is being properly implemented regarding supply and maintenance procedures, ensuring that the crew is ordering the correct spare parts for the ship machinery systems and that those spare parts are properly installed.

Endorsement: I concur with this recommendation.

Administrative Recommendation 2. Formal recognition for Baytown Fire Department Engine 2 for their unwavering assistance in the search and recovery of the three STRIDE crewmembers. Their rapid triage and assessment of the three crew members resulted in them saving the life of the wiper.

Action: I concur with this recommendation. Sector Houston-Galveston will draft a public service award to recognize Baytown Fire Department Engine 2.

Administrative Recommendation 3. It is recommended that the investigation be

closed.

Endorsement: I concur with this recommendation.

CG SECTOR Houston-Galveston (s)

Enclosures: (1) Investigating Officer's Report

U.S. Department of Homeland Security
United States Coast Guard

Commander
United States Coast Guard
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16732
April 11, 2025

FIRE ONBOARD PANAMA-FLAGGED CONTAINER SHIP STRIDE (IMO 9149835), BAYPORT CONTAINER TERMINAL IN HOUSTON, TX, RESULTING IN THE LOSS OF TWO LIVES ON JANUARY 8, 2024

EXECUTIVE SUMMARY

On January 3, 2024, the STRIDE (IMO 9149835) departed Puerto Barrios, Guatemala, enroute to Bayport Container Terminal, Houston, Texas, to discharge shipping containers. The STRIDE is a 573-foot, 21611 gross-ton, Panama-flagged container ship. The voyage was uneventful, and the STRIDE arrived at Bayport Container Terminal on January 7, 2024. All the ship's equipment was operating correctly, and the crew noted no discrepancies. While the ship conducted cargo operations, the vessel ordered a bunker barge alongside the starboard side to conduct bunkering. The bunker barge connected its transfer hose to the starboard manifold on the 2nd deck of the STRIDE, and the ship intended to load 1100 metric tons of very low sulfur fuel oil and 80 metric tons of marine grade diesel oil.

The bunkering crew completed the transfer connection, and the bunkering operations began. During the bunkering transfer, the STRIDE chief engineer requested increases in pressure from 1000 RPM to 1400 RPM. Approximately 20 minutes into the bunkering operation, the wiper, located in the engine room of the STRIDE, observed oil flowing down the bulkhead. The wiper immediately notified the chief engineer and the third assistant engineer in the engine control room. All three crewmembers left to investigate the cause of the oil leak. The STRIDE chief engineer immediately instructed the bunkering crew to stop the transfer via handheld radio, and the tankerman immediately shut down the transfer pump.

The chief engineer, third engineer, and wiper witnessed an “explosion” and then a fire on 3rd Deck. The three crewmembers returned to the engine control room and closed the door behind them. At the same time, two crewmembers in the ship’s office, located on the upper deck of the STRIDE, heard a “boom” or “whoosh” come from the engine room and saw smoke emanating from the bottom of the door leading into the engine room.

The initiating event for this marine casualty was the installation of an improper valve at the port marine diesel oil tank that prevented the marine diesel oil product from going into the tank during the bunkering operations. Subsequent events for the marine casualty include an oil discharge, a fire, the deaths of the chief engineer and third engineer, life-threatening injuries to the wiper, and a total constructive loss of the vessel.

U.S. Department of Homeland Security
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April 11, 2025

FIRE ONBOARD PANAMA-FLAGGED CONTAINER SHIP STRIDE (IMO 9149835), BAYPORT CONTAINER TERMINAL IN HOUSTON, TX, RESULTING IN THE LOSS OF TWO LIVES ON JANUARY 8, 2024

INVESTIGATING OFFICER'S REPORT

1. Preliminary Statement

1.1. This marine casualty investigation was conducted, and this report was submitted in accordance with Title 46, Code of Federal Regulations (CFR), Subpart 4.09, and under the authority of Title 46, United States Code (USC), Chapter 63.

1.2. In accordance with 46 CFR § 4.03-10, the Coast Guard designated as parties-in-interest: Danaos Shipping Co. Ltd, owner of the vessel involved in the marine casualty, Buffalo Marine Service, Inc., owner of the bunker barge involved in the marine casualty, and COSCO (Cayman) Mercury Co. Ltd., the charterer of the vessel involved in the marine casualty. No other individuals, organizations, or parties were designated a party-in-interest.

1.3. The Coast Guard was the lead agency for all evidence collection activities involving this investigation. The National Transportation Safety Board (NTSB) assisted with the investigation. Technical computer support was provided by the Mark L. Jenkins Digital Forensic Laboratory. No other persons or organizations assisted in this investigation.

1.4. All times listed in this report are in Central Standard Time using a 24-hour format and are approximate.

2.Vessel Involved in the Incident

Figure 1: Photograph of STRIDE, retrieved via open source on November 25, 2024.

Official Name:	STRIDE
Identification Number:	IMO 9149835
Flag:	Panama
Vessel Class/Type/Sub-Type:	General Dry Cargo/Container Ship
Build Year:	1997
Gross Tonnage:	21611 ITC
Length:	573.3 feet
Beam/Width:	99.1 feet
Draft/Depth:	35.4 feet
Main/Primary Propulsion: (Configuration/System Type, Ahead Horsepower)	Slow Speed Diesel Direct/ 26740 Ahead Horsepower
Owner:	Speedcarrier No. 3 Corp.
Operator:	Danaos Shipping Co. Ltd.

3. Deceased, Missing, and/or Injured Persons

Relationship to Vessel	Sex	Age	Status
Chief Engineer	Male	64	Deceased
Third Assistant Engineer	Male	57	Deceased
Wiper	Male	32	Injured

4. Findings of Fact

4.1. The Incident

4.1.1. On January 7, 2024, at 1630, the STRIDE docked at Bayport Container Terminal, Berth #5, Houston, Texas.

4.1.2. At 1906, the STRIDE commenced cargo operations using two gantry cranes to offload containers to Bayport Container Terminal.

4.1.3. At 2200, the wiper onboard the STRIDE was assigned to wash the cylinder head of the main engine, which is located on the port side of the 3rd Deck in the engine room.

4.1.4. On January 8, 2024, at 0150, the towing vessel JACQUES-IMO (ON 1244103) and bunker barge SHAMROCK 500 (ON 1231403) secured alongside the starboard side of the STRIDE.

4.1.5. At 0235, the SHAMROCK 500 tankerman began connecting the bunker hose to the barge manifold and then gave the other end to the transfer hose to the crewmember on the STRIDE.

4.1.6. At 0245, the STRIDE Chief Engineer completed the declaration of inspection.

4.1.7. At 0305, bunker operations commenced, starting with marine grade diesel oil.

4.1.8. At 0307, the STRIDE Chief Engineer requested an increase in pumping rate from 1000 RPM to 1200 RPM.

4.1.9. At 0307, the SHAMROCK 500 tankerman increased the pumping rate to 1200 RPM.

4.1.10. At 0309, the STRIDE Chief Engineer requested another increase in pumping rate to 1400 RPM.

4.1.11. At 0309, the SHAMROCK 500 Tankerman increased the pumping rate to 1400 RPM's.

4.1.12. At 0310, the SHAMROCK 500 tankerman informed the STRIDE Chief Engineer that he would not increase the pumping rate again because the discharge pressure was at 90 psi. The maximum pressure for the discharge was 100 psi.

4.1.13. At 0325, the wiper observed oil flowing down the forward bulkhead in the engine room coming from several decks above, near the incinerator and boiler.

4.1.14. The wiper went to the engine control room on 2nd Deck to inform the chief engineer and third engineer of the presence of oil.

4.1.15. The chief engineer, third engineer, and wiper left the engine control room to investigate the oil discharge. The chief engineer realized the oil was marine grade diesel oil and immediately radioed the tankerman, instructing him to stop the bunker operations.

4.1.16. At 0328, the tankerman was on the deck of the SHAMROCK 500 conducting tank soundings when he heard "excited chatter" on the handheld radio. He could not make out what was being said.

4.1.17. At 0328, the wheelman on the JACQUES IMO was in the wheelhouse and heard "excited chatter" on the handheld radio. He directed the tankerman to shut down the

transfer.

4.1.18. At 0329, the tankerman shut down the transfer by taking the pump out of gear and closing the discharge valve.

4.1.19. At 0330, the chief engineer, third engineer, and wiper observed an “explosion" and a fire on Deck 3 near the area where the wiper had been previously working. The three crewmembers returned to the engine control room, closing the door behind them.

4.1.20. At the same time, two crewmembers in the ship’s office, located on the A deck of the STRIDE, heard a “boom” or “whoosh” come from the engine room and saw smoke coming from the bottom of the door leading into the engine room.

4.1.21. The chief engineer shut down all electrical power, blacking out the STRIDE.

4.1.22. At 0331, the ship’s fire alarm sounded, and the captain reported to the bridge. He pressed the emergency stops for all operating machinery, including ventilation, and sounded the ship's emergency signal for the crew to muster.

4.1.23. The captain gave directions to the crew via handheld radio to prepare fire teams, close ventilation dampers, and gather emergency escape breathing devices from the TV room.

4.1.24. At 0334, the captain hailed USCG Sector Houston-Galveston Command Center on VHF channel 16 and reported the fire.

4.1.25. At 0335, crewmembers observed flames coming from the engine room hatch on the main deck, directly behind the superstructure.

4.1.26. At 0338, the STRIDE’s fire team attempted to enter the engine room through the A Deck entrance but was unsuccessful due to flames and high heat.

4.1.27. At 0341, the captain reported to USCG Sector Houston-Galveston Command Center that he "had a fire in the way of the incinerator and still have three persons in the engine room.”

4.1.28. At 0350, a crewmember gained access to the engine room through the emergency escape hatch but could not locate the missing crewmembers.

4.1.29. Between 0350 and 0408, the Port of Houston Fire Department, La Porte Fire Department, and Baytown Fire Department arrived on scene.

4.1.30. At 0415, Baytown Fire Department entered the engine room through the upper deck with a ship’s fire team member escorting them. The three crewmembers; chief engineer, third engineer, and wiper, were located inside the engine control room in front of the console. The crewmembers were medically assessed, and the fire team determined the wiper was still breathing. The wiper was evacuated through the door on the upper deck.

4.1.31. At 0430, the ship’s crew evacuated the two deceased crewmembers through the engine room hatch.

4.1.32. At 0517, a helicopter arrived on scene to transport the wiper to a local hospital.

4.1.33. The chief engineer and third engineer were transported to a local hospital via ambulance and were pronounced deceased.

4.1.34. At 0710, the JAQUES-IMO and the SHAMROCK 500 disconnected bunkering lines and untied mooring lines from the STRIDE and departed the scene.

4.1.35. At 0800, Coast Guard personnel requested that the fixed fire suppression system be discharged into the engine room and be sealed for twenty-four hours. The Captain attempted to release the CO2 system remotely, but the system failed to discharge. The Captain went to the aft upper deck and manually opened 139 CO2 bottles into the engine room.

4.1.36. On January 9, 2024, all crewmembers of the STRIDE took required Department of Transportation drug tests. All tests were negative for dangerous drugs.

4.1.37. Alcohol tests were not conducted within the eight-hour window due to safety concerns still being addressed onboard the STRIDE.

4.2. Additional/Supporting Information

4.2.1. *STRIDE Crew*

4.2.2. The chief engineer had thirty-eight years in the maritime industry. He had been a chief engineer with Danaos Shipping Co. Ltd since 2016 and had been on six other company vessels. This assignment was the chief engineer's first trip on the STRIDE. He reported on November 19, 2023.

4.2.3. The previous chief engineer worked for Danaos Shipping Co. Ltd for eleven years and was in the maritime industry for twenty-three years. He reported to the STRIDE on August 2, 2023, and departed the vessel on November 19, 2023.

4.2.4. The third engineer began working for Danaos Shipping Co. Ltd in 2004. He completed twenty-six contracts as a motorman, fourth engineer, and third engineer on multiple company vessels. He reported to the STRIDE on December 11, 2023.

4.2.5. The wiper worked in the maritime industry for approximately four years, all with Danaos Shipping Co. Ltd. This was the wiper’s first trip aboard the STRIDE. He reported on November 28, 2023.

4.2.6. *Port Double Bottom Diesel Oil Port Tank Valve Replacement*

4.2.7. On November 11, 2023, the chief engineer onboard the STRIDE placed an order using the company's computerized ordering system for a cast iron screw-down check angle valve, JIS F-7354. The requisition did not indicate what the valve would be used for.

4.2.8. The company's Safety Management System for Supply Procedure states that the

"requisition lists are directed to the Supply Department, which reviews and checks for adequacy to specified requirements and enters the requisition in the supply software program. The requisition form shall clearly describe the specification/type of the product to be purchased, indicating, where applicable, the International Ships Suppliers Association catalog reference number, description or other precise identification, quantities on board, and quantities required."

4.2.9. The valve was delivered to the STRIDE on November 23, 2023, while the vessel was moored in Houston, TX.

4.2.10. On November 24, 2023, a new screw-down check angle valve, was installed on the port double bottom diesel oil tank to replace the previous valve.

Figure 2: Images of the port double bottom diesel oil tank valve replacement from the 20-26 Nov-2023 Weekly Engine Jobs. Provided by Danaos Shipping Co. Ltd.

4.2.11. Both the port and starboard valves for the double bottom diesel oil tanks were located below the deck plate on the 4th deck. Each valve had a reach rod accessible from the deck plate. During the investigation, it was discovered that the reach rod was not attached to the port valve. A reach rod is used to operate valves that are in hard-to reach areas.

Left- Figure 3- Starboard double bottom diesel oil storage tank valve with attached reach rod. Right- Figure 4- Port double bottom diesel oil storage tank with reach rod hanging down but not attached. Images taken on January 13, 2024, by U.S. Coast Guard.

4.2.12. When the U.S. Coast Guard had the crew remove the port valve, it was observed

to be in the closed position.

4.2.13. From the time the new valve was installed until the bunkering on January 8, 2024, no bunkering occurred to the port double bottom diesel oil tank.

4.2.14. *Fuel Tank Vent Piping Arrangements*

4.2.15. Several fuel tanks, including the port and starboard double bottom diesel oil tanks, heavy fuel oil overflow tank, sludge tank, double-bottom diesel oil service tank, and heavy fuel oil service tank, were fitted with a vent pipe that connected to a 12-inch steel pipe. The 12-inch pipe ran from the 4th deck in the engine room up to the compass deck, ending in a gooseneck; total length of the vent pipe was approximately 125 feet in length.

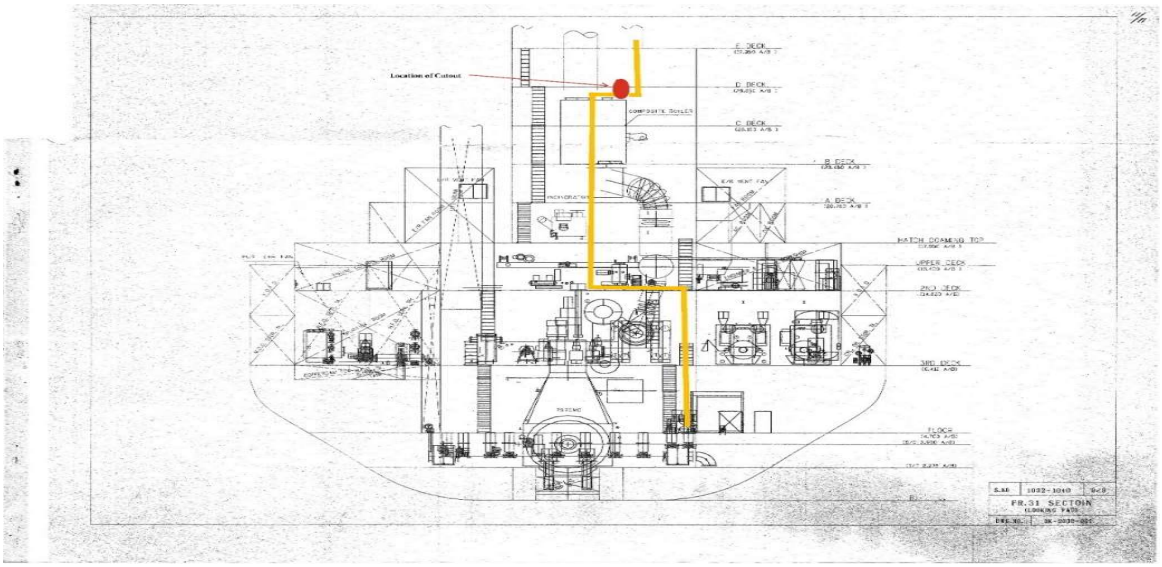
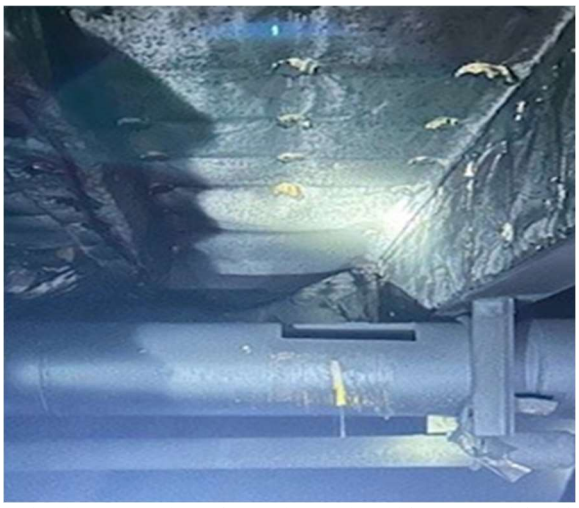


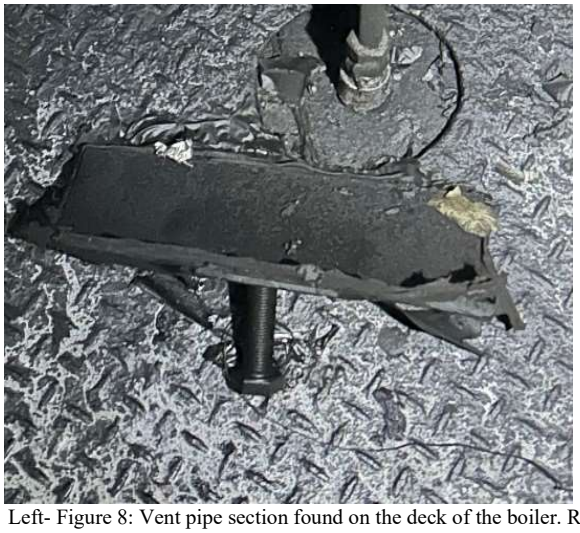
Figure 5- Diagram of engineering spaces looking forward. The yellow line is the vent pipe. The red circle is the location of the cutout. Diagram provided by Danaos Shipping Co. Ltd .

4.2.16. On January 10, 2024, Coast Guard and National Transportation Safety Board investigators discovered a 7-inch by 11-inch cutout on a horizontal section of the vent pipe. The cutout was located approximately 98 feet above the double bottom diesel oil tanks, in the overhead of D Deck, above the boiler. Investigators observed standing oil throughout the interior of the vent piping.




Left- Figure 6: Horizontal vent pipe section with cut out. Right- Figure 7: Diesel oil inside the vent pipe. Both images taken on January 11, 2024, by U.S. Coast Guard.

4.2.17. Below the cutout, on the boiler's deck, investigators discovered the missing section of the vent pipe along with remnants of tape and a flexible adhesive. The removed section of the vent pipe had a bolt threaded into a nut that was welded onto the removed section.



Left- Figure 8: Vent pipe section found on the deck of the boiler. Right- Figure 9: The removed section fits perfectly into the cutout section of the vent pipe. Both images taken on January 11, 2024, by U.S. Coast Guard.

4.2.18. *Bunkering Operations*

4.2.19. The STRIDE Safety Management System bunkering procedures state, "Minimum two engineer officers, two engine ratings, one deck officer, and one A.B., shall be on duty during bunkering. However, the chief engineer can assign duties to the additional crew if he deems it necessary during the oil transfer. The names and the specific duties by the title of all persons involved in oil transfer procedures shall be listed on the SQE-18 form (Bunkering team), which shall be posted in the engine control room and bunker station. (Ref. SQE-18)."

4.2.20. The Safety Management System bunkering procedures also state that during bunkering procedures, "frequent tank soundings and valves (HFO/MDO/MGO) adjustment to be made as needed." Both the port and starboard double-bottom diesel oil

tank valves were located at the deck plate on the 4th deck. The sounding tubes for the starboard and port double bottom diesel oil tanks were located forward on the 4th deck in the vicinity of the valves.

4.2.21. The capacity of the starboard double-bottom diesel oil tank is 121.6 metric tons, and the capacity of the port double-bottom diesel oil tank is 83.6 metric tons. On January 6, 2024, the engine room logbook recorded that the starboard tank had 68.2 metric tons of marine grade diesel oil, and the port tank had 27.7 metric tons.

4.2.22. On January 7, 2024, STRIDE placed an order for 80 metric tons of marine grade oil and 1100 metric tons of low-sulfur fuel oil.

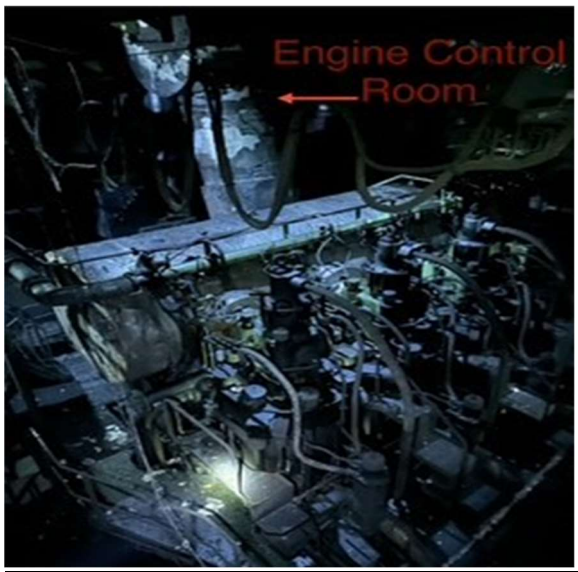
4.2.23. The marine grade diesel oil would be bunkered first, followed by the low sulfur fuel oil. It is believed that the marine grade diesel oil would be bunkered into the port double bottom diesel oil tank first and then into the starboard tank.

4.2.24. The bunkering operations on January 8, 2024, lasted approximately twenty-three minutes. During that time, 52 metric tons of marine grade diesel oil was transferred to the STRIDE.

4.2.25. On January 11, 2024, the starboard-sounding tube was opened by Coast Guard Investigators and was filled to capacity and pressurized. The port tank sounding was recorded at 12.7 metric tons.

4.2.26. *Fire Damage*

4.2.27. The fire on the STRIDE caused substantial damage to the engine room. Fire, heat, and soot damage were observed throughout the engine room. Numerous electrical panels and visual alarms were burned beyond recognition.



Left- Figure 10: Main engine. Right- Figure 11: Electrical Panel. Both images were taken on January 11, 2024, by the U.S. Coast Guard.

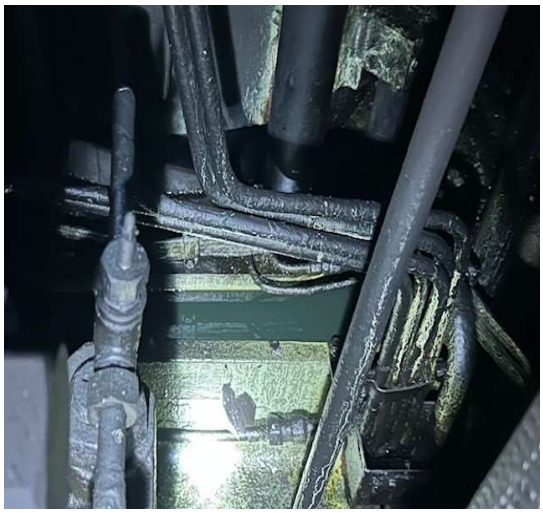
4.2.28. The National Transportation and Safety Board fire and explosion specialist observed an area on the 4th deck that showed evidence of a high-temperature exposure on

the starboard side of the main engine. This area had steep gradients of thermal damage over short distances and sharp demarcation between charred and undamaged surfaces. A lube oil filtration system was centered within this area.

Figure 12: Lube oil filtration system located within the high-temperature exposure area. Images taken on January 11, 2024, by U.S. Coast Guard.

4.2.29. Outside of the forward engine control room door, boxes and other combustibles were found unaffected by the heat or flames.

4.2.30. Pools of unburned marine diesel oil were discovered on all decks, starting from the top of the D deck down to the 4th deck. The bulkheads had visible oil streaks throughout the funnel casing and engine room.



Left- Figure 13: Unburned marine diesel oil on D deck. Right- Figure 14: Unburned marine diesel oil at the main engine. Images taken on January 11, 2024, by the U.S. Coast Guard.

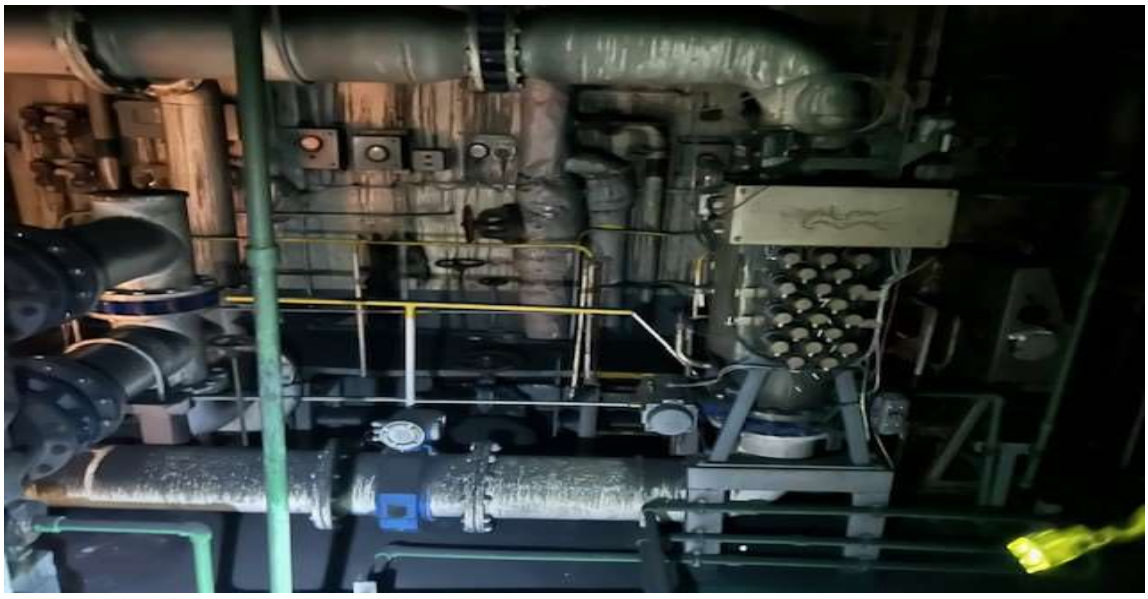


Figure 15- Oil streaked down the forward bulkhead in the engine room on two decks. Images taken on January 11, 2024 by the U.S. Coast Guard.

5. Analysis

5.1. The correct valve was not verified prior to installation. It should have been verified that the valve ordered and received was the correct type needed for the port double bottom diesel oil tank. The fuel oil transfer and purifying system drawing shows that the port double bottom diesel oil tank should have an angle stop valve. The previous valve was an angle stop valve, allowing fuel to flow into and out of the tank. The new check valve was installed so that it would only allow oil to flow from the storage tank when it was opened.

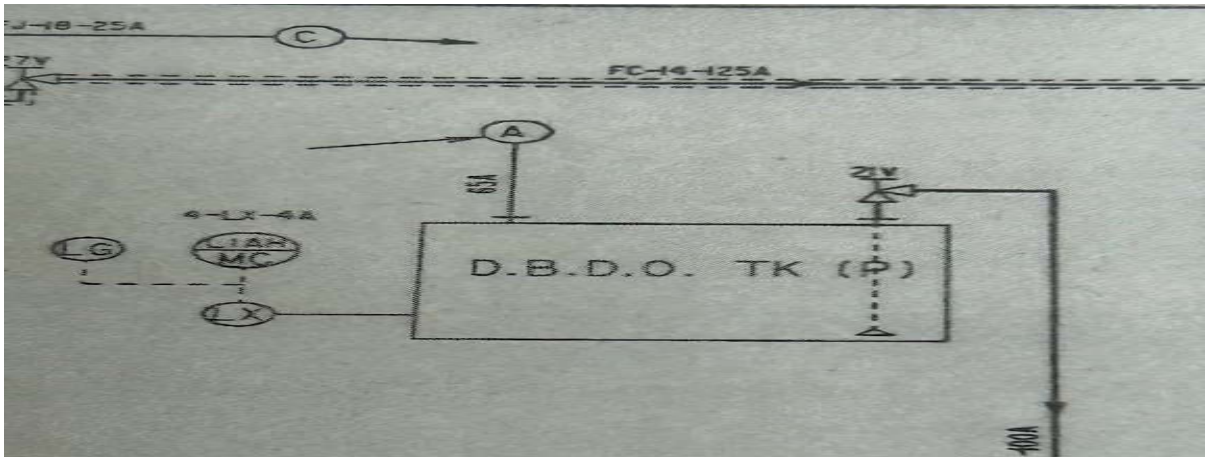


Figure 16: Fuel oil transfer and purifying line drawing showing the port double-bottom diesel oil tank and the required valve.

5.2. Improper installation of reach rod: When the check angle valve was installed for the port double bottom diesel oil tank, the reach rod was not connected to the valve. The reach rod, located at the deck plate, was tied off to piping using rags. The valve was located below the deck plates in between multiple pipes, which would be difficult to close in the event of an emergency.

5.3. Failure to follow Safety Management System bunkering procedures for manning:

Although the SMS procedures require a minimum of four engineers, the bunkering operations on January 8, 2024, consisted of the chief engineer, the third engineer, and the fitter. The fitter was directed by the chief engineer to be positioned at the starboard manifold on A deck. The chief engineer and third engineer were in the engine control room.

5.4. Failure to follow Safety Management System bunkering procedures for tank soundings and valve alignment: The bunkering operations lasted twenty-three minutes. During that time, the chief engineer made two separate requests to increase the transfer rate, beginning with 1000 RPM and increasing to 1400 RPM. With the chief engineer and the third engineer in the engine control room, there was no one located on the 4th deck to conduct soundings. The chief engineer and third engineer likely monitored the tank levels remotely from the engine control room.

5.5. Unauthorized alterations to the vent pipe: At an undetermined date, a 7-inch by 11-inch section of pipe was cut out of a horizontal section of the vent pipe. The cutout section was put back in place with a flexible sealant and tape. Investigators were told that this cutout was an "inspection port." There are no records of this alteration and no records from the classification society that approved this alteration.

6. Conclusions

6.1. Determination of Cause

6.1.1. The initiating event for this casualty occurred when the improper valve was installed on the port double bottom diesel oil tank. The causal factors leading to this event were:

6.1.1.1. The prior chief engineer ordering the valve, most likely did not verify the required type of valve that needed to be installed.

6.1.1.2. It was not confirmed during the valve's installation that it was the proper valve for its intended use.

6.1.1.3. Since the valve was replaced, no bunker operations transferring oil into the port double bottom diesel oil storage tank had occurred.

6.1.1.4. The Safety Management System was not properly implemented regarding supply procedures.

6.1.2. Subsequent to installing the improper valve on the port double bottom diesel oil storage tank, marine grade oil discharged and flowed down the forward bulkhead in the engine room. The causal factors leading to this event were:

6.1.2.1. Valve alignment for the fuel oil transferring system was not verified prior to commencing bunker operations.

6.1.2.2. Tank soundings were not conducted during the bunkering operation.

6.1.2.3. The cut out in the vent pipe gave the oil a discharge path, allowing it to

flow out of the pipe and into the engine room.

6.1.2.4. The Safety Management System was not properly implemented regarding bunker operations.

6.1.3. Subsequent to the oil discharging, a fire ignited in the engine room.

6.1.4. Subsequent to the fire, was the death of the chief engineer and third engineer, and the life-threatening injuries to the wiper. The causal factors leading to this event were:

6.1.4.1. Inability to leave the engine control room due to flames and heat being present directly outside the door.

6.1.4.2. Failure to use the emergency escape breathing device located in its proper bracket in the engine control room.

6.2. Evidence of Act(s) or Violation(s) of Law by any Coast Guard Credentialed Mariner subject to action under 46 USC Chapter 77: There were no acts of misconduct, incompetence, negligence, unskillfulness, or violations of law by a credentialed mariner identified as part of this investigation

6.3. Evidence of Act(s) or Violation(s) of Law by U.S. Coast Guard personnel or any other person: There were no acts of misconduct, incompetence, negligence, unskillfulness, or law violations by Coast Guard employees or any other person that contributed to this casualty.

6.4. Evidence of Act(s) Subject to Civil Penalty: This investigation did not identify acts subject to civil penalties.

6.5. Evidence of Criminal Act(s): This investigation did not identify violations of criminal law.

6.6. Need for New or Amended U.S. Law or Regulation: This investigation did not identify a need for new or amended U.S. Law or Regulation.

6.7. Unsafe Actions or Conditions that Were Not Causal Factors: This investigation did not identify any unsafe actions or conditions that were not causal factors.

7. Actions Taken Since the Incident

7.1. The Danaos Shipping Co. Ltd. updated their pre-bunkering training procedure to “ensure the crew is familiar with the piping related to the bunkering (filling line, transfer line, vent line, and respective valves) and confirm the lines integrity and water tightness.”

7.2. The STRIDE’s Classification Society attended the seven sister ships of the STRIDE and discovered three of them had a similar cutout installed on the vent pipe. The three vent pipes have been restored to their original condition.

8. Recommendations

8.1. Safety Recommendations: This investigation did not identify any safety recommendations.

8.2. Administrative Recommendations

8.2.1. Conduct mandatory training for all personnel involved in bunkering operations aboard all remaining vessels. The curriculum should critically review existing Safety Management System procedures pertaining to bunkering and solidify the consistent application of these protocols. Specific attention should be given to proper operational manning levels during bunkering operations.

8.2.2. Recommend an internal audit to verify that the Safety Management System is being properly implemented regarding supply and maintenance procedures, ensuring that the crew is ordering the correct spare parts for the ship machinery systems and that those spare parts are properly installed.

8.2.3. Formal recognition for Baytown Fire Department Engine 2 for their unwavering assistance in the search and recovery of the three STRIDE crewmembers. Their rapid triage and assessment of the three crewmembers, was instrumental in stabilizing the wiper, ultimately saving his life.

8.2.4. Recommend this investigation be closed.

Chief Warrant Officer, U.S. Coast Guard
Investigating Officer