

MA2016-2

**MARINE ACCIDENT  
INVESTIGATION REPORT**

February 25, 2016



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

January 21, 2016

Adopted by the Japan Transport Safety Board

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

<b>Accident type</b>	Fatality of a worker
<b>Date and time</b>	Around 15:18 on September 1st, 2014
<b>Location</b>	Kashima Port, Timber Quay, Ibaraki Prefecture (Approximately 35 ° 55.4'N, 140 ° 39.7'E)
<b>Summary of the Accident</b>	While the Cargo ship CAMPANULA was handling operation of unloading raw wood in Kashima Port at around 15 hours 18 minutes on September 1, 2014, a raw wood which had been suspended hit a cargo worker, and the worker died.
<b>Process and Progress of the Investigation</b>	<p>(1) Set up of the Investigation The Japan Transport Safety Board appointed an investigator-in-charge and other investigators to investigate this accident on September 3, 2014.</p> <p>(2) Collection of Evidence On September 3, and October 19 and 20 in 2014, on-site investigation and interviews were held; on September 4, and November 13 and 14 in 2014, interviews were held; on May 28 and June 1, 2015, answer document received.</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 Flag State Comments on the draft report were invited from the flag State of CAMPANULA.</p>
<b>Factual Information</b>	<p>Vessel type and name      Cargo ship    CAMPANULA</p> <p>IMO number                      9336775</p> <p>Port of registry                Republic of Panama, Panama</p> <p>Owner                              S.T.OCEAN SHIPPING S.A. (Republic of Panama)</p> <p>Ship management company   Santoku Senpaku Co., Ltd.</p> <p>Gross tonnage                  19,885tons</p> <p>Classification society        NK</p> <p>L×B×D, Hull material</p> <p>Engine, Output                177.00 m×28.40 m ×14.2 m, Steel</p>

<p>Date of launch</p>	<p>Diesel engine, 6,620 kW February 8, 2007 (See Photo 1)</p>  <p>Photo 1 CAMPANULA</p>
<p>Cargo holds, Information of cargo handling</p>	<p>(1) CAMPANULA (hereinafter referred to as "this vessel") arranges the cargo holds with the numbers No. 1 through 5, whose sizes of the opening are 15.2m in the length and 15.8m width in the case of No.1 and 20.0m in the length and 19.0m in the width in the case of other cargo holds.</p> <p>(2) This vessel arranges one deck crane between each cargo holds and the maximum loading limit of No.1 crane "hereinafter referred to as "the crane)", which being located between No. 1 cargo hold and No. 2 cargo hold, was 30.5 tons.</p> <p>(3) The "handling operation of unloading raw wood (hereinafter referred to as "this case work") was composed of to grab the raw wood loaded on this vessel with the grab bucket, which was applied to the deck crane and whose own weight is about 6 tons and the maximum loading weight was limited to 16 tons, and then to lift-up the grab bucket by the deck crane in order to land on the quay side. (See Photo 2)</p>  <p>Photo 2 Grab bucket</p> <p>(4) The raw wood stacked on vessel were almost eight to twelve meters by length and one tons per piece wood.</p> <p>(5) There were no trouble or failure reported in the machines and uploading facilities of this vessel used for this case work at the time when the accident occurred.</p> <p>(6) Kashima Kowan Unso K.K. (hereinafter referred to as "Company A") had been engaged in this case work as a</p>

	<p>subcontractor of a port cargo handling company since May 2007.</p> <p>(7) This case work was performed by four (4) groups of people, each group was comprised of three (3) people, a switch man, a crane man and a waiting person, and the groups were changed on about every two (2) hours to engage in this case work, plus a loading/unloading officer that makes thirteen (13) people in total (consisting of a loading/unloading officer and ten (10) handling workers that had been sent from company A, and two (2) handling workers that had been sent from a subcontractor (hereinafter referred to as "Company B").</p> <p>(8) The switch man took charge of grab bucket opening and shutting operation by a remote control system and in charge of giving order to the crane man for starting of the lift-up of the grab bucket.</p> <p>(9) The crane man took charge of the operation of the grab bucket lifting and of turning of the deck crane.</p>
Crew Information	<p>Master (Nationality: People's Republic of China), Male, 43 years old Endorsement attesting the recognition of Certificate under STCW regulation I/10 Master (Panama Republic) Date of issue: August 13, 2012 (valid until August 15, 2016)</p> <p>Loading/unloading officer, Male, 49 years old After joining the Company A in April 1989, he became General Manager of the office in Kashima-Port in April, 2013 and had been performing operations as responsible person in loading/unloading work. At the time of this accident, his health condition was good.</p> <p>The switch man who was in charge of the crane at the time the accident (hereinafter referred to as "this case switchman") Male, 42 years old After joining the Company B in November, 2006, he acquired a license of Cargo Lifting Appliance Operator in December, 2009, he had been engaged in this case work since July, 2010. At the time of this accident, his health condition looked good.</p> <p>The crane man who was in charge of the crane at the time the accident (hereinafter referred to as "this case crane man") Male, 38 years old After joining the Company A in April, 1997, he acquired a license of Cargo Lifting Appliance Operator in December, 2004, he had been engaged in this case work since May, 2008. At the time of this accident, his health condition was good.</p>
Injuries to Persons	The death of one person (this case switch man)
Damage	Not applicable
Weather and Sea Conditions	<p>Weather: A cloudy weather and the wind direction was North-by-northeast and wind velocity was about 2.7m/s.</p> <p>Sea conditions: Sea surface calm.</p>

Events leading to the accident

(1) Movements of the vessel

Twenty-one (21) crew members (all of them were of Chinese national) other than the master were on board this vessel, whose cargo holds and upper deck were loaded with raw wood of about 27,000 tons, which put the port (left) side and anchored to the wood wharf of Kashima port on August 28, 2014.

(2) State of this case work

Company A had started this case work since August 28th and scheduled to finish it on September 2nd.

On September 1st, the loading/unloading officer and all handling workers started this case work at around 06:30 hours, after loading/unloading officer made explanation of this case work at the meeting early in the morning.

This case switch man, when performing this case work after taking this case switch man and this case crane man in charge in turn, stood-by a while, and then around 13:30 hours restarted this case work as switch man again.

The loading/unloading officer, at around 15:00 hours started to confirm the progress state of this case work from the No. 1 cargo hold in order.

This case switch man, at around 15:17 hours, while standing on the deck near the hatch coaming on the bow side in the No. 1 cargo hold from where the inside of the cargo hold can be easily overlooked, in order to grab the raw wood piled on the stern side in the directions of the bow and the stern, ordered this case crane man to lift-up "around ten raw wood caught by the grab bucket" (hereinafter referred to as "this case bunch of the raw wood")

This case crane man, after starting the lift-up, recognizing that there was "a raw wood extending by 4-5 meters outside of the bunch" (hereinafter referred to as "this case raw wood") included in this case bunch of raw wood, with this he knew that the whole length of this case bunch of raw wood exceeds the width of the opening of the cargo hold, he started to lift-up by pushing one edge part of this case bunch of raw wood against the sloped plating of top side tank (hereinafter referred to as the "Sloped plating") on the left side deck, therefore this case bunch of raw wood was kept slant.

(See Figure 1)

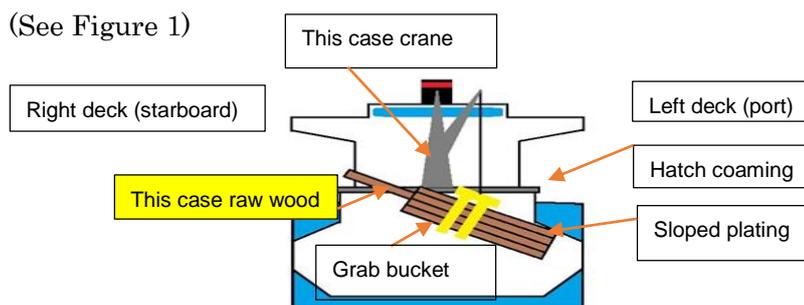


Figure 1 The lift-up situation of this case bunch of raw wood using the sloped plating

This case crane man witnessed at around 15:18 hours, while lifting-up this case bunch of raw wood in the slant state, that the bunch started to circle counter-clockwise, moved through the gap (around 1.0 meter) between the upper edge of the hatch coaming on the bow side of No.1 cargo hold and the lower edge of the hatch cover, and bounced by the forecastle bulkhead after colliding to this case switch man.

(Refer to Photo 3 and Figure 2)

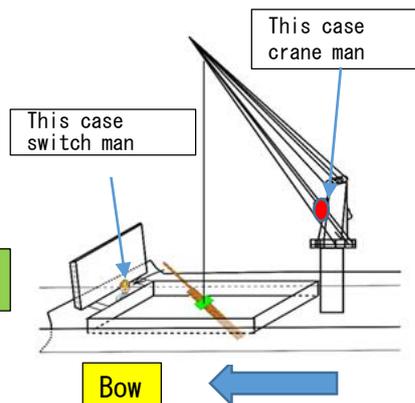
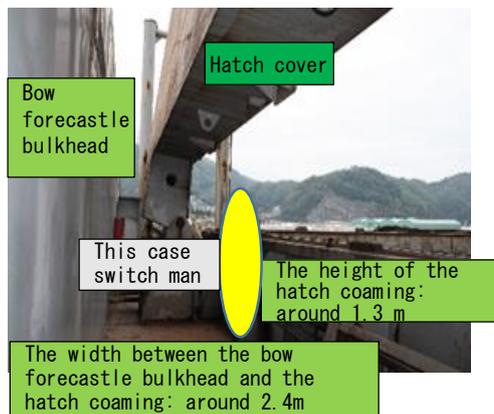


Photo 3 Bow side of No. 1 cargo hold

Figure 2 Circle state of this case bunch of raw wood

This case crane man stopped the crane operation immediately and communicated the occurrence of this accident to one of the handling workers on the land, and the said worker made a 119 emergency report.

This case switch man was taken to the hospital by ambulance, but he died about two hours later, he was given a diagnosis that the cause of death was the fracture of pelvic bone.

Other Matters

- (1) This case raw wood was about 12.0 m of length, about 0.7 m of diameter and about 1 t of weight.
- (2) In the hatch coaming area of No. 1 cargo hold bow side, the width between the bow forecastle bulkhead and the hatch coaming was about 2.4m, while the height of the hatch coaming was about 1.3m.
- (3) In No. 1 cargo hold, it happened more frequently compared to other cargo holds of this vessel, when grasping raw wood with the grab bucket some raw wood extends out of the bunch of raw wood.
- (4) Handling workers knew that there were cases when some raw wood extend out of a bunch of raw wood, the lift-up were done in the slanting state by pushing an end of the bunch of raw wood against the sloped plating and there were cases where the bunch started to circle and collide to the hatch coaming or hatch cover.
- (5) Both loading/unloading officer and the handling workers thought that the risk of colliding the raw wood to this case switch

	<p>man might be low, because usually the bunch of raw wood stopped at the hatch cover even if the bunch of raw wood circled on the bow side or stern side upper deck.</p> <p>(6) This case work was performed in accordance with the Standard Operation Manual prepared by Company A, however, there was no mentioning in the said manual of the measures when the full length of the raw wood exceeded the width of the opening due to the extension of some raw wood.</p> <p>(7) Company A was usually performing study meetings on awareness of a risk and near-miss targeted for the loading and unloading handling workers, however, the Safety and Health Committee of the company was not aware of the risk state that there are cases where the raw wood sometimes exceeded out of the bunch of raw wood and in such cases the bunch of raw wood were lifted-up by making use of the sloped plating.</p>
<p><b>Analysis</b></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 death of this case switch man was a pelvis bone fracture.</p> <p>(2) It is probable that while this case crane man was performing this case work using this case crane for this vessel on the timber quay of Kashima port, this case crane man lifted-up this case bunch of raw wood in the slant state by pushing the one edge part of this case bunch of raw wood against the sloped plating on the left deck side because the full length of this case bunch of raw wood exceeded the opening width of No.1 cargo hold.</p> <p>(3) It is probable as the edge part of this case bunch of raw wood being pushed against the sloped plating on the left deck side slid-down to the stern side, it circled to the counter-clockwise.</p> <p>(4) It is probable that this case raw wood, while this case bunch of raw wood was being lifted-up by pushing against the sloped plating this case bunch of raw wood started to circle counter-clockwise, moved through the gap between the upper edge of the hatch coaming on the bow side of No. 1 cargo hold and the lower edge of the hatch cover, collided to this case switch man who was standing near the hatch coaming on the bow side of No. 1 cargo hold.</p> <p>(5) Because this case switch man had died, it could not make clear whether this case switch man could have avoided this case</p>

	<p>raw wood or not.</p> <p>(6) It is probable that there might be relationship between the fact that in this case accident this case bunch of raw wood was lifted-up while being pushed against the sloped plating and that there was no mentioning about the measures in the Standard Operation Manual of Company A when the full length of the bunch of raw wood exceeded the width of the opening portion.</p> <p>(7) It is probable that the Safety and Health Committee of Company A did not grasp the state of risk as there had been no report on how the bunch of raw wood had been lifted-up when the full length had exceeded out of the bunch of raw wood length in the study meetings of awareness on a risk and near-miss (KY).</p>
<p><b>Probable Causes</b></p>	<p>It is probable that this accident occurred while this vessel was performing this case work using this case crane at the timber quay of Kashima port, when this case bunch of raw wood was being lifted-up by pushing against the sloped plating, this case bunch of raw wood started to circle counter-clockwise and collided to this case switch man who was standing near the hatch coaming on the bow side of No. 1 cargo hold.</p> <p>It is probable that the reason for this case bunch of raw wood circled to the counter-clockwise was that the edge part of this case bunch of raw wood being pushed against the sloped plating on the left deck side slid-down to the stern side.</p> <p>It is probable that the reason for this case bunch of raw wood had been lifted-up by pushing against the sloped plating was that the full length of this case bunch of raw wood exceeded the width of the opening of No. 1 cargo hold, and it had something to do with it that Company A had not specified the measures when the full length of the bunch of raw wood exceeded the width of the opening portion.</p>
<p><b>Safety Actions</b></p>	<p>After this accident, Company A considered a recurrence preventive measure and took the measures as follows.</p> <p>(1) As a revision of the Standard Operation Manual the following items were added and education and guidance for the working staffs were performed.</p> <p>(i) When it is felt dangerous, stop the deck crane, and resume the work after being sheltered in a safe place once.</p> <p>(ii) When grasping had been made in the state where some raw wood extended out of the bunch widely, try to grasp it again properly.</p> <p>(iii) It is prohibited to lift-up when the full length of the bunch of raw wood exceeds the width of the opening or the edge part of the bunch of raw wood had been caught at the opening.</p> <p>(2) It was decided to carry the following thoroughly.</p> <p>(i) Do the KY activity securely in a meeting before starting of loading/unloading work.</p>

	<p>(ii) Reduce the dangerous situation reported by near-miss awareness activities.</p> <p>(iii) Do safety education in foreman meetings and study meetings.</p> <p>(iv) Strengthen the safe patrol by the Safety and Health Committee or in any other ways.</p> <p>The following measures are desired as useful items for preventing the recurrence of similar accidents:</p> <ul style="list-style-type: none"><li>• Company A shall construct a companywide system so that near-miss information on site, such as the lifting-up of the bunch of raw wood that has a danger whose full length exceeds the bunch of raw wood by extension of some wood, could be provided to the Safety and Health Committee of the company.</li></ul>
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