

MA2015-7

**MARINE ACCIDENT
INVESTIGATION REPORT**

June 25, 2015



The objective of the investigation conducted by the Japan Transport Safety Board in accordance with the Act for Establishment of the Japan Transport Safety Board is to determine the causes of an accident and damage incidental to such an accident, thereby preventing future accidents and reducing damage. It is not the purpose of the investigation to apportion blame or liability.

Norihiro Goto
Chairman,
Japan Transport Safety Board

Note:

This report is a translation of the Japanese original investigation report. The text in Japanese shall prevail in the interpretation of the report.

MARINE ACCIDENT INVESTIGATION REPORT


June 4, 2015

Adopted by the Japan Transport Safety Board

Chairman	Norihiro Goto
Member	Kuniaki Shoji
Member	Satoshi Kosuda
Member	Toshiyuki Ishikawa
Member	Mina Nemoto

Accident type	Fatality of a crew member
Date and time	Between 03:45 to 03:55 on December 17th, 2013 (local time, UTC-8 hours)
Location	On the Pier of the Morro Redondo Port in the Cedros Island, Baja California State, United States of Mexico (approximately 28° 02.6'N, 115° 10.7'W)
Summary of the Accident	While the Cargo ship ONOE with twenty crew, including the Master and the second officer, was under the cargo handling load of the sea salt at the pier of the Morro Redondo Port in the Cedros Island, Baja California State, United States of Mexico on December 17th, 2013, and between 03:45 and 03:55, the second officer fell from the gangway of the land boarding facility to the pier underneath, which is about 5 to 6 meters in height, and died.
Process and Progress of the Investigation	<p>(1) Setup of the Investigation The Japan Transport Safety Board appointed an investigator to investigate this accident on February 17th, 2014.</p> <p>(2) Collection of Evidence Collection of questionnaire on February 18, 26, and 27; March 7, 11, and 25; July 10; August 14; September 3, 8, 11, 16, 24, and 29, 2014.</p> <p>(3) Comments from Parties Relevant to the Cause Comments on the draft report were invited from parties relevant to the cause of accident.</p> <p>(4) Comments from the substantially interested State Comments on the draft report were invited from the substantially interested State of the cargo ship ONOE.</p>

<p>Factual Information</p> <p>Vessel Information</p> <p>Vessel type and name</p> <p>Gross tonnage</p> <p>IMO number</p> <p>Port of registry</p> <p>Owner</p> <p>Ship management company</p> <p>Classification society</p> <p>L×B×D, Hull material</p> <p>Engine, Output</p> <p>Date of launch.</p>	<p>Cargo ship ONOE (hereinafter referred to as “the vessel”)</p> <p>87,404 tons</p> <p>9217759</p> <p>Tokyo</p> <p>NIPPON YUSEN KABUSHIKI KAISYA.</p> <p>NYK SHIPMANAGEMENT PTE LTD (hereinafter referred to as “Company A”) (in Republic of Singapore)</p> <p>Nippon Kaiji Kyokai</p> <p>289.00m x 45.00m x 24.10m, Steel</p> <p>Diesel engine, 14,710kW</p> <p>November 2nd, 1999</p>
<p>Information about this land getting on and off facilities</p>	<p>According to the questionnaires collected from Company A and the port authority (EXPORTADORA DE SAL, S.A. DE C.V.), the outline information is as follows.</p> <p>(1) The land getting-on and getting-off facilities from the vessel to the land and vice versa (hereinafter referred to as “this land getting on and off facilities”) was comprised of a gangway, a pole, a wire-rope moving the gangway forward-and-backward (hereinafter referred to as “this wire rope”), and a winch, as well as a wire-rope moving the gangway up-and-down, and a winch. (See Figure 1)</p> <div data-bbox="635 1160 1332 1572" data-label="Diagram"> </div> <p>Figure1: Schematic drawing of this land getting on and off facilities</p> <p>(2) The main items of this land getting on and off facilities described in the questionnaires are as follows:</p> <p>(i) The length x width x height of the gangway: 16m x 0.7m x 1.1m</p> <p>(ii) Material of the gangway: Aluminum alloy</p> <p>(iii) Diameter of the wire rope moving up-and-down of the gangway: approx. 13mm</p> <p>(iv) Diameter of this wire rope: 10mm</p> <p>(3) “Positioning of the gangway in the directions of backward-</p>

	<p>and forward, as well as up-and-down” (hereinafter referred to as “gangway operations”) was carried-out by the control box of this land getting on and off facilities (remote control device).</p>  <p>Photo 1: Control box (Provided by Company A)</p>
<p>Crew Information</p>	<p>Master (Nationality: The Philippines), male, 58 years old Endorsement attesting the recognition of certificate as master under STCW regulation I/10 (issued by Japanese government), Date of issue: August 24th, 2012 (valid until August 23th, 2017) Boarded as master on this vessel since October 2013.</p> <p>Second officer (Nationality: The Philippines), male, 52 years old Endorsement attesting the recognition of certificate as master under STCW regulation I/10 (issued by Japanese government), Date of issue: December 14th, 2010 (valid until December 13th, 2015) Boarded as an officer on a container ship and a bulk carrier ^{*1} since March, 1994, and then as second officer on this vessel since November 2013.</p> <p>Able seaman (Nationality: The Philippines), male, 27 years old Boarded as able seaman on this vessel since February 2013.</p> <p>Ordinary seaman A (Nationality: The Philippines), male, 25 years old Boarded as able seaman on this vessel since September 2013.</p>
<p>Injuries to Persons</p>	<p>The death of one person (Second officer)</p>
<p>Damage to Vessel (or Other Facilities)</p>	<p>The vessel: Cracks and bent damage occurrence to the handrail of the starboard rear.</p> <p>This land getting on and off facilities: Break of this wire rope and bent damage occurred to the top part of the gangway.</p>
<p>Events Leading to the Accident</p>	<p>The questionnaire collected from Company A listed as follows.</p> <p>(1) Movements of the vessel</p> <p>The vessel, including twenty crew (all of them are the Philippine nationals) the Master and the second officer got on board, came alongside on the starboard side to the pier of the</p>

^{*1} The “bulk carrier” means a cargo ship which is exclusively used for loading granular or liquid cargo, such as grain and oil, in an unpacked and loosened state. (Source: “Basic Navigation Glossary”, edited by Japan Institute of Navigation, Kaibundo Publication, May 1993)

Morro Redondo Port in the Cedros Island at around 11:40 on December 14th, 2013. (See Figure 2 and Photograph 2)



Figure 2: Cedros Island (Source: Grand New World Atlas, Zenkyo Shuppan, March 1995)

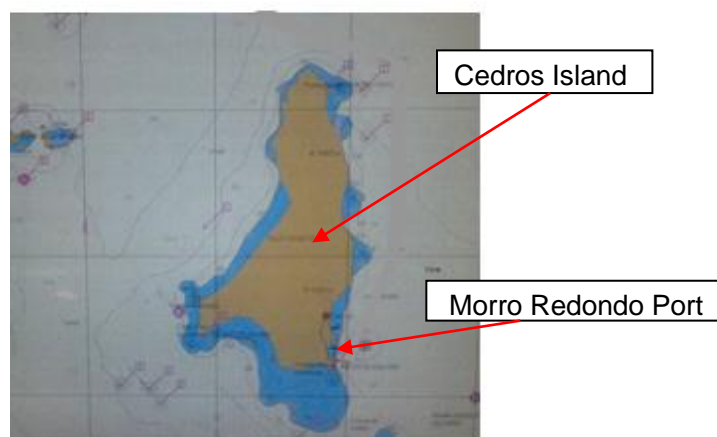


Photo 2: Cedros Island on the ECDIS (Provided by Company A)

(2) Situation of the Accident Occurrence

The first officer had a meeting with the port manager on the loading cargo works on December 14th around 14:10, in which he was instructed by the port authority that the gangway operations is recommended to be done by the crew of the vessel, and that the tip division of the gangway, when it is not being used, is recommended to be maintained at a higher position than “the starboard side handrail on the upper deck of the vessel” (hereinafter referred to as “the handrail” and apart from the vessel).

The first officer made the instructions of the port authority and how to use the control box known to every crew member, and then started to load the cargo works of the sea salt at around 14:15.

The second officer got the watch duty of the loading cargo works with the able seaman and ordinary seaman B on December 17th at around 00:00.

At around 03:45, when the loading cargo works at No.5 cargo space had been completed, one of two stevedores who were

moving the loader (land cargo work facilities) from No.5 hatch way to No.7 hatch way asked the able seaman to tell the second officer to accompany the stevedore, as he was going to measure the draft of the vessel from the work barge.

The second officer, who had been staying in the cargo control room, received the requested instructions by the stevedore, the second officer took the gangway at the upper deck on the starboard side near No.9 cargo space in order to transfer to the work barge.

The second officer instructed the able seaman from the gangway to wake up the boatswain and the ordinary seaman for the next watch duty (watch between 04:00 and 08:00) and also instructed the ordinary seaman A to perform the “tightening the slacked mooring rope on the stern with the mooring winch” (hereinafter referred to as “this mooring operation”), with these instructions, the able seaman went to the accommodation space and the ordinary seaman A went to the quarter-deck, respectively.

The ordinary seaman A asked the start permission from the second officer for commencing this mooring operation over the radio, and when the second officer gave permission, the ordinary seaman A started this mooring operation.

The ordinary seaman A, while doing this mooring operation, hearing the second officer’s voice over the radio shouting “YYY (name of the able seaman), gangway”, stopped the running of the mooring winch and put on the brakes, and hurried to the gangway. The able seaman in the accommodation space, when hearing the second officer called his name over the radio, went to the gangway quickly.

The two stevedores, who were at the fore about 150 meters away from the gangway, saw the second officer, who was walking toward the shore side on the gangway, which was set at the same height of the handrail, rushed toward the vessel on the gangway when the vessel suddenly moved toward the stern side and the handrail contacted with the tip of the gangway.

While two stevedores were running toward the gangway in order to raise the gangway tip over the handrail, one of the stevedores saw the second officer fall down from the gangway.

The work barge operator, while waiting on the sea near the gangway, saw that the wire rope was broken immediately after the handrail pushed the tip of the gangway toward the shore side, and the second officer, who was rushing toward the vessel, fell down from the gangway. (See Figure 3 and Photos 3-5)

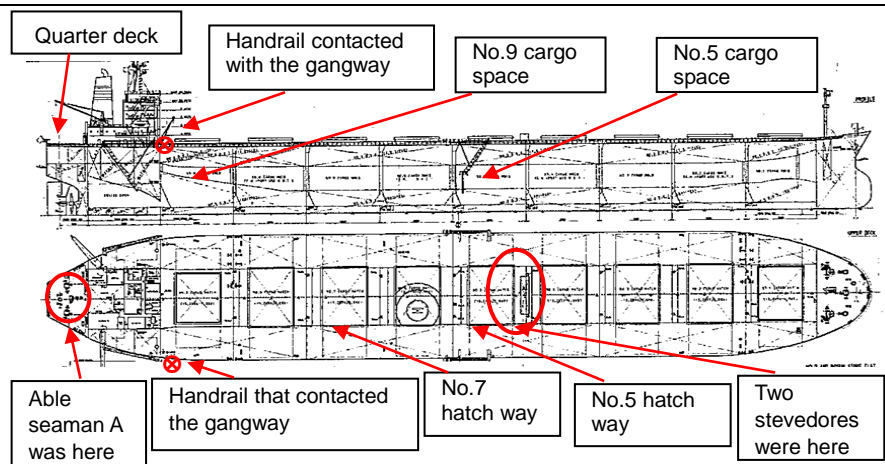


Figure 3: The situation on the deck of the vessel



Photo 3: Damage to the handrail



Photo 4: Damage to the gangway



Photo 5: Broken state of this wire rope

(Photos 3-5: Provided by Company A)

The able seaman found the second officer, who had fallen on the pier, which was about 5-6 meters below the gangway at around 03:55, and reported it to the master. The second officer was taken to the medical office in the Cedros Island by an ambulance, but he was confirmed dead at 04:30; the cause of death was a heart attack, a compound fracture and a head injury.

The second officer was wearing a helmet at the time of the accident.

Weather and Sea Conditions

Weather: Clear weather; Wind direction: South-southwest; Wind force: 2; Visibility: good.

Sea conditions: Wave height: about 0.5m; Ebb and flow: Last period of the ebb tide; Time of the high tide: 00:14 by 1.72m; Time

	<p>of the low tide: 04:52 by 0.98m. Time of sunrise: 06:26</p>
<p>Other Matters</p>	<p>(1) Information about this land getting on and off facilities</p> <p>(i) Information about the wire rope The questionnaire from the port authority indicates as follows:</p> <ol style="list-style-type: none"> a. This wire rope was broken. b. This wire rope had been newly replaced on May 15th, 2012. c. The breakage of a wire rope accident has not occurred during the last 25 years. <p>(ii) Information about a safety net The questionnaire from Company A indicates that there was no safety net set to protect anyone from falling from the gangway.</p> <p>(iii) Maintenance and examination work on this land getting on and off facilities The questionnaire from the port authority indicates that maintenance and examination had been carried-out every month by the port authority by way of the visual inspection, with an inspection slip, on the conditions of this wire rope and the hand rail during the calendar year of 2013, and no irregularities had been found on this wire rope.</p> <p>(2) Information about this vessel</p> <p>(i) Information about the vessel draught: The questionnaire from Company A indicates that the draught of this vessel when arriving at the port pier was 6.5m at the bow and 8.9m at the stern, and they were 17.3m at the bow and 17.5m at the stern when the cargo loading work was completed on December 18th at around 00:12</p> <p>(ii) Information about the mooring rope on the stern: The questionnaire from Company A indicates that the mooring ropes on the stern were six in total: two stern ropes and four breast lines.</p> <p>(iii) Information about the gangway operations and the cargo loading works watch duty: The "Night Order Book" between December 14th and 16th, which was recorded by the first officer, described as follows and was signed by each crew except for the master, who put in the column under the items mentioned. (Extract)</p> <ul style="list-style-type: none"> • The person in charge of the gangway is recommended not to leave the position near the gangway. By the instruction of the port authority, the gangway operation is recommended to be done by the crew of the vessel. The tip part of the gangway is recommended to be always kept above the

handrail of the upper deck, and when it is not used, the gangway is recommended to be separated from the vessel at a safe enough distance.

- Be careful of all mooring ropes. Special attention is recommended to be given to the tidal range and swell. When additional manpower is needed, obtain the support of the boatswain or additional personnel.

(iv) Information about the safety management:

Company A had been doing the safety management in the Mooring work by using the following manuals and other information.

a. According to the "Windlass and Mooring Winch" (revised on April 1st, 2013), windlass and mooring winch is recommended to be operated based on the "Safe Mooring practices and Guidelines".

b. According to the "Safe Mooring practices and Guidelines" (revised on April 1st, 2013) it is regulated as follows. (Extract)

- Communication:

The person carrying-out the adjustment of the mooring lines are recommended to obtain permission from the officer of watch. The officer of watch is recommended, before giving permission, to carefully assess how the position of the vessel would be changed by the adjustment of the mooring rope, before giving the permission.

- Safe actions:

The mooring operations in shipboard exert a serious risk to the crew. Those crew who are to engage in the mooring operation is recommended to be trained so that hazard (or potential hazard) recognition is available and the risk assessment is recommended to be implemented before starting the mooring operations.

c. According to the "Risk Management" (revised on March 31st, 2012) it is regulated as follows. (Extract)

- Risk assessment process:

The operations using the mooring device has to be carried out, based on the risk assessment process procedures.

d. Education and training about the risk

The questionnaire from Company A indicates that the company had not implemented education and training about the risk assessment for all of the crew members of this vessel, including, master, officers, and the crews who were engaged in the mooring operations.

	<p>(3) Information about other matters</p> <p>The questionnaire from the port authority Company A indicates that there were no ships sailing in the vicinity of the pier at the time when the accident took place.</p>
<p>Analysis</p> <p>Involvement of crew members</p> <p>Involvement of vessel, engine, etc.</p> <p>Involvement of weather and sea conditions</p> <p>Analysis of the findings</p>	<p>Applicable</p> <p>Applicable</p> <p>Not Applicable</p> <p>(1) The cause of the death of the second officer was a heart attack, a compound fracture and a head injury.</p> <p>(2) It is considered probable that during loading operation at the Morro Redondo Port, the first officer communicated to all of the crew members, except the master, with the “Night Order Book”, that the person in charge of the gangway is recommended not to leave the position near the gangway, the gangway operation is recommended to be done by the crew of the vessel, the tip part of the gangway is recommended to be always kept above the handrail, and that when it is not used, the gangway is recommended to be separated from the vessel.</p> <p>(3) It is considered probable that second officer moved from the vessel to the gangway which had been adjusted to the same height with the handrail, in order to take the work barge waiting for them near the gangway, with the stevedore, as the cargo loading works at the No.5 cargo space had been completed on December 17th, at around 03:45.</p> <p>(4) It is considered probable that there was nobody near the gangway, as the second officer instructed the able seaman to wake up the crew to be engaged in the next watch duty, and also instructed the ordinary seaman A to perform the mooring operation of this vessel.</p> <p>(5) It is considered probable that the reason for the handrail contacted the tip portion of the gangway after starting this mooring operation was related to the fact that the gangway had been adjusted to the same height of the handrail, and that there was nobody left around the gangway and there was not anybody who could adjust the height of the gangway.</p> <p>(6) It is considered probable that the reason for the mooring rope slacked was that it was about the last period of the ebb tide and the draught of the vessel was deepened as it was during the cargo loading work.</p> <p>(7) It is considered probable that the second officer did not predict that the handrail could contact the tip of the gangway if the</p>

mooring operation had been started, given the fact that the second officer called the able seaman over the radio shouting “YYY (name of the able seaman), gangway”, after giving the permission of the request from the ordinary seaman A and the handrail contacted the tip of the gangway, as the vessel was drawn to the pier side due to the mooring operation. It is considered probable that the second officer was staying on the gangway because he did not predicted that the handrail could contact the tip of the gangway with the movement of the vessel; however, it was not possible to determine the actual situation.

- (8) It is considered probable that the reason the second officer, who had been walking toward the shore side on the gangway, moved toward the vessel, was because he knew that the handrail contacted the tip of the gangway.
- (9) It is considered probable that as the ordinary seaman A carried-out the mooring operation, after obtaining the permission from the second officer, this vessel was drawn to the pier while being moved toward the stern direction, and the handrail was in contact with the tip of the gangway; thus, the gangway was pushed toward the shore direction, a tensile stress exceeding the strength of this wire rope, which therefore, caused the wire rope to break. (See Photo 6)

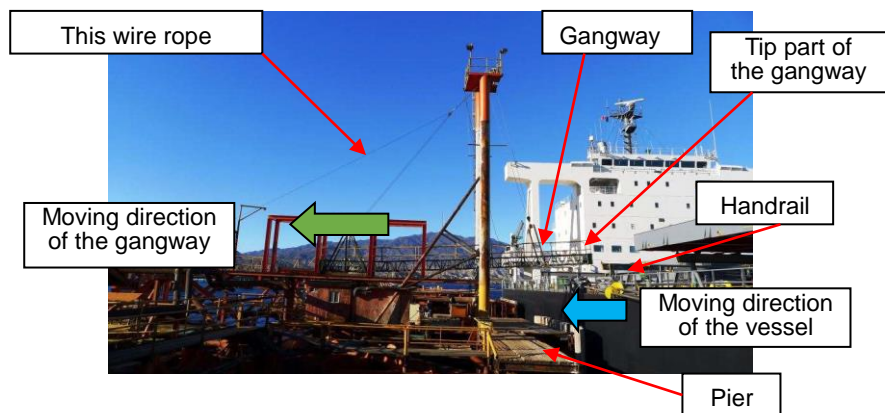


Photo 6: Moving situation of the vessel and the gangway after starting of this mooring operation

- (10) It is considered probable that the second officer fell down from the gangway to the pier, as the gangway moved toward the shore direction because this wire rope was broken when he was returning back to the vessel on the gangway. However, it was not possible to determine the situation that led him to fall.
- (11) In Company A, as the mooring operation gives a serious risk to the crew, it had been so determined that the mooring winch operation is recommended to be conducted in accordance with the "Safe Mooring Practices and their Guidelines", so that the crew members involved in the mooring operation are trained to

	<p>recognize the hazard, and the risk assessment be implemented before starting the mooring operation. However, education and training about the risk assessment for all of the crew members of this vessel, including the master, officers, and the crews who were engaged in the mooring operations had never been implemented; therefore, it is considered probable that these factors are related to the occurrence of this accident. It is considered somewhat likely that this accident could have been avoided if Company A had implemented the education and training of the risk assessment for the crews to make it possible for them to recognize the hazard, and if the second officer had taken command of this mooring operation on the upper deck.</p> <p>(12) Concerning this wire rope, the maintenance and examination had been carried-out by the port authority by way of the visual inspection, and almost a year and 7 months had elapsed since it had been replaced with a new one; thus, neither the strength of it could not be determined, nor the possibility of it breaking could be determined.</p> <p>(13) It is considered probable that there was no impact on the accident of the ship that was generated by waves, and general sea conditions, as there were no ships sailing in the vicinity of the pier at the time when the accident took place; further, the wave height was about 0.5m.</p>
<p>Probable Causes</p>	<p>It is considered probable that this accident happened during the cargo loading works at night at the pier of the Morro Redondo Port, in such manner as when the vessel was drawn to the pier side by this mooring operation, the handrail contacted the tip part of the gangway, the gangway was pushed back to the shore side, then this wire rope broke; therefore, the second officer, who was in the process of going back to the vessel on the gangway fell down to the pier.</p> <p>It is considered also probable that the reason for the second officer being on the gangway was that he did not predict that the handrail could contact the tip part of the gangway due to the movement of the vessel. However, it was not possible to determine such situation.</p>
<p>Safety Actions</p>	<p>In Company A it had been so determined that the crew members involved in the mooring operation are trained to recognize the hazard, and risk assessment should have been implemented before starting of a mooring operation, however, education and training about the risk assessment for the crew members of this vessel including the master, officers, and the crews who were engaged in the mooring operations had never been implemented. Therefore, it is considered probable that these factors are related to the occurrence of this accident.</p>

It is considered also probable that the reason for the handrail contacted the tip portion of the gangway after starting of this mooring operation was related to the fact that the gangway had been adjusted to the same height of the handrail, and that there was neither anyone left around the gangway, nor was there anybody who could have adjusted the height of the gangway.

Therefore, it is recommended for Company A to let the crew members involved in the mooring operation be well instructed to obey the "Safe Mooring Practices and Guidelines", and to implement the education and training about the risk assessment for all the crew members involved in the mooring operations so that recognition of a hazard can be made available, as well as to let the crews on the duty of cargo loading watch be well guided to observe the items about the mooring operations which are set forth in the "Night Order Book."

Company A has investigated the cause of the accident and has considered the recurrence preventive measures and it has made well-known the following items to the ships which Company A manages (155 vessels in total) after the accident.

- At least one person shall get duty watch on the gangway whenever any person embarks or disembarks.
- A crew member shall not operate a ladder or a gangway (including a gangway provided on a vessel) whenever any person is getting on a ladder or a gangway.
- A safety net shall be attached to a shore gangway.

The port authority established procedures on operation of this land getting on and off facilities on December 19 in 2013 which indicate that terminal operators are responsible for operating the gangway and so forth.

The following measures are possible to prevent recurrence of similar accidents:

- It is desirable for Company A to make sure that the crew members engaged in the mooring operations to obey the "Safe Mooring Practices and Guidelines", and to implement training and education for them about the risk assessment, so that they can recognize the hazards.