

MA2012-7

**MARINE ACCIDENT  
INVESTIGATION REPORT**

July 27, 2012

**Japan Transport Safety Board**

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

July 5, 2012

Adopted by the Japan Transport Safety Board

Chairman	Norihiro Goto
Member	Tetsuo Yokoyama
Member	Kuniaki Shoji
Member	Toshiyuki Ishikawa
Member	Mina Nemoto

Accident Type	Fatality during mooring operation																		
Date and Time	At about 1005 (local time, UTC+9), on January 11, 2011																		
Location	South Berth A, Funabashi Chuo Wharf, Katsunan District, Chiba Port, Chiba Prefecture. Approximately 076° true, 2.0 nautical miles from Chiba-ko Katsunan Ichikawa Lighthouse,. (Approximately 35° 40.5' N, 139° 58.4' E)																		
Summary of the Accident	While the cargo ship EN KAI was berthing at South Berth A, Funabashi Chuo Wharf, a tensed mooring rope suddenly bounced and struck the chest of a boatswain working on the forecastle deck. The boatswain was killed. (Photo 1: Whole View)																		
Process and Progress of the Investigation	(1) Set up of the Investigation The Japan Transport Safety Board appointed an investigator-in-charge and another investigator to investigate this accident on January 12, 2011. (2) Collection of Evidence January 12 and 13, 2011: On-site Investigations and Interviews. January 14 and 17, 2011: Interviews. (3) Comments from Parties Relevant to the Cause Comments on the draft report were invited from parties relevant to the cause of accident. (4) Comments from the Flag State Comments on the draft report were invited from the Flag State.																		
Factual Information Vessel Information Particulars of Vessel	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Vessel type and name</td> <td>Cargo ship EN KAI</td> </tr> <tr> <td>Gross tonnage</td> <td>2,653 ton</td> </tr> <tr> <td>IMO number</td> <td>9396036</td> </tr> <tr> <td>Port of registry</td> <td>Quanzhou, the People's Republic of China (China)</td> </tr> <tr> <td>Owner</td> <td>FUJIAN ANDA SHIPPING CO. LTD, China</td> </tr> <tr> <td>Management company</td> <td>FUJIAN ANDA SHIPPING CO. LTD, China</td> </tr> <tr> <td>Classification society</td> <td>CHINA CLASSIFICATION SOCIETY</td> </tr> <tr> <td>L × B × D</td> <td>89.0m × 15.0m × 6.7m</td> </tr> <tr> <td>Hull material</td> <td>Steel</td> </tr> </table>	Vessel type and name	Cargo ship EN KAI	Gross tonnage	2,653 ton	IMO number	9396036	Port of registry	Quanzhou, the People's Republic of China (China)	Owner	FUJIAN ANDA SHIPPING CO. LTD, China	Management company	FUJIAN ANDA SHIPPING CO. LTD, China	Classification society	CHINA CLASSIFICATION SOCIETY	L × B × D	89.0m × 15.0m × 6.7m	Hull material	Steel
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	<p>Engine, Output Diesel, 1,618kW Date of launch September, 2006</p>
Conditions at the Forecastle Deck	<p>On the EN KAI (hereinafter referred to as “the ship”), one electric-hydraulic windlass was located near the center of the forecastle deck. Behind the windlass, an electric-hydraulic rope reel (hereinafter referred to as “the rope reel”) is located on each side respectively. Each side was equipped with two fairleads, one bollard and one cleat. (Chart 1: Forecastle Deck Plan)</p>
Crew Information	<p>Gender, Age and Certificate of Competence (1) Master (Nationality: China), male, 54 years old Master certificate (Issued by China) Date of Issue: December 6, 2006 (Valid until December 6, 2011) (2) Chief officer (Nationality: China), male, 57 years old Master Certificate (Issued by China) Date of Issue: November 27, 2007 (Valid until November 27, 2012) (3) Boatswain (Nationality: China), male, 38 years old</p>
Injuries to Persons	One fatality (Boatswain)
Damage to Vessel	Nil
Events Leading to the Accident Use Plan of Mooring Lines and Anchor	<p>The ship was scheduled to be berthed port side alongside at South Berth A, Funabashi Chuo Wharf (hereinafter referred to as “the Berth A”) where the bitt intervals were 24 meters, casting the starboard anchor and sending two mooring lines from the bow and stern respectively. (Chart 2: Use Plan of Mooring Line and Anchor)</p>
Movement of the ship According to AIS Records at the time of the accident	<p>The ship’s movement until the accident occurred is shown in Chart 3 (Ship Positions Plotted on AIS). (Table1: Records of AIS Information (Excerpt))</p>
Movement of the ship	<p>The ship was manned by a Master and 15 crew members (All nationality:China) and left Shanghai Port, China. She was loaded with 3,271t of steel coils. The ship arrived at the south entrance of Funabashi Fairway, Chiba Port, Japan on January 11, 2011 and anchored there. At approximately 0855, the ship heaved up anchors and proceeded to north for the Berth A through Funabashi Fairway.</p>
Preparation for Mooring Operation	<p>The Master deployed four crew members: the Chief Officer, the boatswain and two able seamen (hereinafter referred to as “the AB A” and “the AB B”), for the mooring operation (hereinafter referred to as “the bow operation”) on the forecastle. On the port side on the forecastle deck, the Chief Officer took command of the bow operation, and as usual, let out the forward spring line, which was 70mm in diameter, (hereinafter referred to as “the Spring”) about 40~50m, from the rope reel and put it in a snake down</p>

	<p>coil on the deck.</p> <p>He then passed the end of the spring line through the fairlead located aft the port side (hereinafter referred to as “the aft fairlead”) on the forecastle deck.</p> <p>(Chart 4: Snake Down Coil of the Spring)</p> <p>The Chief Officer planned to put the Spring through the roller of the fore fairlead on the port side on the forecastle deck (hereinafter referred to as “the fore fairlead”) after the Spring was secured on No.3 bitt.</p> <p>(Chart 5: Layout Plan of head line and spring line)</p>
<p>Situation surrounding the Occurance of the Accident</p>	<p>As the ship was just about to approach the Berth A, the Master who was conning from the port side wing, stopped the ship and casted the starboard anchor. (Chart 3 ①)</p> <p>As the bow approached about 20m on the Berth A (Chart 3 ③), the Chief Officer instructed the crew to throw the heaving lines of the head line and the Spring to the Berth A. And then Chief Officer confirmed that the head line’s eye was secured on No.1 bitt.</p> <p>While the Spring coiled on the deck was being let out from the aft fairlead, it was found to be 1~2m shorter than needed to reach No.3 bitt. So the Chief Officer instructed the AB A to reel out more of the Spring from the rope reel.</p> <p>The rope reel started to spin, but immediately and unexpectedly stopped. The Chief Officer reported it to the Master by a transceiver.</p> <p>Since the ship had proceeded a little forward of the intended berthing position, the Spring was not able to reach the Berth A, and the Chief Officer reported that the rope reel stopped, then the Master ordered the engine slow astern.</p> <p>The Spring was secured on No.3 bitt while the ship continued astern propulsion.</p> <p>The Chief Officer saw the boatswain who operating the windlass, went down the starboard side stairway of the forecastle deck. After that the rope reel started to spin again, the Chief Officer thus thought that the boatswain had managed to recover the operation of the hydraulic pump after going to the hydraulic pump room beneath the forecastle deck.</p> <p>Thus the Master ordered the engine slow ahead in order to readjust the berthing position slightly. (Chart 3 ④)</p> <p>Since the ship was proceeding at a speed of approximately 0.51 m/s that was faster than the reeling-out speed of the Spring (Nominal Speed: first layer approximately 0.25m/s), the Chief Officer could not put the Spring through the fore fairlead due to the insufficient length of the Spring.</p> <p>The Chief Officer saw the boatswain went up the port side stairway of to the forecastle deck. And then while the Chief Officer was watching the condition of all the mooring lines, all of a sudden, he heard a sound around the rope reel. He found the boatswain lying down on the port</p>

	<p>side, behind the rope reel. (Chart 3 ⑤, Chart 6: The Situation of the Bounced Spring and Photo 2: The Scene Situation of the Bounced Spring)</p> <p>The ship agent standing at the Berth A witnessed a crew member being thrown up into the air at about 1005, and thought that he might be injured. The ship agent informed the Master of the accident by cellular phone, and at about 1011 informed the fire station.</p> <p>The ship arrived alongside the Berth A at about 1015. (Chart 3 ⑦)</p> <p>The ambulance arrived at about 1026.</p> <p>The boatswain was taken from the vessel at about 1056 hrs accompanied by the doctor arrived at the ship at about 1038 to the hospital at about 1117. Despite medical treatment, the boatswain died at about 1210.</p> <p>According to the death certificate, the cause of the death of boatswain was a massive hemothorax resulting in a tension pneumothorax.</p>
Other matters	<p>(1) According to the AB B, usually, before throwing the heaving line to a berth, the Spring was put down on the deck in a snake down coil. After throwing the heaving line to the berth, the mooring gang engaging in the mooring work secured the end of the line onto the bitt, then the boatswain directed the AB to send out or reel back the rope. the Spring line was then put through the fairlead.</p> <p>(2) The boatswain was wearing a helmet and his proper working uniform.</p>
Weather and Sea Conditions	<p>Weather : fine, wind direction NW. wind force 5, good visibility</p> <p>Sea conditions : wave height unknown</p>
Analysis	<p>(1) It is probable that the Spring was to be put through the fore fairlead after the Spring was put in snake down coil on the deck to prepare for berthing and the end of the Spring was secured on the bitt.</p> <p>(2) It is probable that while the ship was berthing at the Berth A in Chiba Port, where the Master ordered the engine slow ahead to slightly readjust the berthing position after the Spring was secured on No.3 bitt and then the ship proceeded faster than the reeling-out speed of the Spring, therefore the Spring could not be put through the fore fairlead, as a result, the Spring bounced due to sudden tension and struck the boatswain's chest who stood near the Spring, which resulted in his death from a massive hemothorax.</p> <p>(3) It is possible hat the Spring was caught by something under the rope reel when it became tense as the Spring was not put through the fore fairlead and then the Spring bounced after it was suddenly released from under the rope reel.</p> <p>(4) It is possible that this accident could have been avoided if the Spring had been put through the fore fairlead.</p>
Probable Causes	<p>It is probable that this accident occurred while the ship was berthing at the Berth A, where the Master ordered the engine slow ahead to slightly readjust the berthing position after the Spring was secured on</p>

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Chart 1 Forecastle Deck Plan

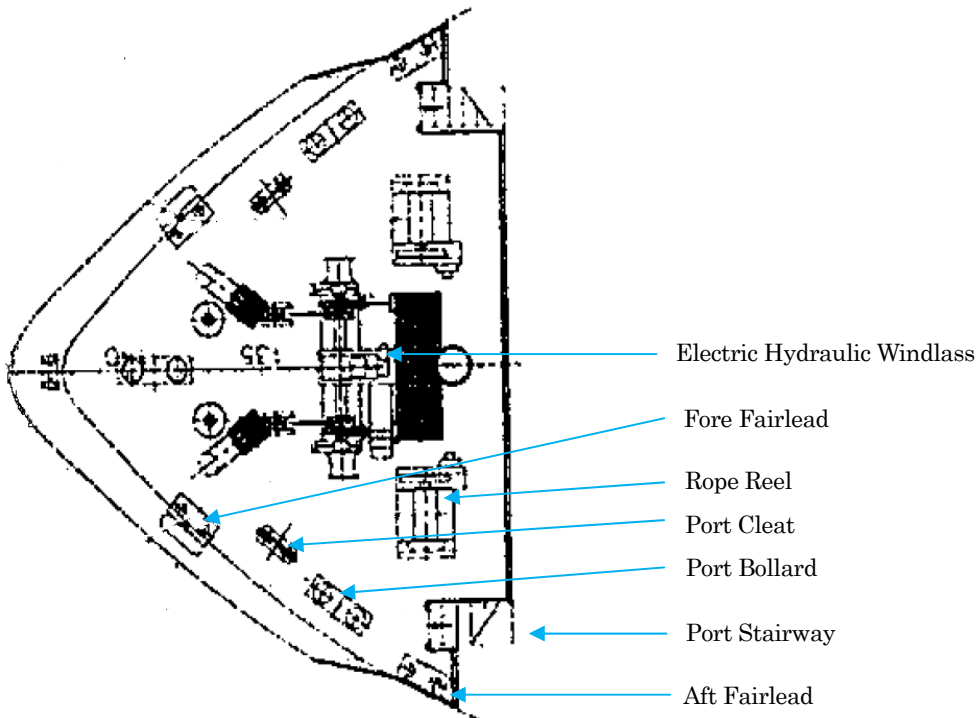


Chart 2 Use Plan of Mooring Line and Anchor

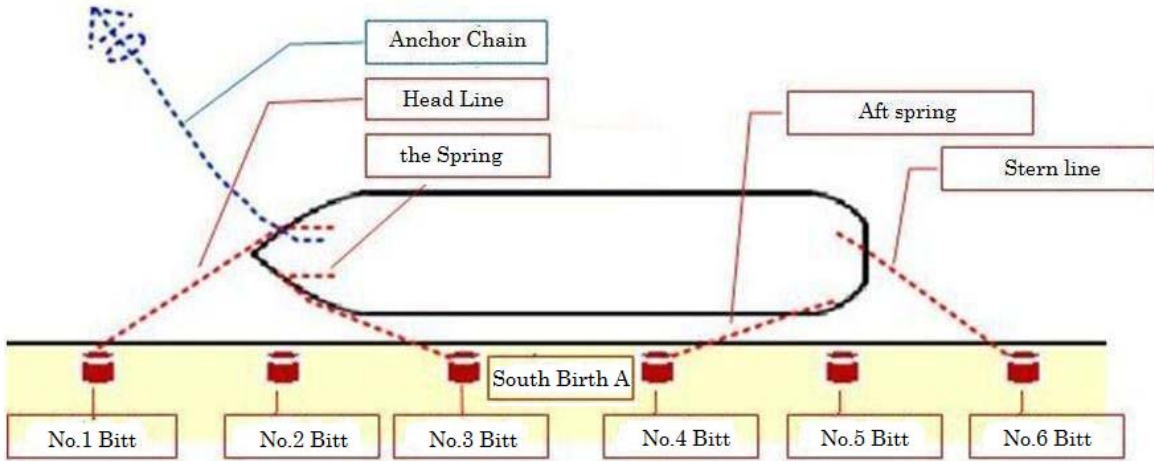


Chart 3 Ship Positions Plotted on AIS

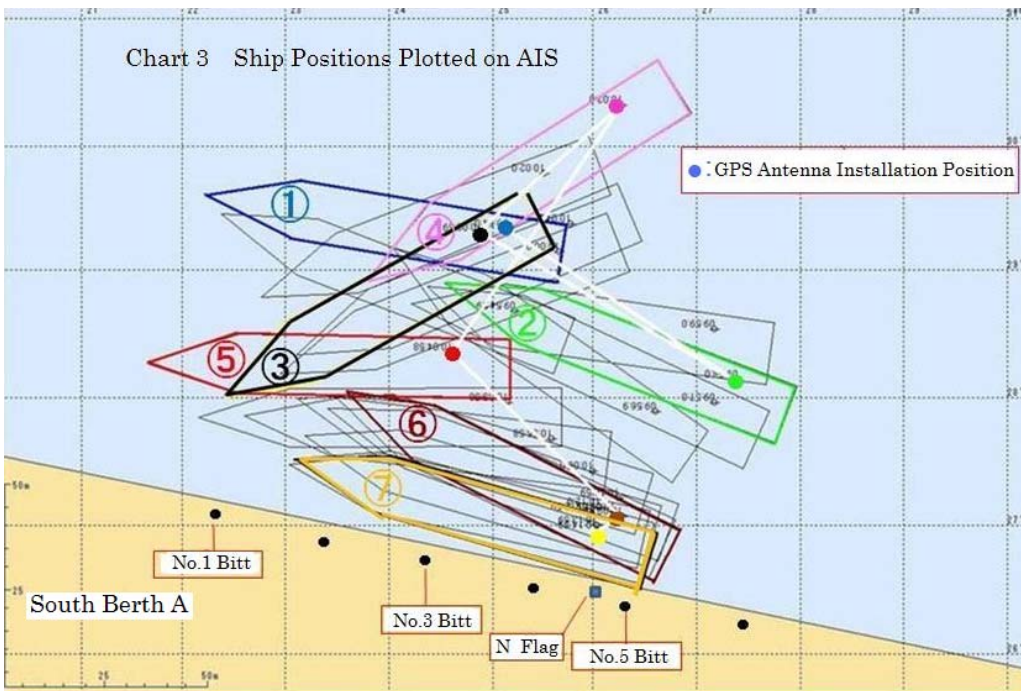




Chart 4 Snake Down Coil of the Spring

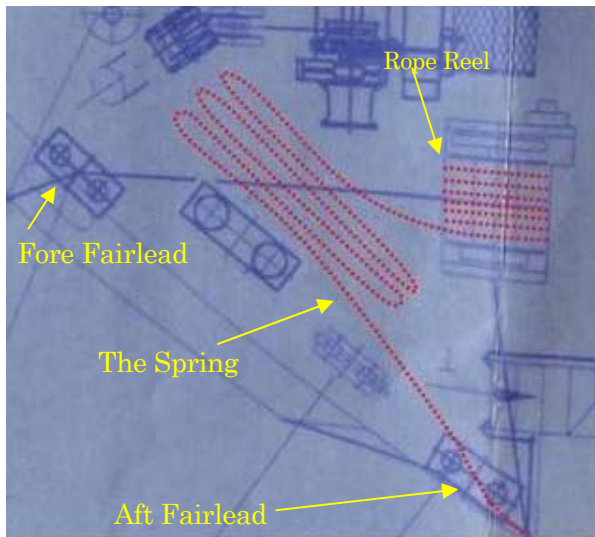


Chart 5 Layout Plan of Head Line and the Spring

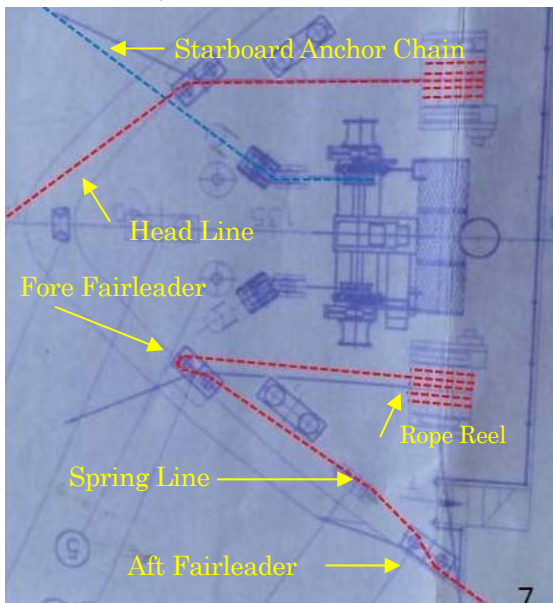
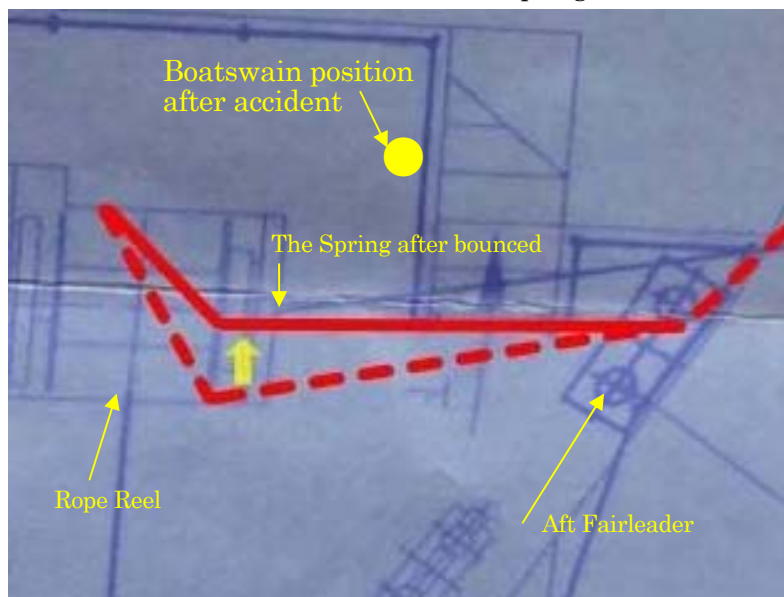


Chart 6 The Situation of the Bounced Spring



Attached Table 1 Records of AIS Information (Excerpt)

Time (hh:mm:ss)	Latitude (North Latitude) ( ° -' -" )	longitude (East Longitude) ( ° -' -" )	Speed (kn)	Course over the ground ( ° )	heading ( ° )
08:55:09	35-35-12.3	139-58-07.2	0.0	351.7	345
09:20:00	35-37-24.1	139-59-08.4	8.9	002.3	004
09:44:58	35-40-20.2	139-58-53.3	4.3	321.4	318
09:49:58	35-40-29.1	139-58-35.9	2.8	277.5	278
09:52:00	35-40-29.4	139-58-29.5	2.4	271.6	273
09:54:00 ①	35-40-29.3	139-58-25.5	0.9	249.2	279
09:58:00 ②	35-40-28.1	139-58-27.4	0.3	084.9	291
10:00:59 ③	35-40-29.3	139-58-24.9	0.3	276.4	241
10:02:00	35-40-29.8	139-25-25.5	0.9	059.6	249
10:03:00 ④	35-40-30.3	139-58-26.3	0.5	031.7	238
10:04:02	35-40-29.4	139-58-25.8	1.5	208.6	247
10:05:03 ⑤	35-40-28.3	139-58-24.6	1.0	222.0	271
10:05:58	35-40-28.0	139-58-25.2	0.6	113.0	270
10:09:59 ⑥	35-40-27.1	139-58-26.3	0.1	143.8	297
10:15:18 ⑦	35-40-27.0	139-58-26.0	0.0	177.2	285

※ Time Column ①~⑦ link to Ship Position in Chart 3 (Ship Positions Plotted on AIS)

Photo 1 Whole View

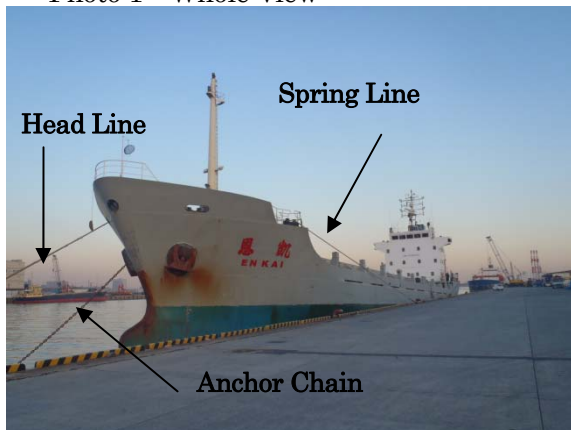


Photo 2 The Scene Situation of the Bounced Spring

