

MA2013-5

**MARINE ACCIDENT
INVESTIGATION REPORT**

May 31, 2013



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

April 11, 2013

Adopted by the Japan Transport Safety Board

Member Tetsuo Yokoyama

Member Kuniaki Shoji

Member Mina Nemoto

Accident Type	Grounding
Date and Time	Around 00:34, January 30, 2011 (local time, UTC+9 hours)
Location	Kanazawa Port in Kanazawa City, Ishikawa Prefecture Around 187° true, 1,420 m from Kanazawa Ko West Breakwater Lighthouse (Approximately 36°37.9' N, 136°35.9' E)
Process and Progress of the Investigation	The Japan Transport Safety Board appointed an investigator-in-charge from the Kobe Office and another investigator to investigate this accident on January 30, 2011. Comments on the draft report were invited from parties relevant to the cause of the accident. Comments on the draft report were invited from the flag State.
Factual Information Vessel type and name, gross tonnage: Vessel number, owner, etc.: L×B×D, hull material: Engine, output, date of launch, etc.	Cargo Ship BOHAI CHALLENGE (registered in Republic of Panama), 8,708 tons 9423243 (IMO number), AI SHIPPING S.A. 119.05 m × 19.40 m × 14.10 m, Steel Diesel engine, 3,900 kW, September 12, 2007
Crew Information	Master (Nationality: People's Republic of China): Male, 33 years old Endorsement attesting the recognition of certificate under STCW regulation I/10: Master (Issued by the Republic of Panama) Date of Issue: July 18, 2007 (Valid until January 18, 2012) Chief Engineer (Nationality: People's Republic of China): Male, 38 years old Endorsement attesting the recognition of certificate under STCW regulation I/10: Chief Engineer (Issued by the Republic of Panama) Date of Issue: June 11, 2008 (Valid until February 20, 2013)

Casualty	None
Damage	There was puncture damage to the starboard quarter of the hull and the engine room was flooded.
Events Leading to the Accident	<p>The vessel was heading for Kanazawa Port with the master, the chief engineer and 17 other crewmembers (all of them nationals of the People's Republic of China) onboard. At around 21:00 on January 29, 2011, the master went up to the bridge to con the vessel himself with the third officer and an able seaman under his command, and gave the engine control room one-hour notice prior to arrival.</p> <p>With three engineers manned in the engine control room, at around 21:38, the chief engineer switched the fuel oil from Heavy Oil C to Heavy Oil A and, at around 22:00, completed preparing the engine after testing the main engine for ahead/astern and the steering gear.</p> <p>Under a northwest wind with a beaufort wind scale of about 7 to 8 and northwest waves at a height of 3 to 4 m, he navigated the vessel by taking into account the possibility of anchoring either outside or inside Kanazawa Port or drifting outside of Kanazawa Port since the master had been informed by the shipping agent located in Kanazawa City that the estimated time of arrival at the port would be around 09:00 on the 30th. At around 22:41 on the 29th, after ordering half ahead, the master instructed the chief officer and the able seaman to take their positions at the bow considering the possibility of anchoring.</p> <p>At around 23:00, the master checked the weather forecast and determined that anchoring the vessel outside Kanazawa Port was not possible. The master then called the Niigata Coast Guard Radio to request information on anchorages inside Kanazawa Port and he was told to wait while they checked the information. The master continued navigating the vessel toward Kanazawa Port thinking that it might be possible to anchor the vessel inside the port.</p> <p>At around 23:25, the master ordered that the engine be set to slow ahead and then at around 23:26 to dead slow ahead. Around this time, an alarm went off and the alarm light started flashing, indicating an error in the governor system, and the main engine of the vessel stopped at around 239° (true bearing; the same shall apply hereinafter) and 1.8 nautical miles (M) from Kanazawa Ko West Breakwater Lighthouse.</p>

The chief engineer neutralized the alarm by pressing an error reset button of the governor system in the engine control room, set the telegraph lever to stop, and tried to start the main engine. The starting air pressure was 29 kgf/cm² and the air was going into the cylinder, but the engine did not start running on the fuel and the red indicator lights of SCAVENGING AIR, TORQUE and PICK UP as well as the START FAIL alarm lamp were on. He could not figure out the reason.

The chief engineer gave up starting the main engine in the engine control room and switched to local control to try to start the engine, cutting the edge of the governor. Although the starting air went inside the cylinder and the engine revolutions per minute (rpm) momentarily increased to approximately 35 to 40, the engine stopped immediately without running on the fuel. This operation was repeated 4 to 5 times and at one time the engine revolutions increased to approximately 100 rpm, but the engine did not start running on the fuel.

Meanwhile, the vessel was drifting eastward by the pressure of wind and waves. At around 23:36, the master ordered the chief officer to drop the port anchor with 8 shackles of anchor chain. In addition, at around 23:46, the master gave an order of dropping the starboard anchor with 3 shackles of anchor chain in order to slow down the drifting, and waited for the main engine to restart with the idea of heading offshore.

The vessel continued drifting eastward and, at around 00:34 on the 30th, ran aground the shallows west of Kanazawa Port West Breakwater (hereinafter referred to as "West Breakwater"), around 187°, 1,420 m from Kanazawa Ko West Breakwater Lighthouse. Immediately thereafter, the stern of the vessel collided with breakwater blocks placed on the west side of the West Breakwater.

The master, upon learning that water was entering from the starboard quarter of the hull, ordered the crewmembers to evacuate to the bridge and wait for rescue. Later, members of a special rescue team of the Japan Coast Guard arrived at the vessel and rescued the entire crew.

After the accident, the vessel was unable to be salvaged due to ongoing bad weather. Later it was found out that the bottom of the vessel and the engine room were badly corroded, and the vessel was scrapped.

<p>Weather and Sea Conditions</p>	<p>(1) Observation data</p> <p>Weather conditions: Weather - snowy, Wind direction- west, Wind scale – 7 to 8</p> <p>Sea conditions: The tide was just beginning to ebb and wave height was approximately 3 to 4 m</p> <p>(2) Weather information</p> <p>On January 28th, a marine warning had been announced over the entire west part of the Japan Sea by Maizuru Marine Observatory. The warning was upgraded to a gale warning at around 05:45 on the next day, the 29th, and the warning remained in effect on the 30th.</p>
<p>Other Matters</p>	<p>The vessel was loaded with approximately 2,900 tons of steel, machinery, equipment, and the like, and her bow draft and aft draft when leaving the Dalian Port were approximately 5.1 meters and 6.1 meters respectively.</p> <p>When the port anchor was cast from the vessel, the water depth was approximately 20 m and the quality of the bottom was mud mixed with sand.</p> <p>At the time of the accident, approximately 94 tons of Heavy Oil A and approximately 443 tons of Heavy Oil C remained inside the vessel.</p> <p>The chief engineer, while trying to start the engine by local control, confirmed that the supply pressure of fuel oil was approximately 5 to 6 kgf/cm², which was within normal range, and had each engineer touch the high pressure pipes to confirm that there were pulsing motions (indicating that the pressure was high). In addition, the starting air pressure was 12 kgf/cm², which was enough pressure to start the main engine. Therefore, the chief engineer was unable to figure out the reason that the engine was not restarting.</p> <p>The 9th Regional Coast Guard Headquarters (hereinafter referred to as “9th Regional Headquarters”) announced a warning (No. 9) of cargo shifting and dragging anchor at 08:30 on January 29 for vessels passing the coastal region under the jurisdiction of the 9th Regional Headquarters and their shipping agents, and transmitted the warning via VHF and AIS messages in order to prevent marine accidents caused by dragging anchor and cargo shifting under rough sea weather during winter.</p> <p>The master was never informed of the warning about cargo shifting and dragging anchor by the shipping agent and was not</p>

	<p>aware that the warning had been issued. Meanwhile, the person in charge at the shipping agent attached the meteorological and oceanographical 72-hour forecast (Kanazawa Port) to an e-mail which was sent to the vessel at around 08:51 on January 29, but did not attach the warning about cargo shifting and dragging anchor. The person in charge assumed that the warning had been orally communicated to the vessel.</p> <p>The master's experience told him that strong ocean winds blowing over the sea far from the coast usually weaken as the vessel approaches port, and judging also from the meteorological chart and other references, the master thought that the winds would lighten as the vessel approached the Japan coast.</p> <p>According to the main engine failure inspection report (dated June 2, 2011) by the manufacturer of the main engine of the vessel, the engine room was so badly flooded that it was not possible to examine and reconstruct what happened.</p> <p>(Refer to Attached Figure 1 Track Chart, Attached Figure 2 Track Chart (Enlarged), and Attached Table AIS Record (Excerpt))</p>
<p>Analysis</p> <p>Involvement of crew</p> <p>Involvement of hull and engine, etc.</p> <p>Involvement of weather and sea conditions</p> <p>Analysis of the findings</p>	<p>Applicable</p> <p>Applicable</p> <p>Applicable</p> <p>It is probable that the situation was as follows: While a gale warning had been announced over the Japan Sea, the master determined that anchoring the vessel outside Kanazawa Port was not possible; he called the Niigata Coast Guard Radio to inquire whether anchoring inside Kanazawa Port was possible, and continued navigating the vessel to the east toward Kanazawa Port in anticipation of anchoring the vessel inside the port; as he ordered that the main engine be set to slow ahead and then to dead slow ahead, the main engine stopped; under a west wind with a wind force of 7 to 8, he let go of both anchors to prevent the vessel from drifting and was waiting for the main engine to restart; and the vessel drifted toward the shallows west of the West Breakwater, and eventually ran aground there.</p> <p>Although it is somewhat likely that fuel was not being supplied to the main engine of the vessel judging from the fact that the alarm was activated to indicate an error in the governor system, it</p>

	<p>was not possible to determine why the main engine stopped and did not restart.</p> <p>It is probable that although the master had obtained weather information on the vessel and weather information had been sent by the shipping agent and the operator, the master was not aware that the warning about cargo shifting and dragging anchor had been announced for shipping agents and others and transmitted via VHF and AIS messages by the 9th Regional Headquarters, as information on this warning was not sent from the shipping agent nor was it received by the vessel.</p> <p>It is somewhat likely that the vessel could have avoided approaching Kanazawa Port if it had obtained this information at an earlier point.</p>
<p>Probable Causes</p>	<p>It is probable that the accident occurred under the following circumstances:</p> <p>At night, while a gale warning had been announced over the Japan Sea, the vessel was sailing east toward Kanazawa Port in anticipation of anchoring inside the port; the main engine stopped when it was put to slow ahead and then to dead slow ahead; under a west wind with a wind force of 7 to 8, both anchors were let go in an attempt to prevent the vessel from drifting, and the vessel was waiting for the main engine to restart; and she drifted toward the shallows west of the West Breakwater, and eventually ran aground there.</p>
<p>Safety Actions</p>	<p>Following the accident, preventive measures were implemented as follows.</p> <p>(1) Owner</p> <p>Notification about the following accident prevention measures was sent to each vessel owned by the owner (in summary).</p> <ul style="list-style-type: none"> ● Before leaving port, in accordance with the safety management system, all items on the checklist must be implemented and weather information and navigational warnings should be received, understood and recorded up to 48 hours prior to the departure. ● Utmost attention should be paid to bad weather. Carelessness and slight mistakes may lead to serious consequences. ● A comprehensive anchoring plan and navigation plan should be developed while referring to information about the port of call, pilot, radio signal and others. Masters should implement ongoing risk assessment procedures.

- An appropriate anchorage should be selected according to sea conditions and tidal currents in the water area and the draft and maneuverability of the vessel.
- Appropriate measures and risk assessment should be implemented against equipment failures, including those in the main engine and steering gear.

(2) Management company

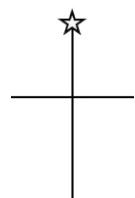
Each vessel operated by the operator was duly informed that she should sail in accordance with her estimated time of arrival at the port and that it is acceptable to be late in entering the port under circumstances where the safety is impeded.

(3) Users of Kanazawa Port and administrative agencies concerned

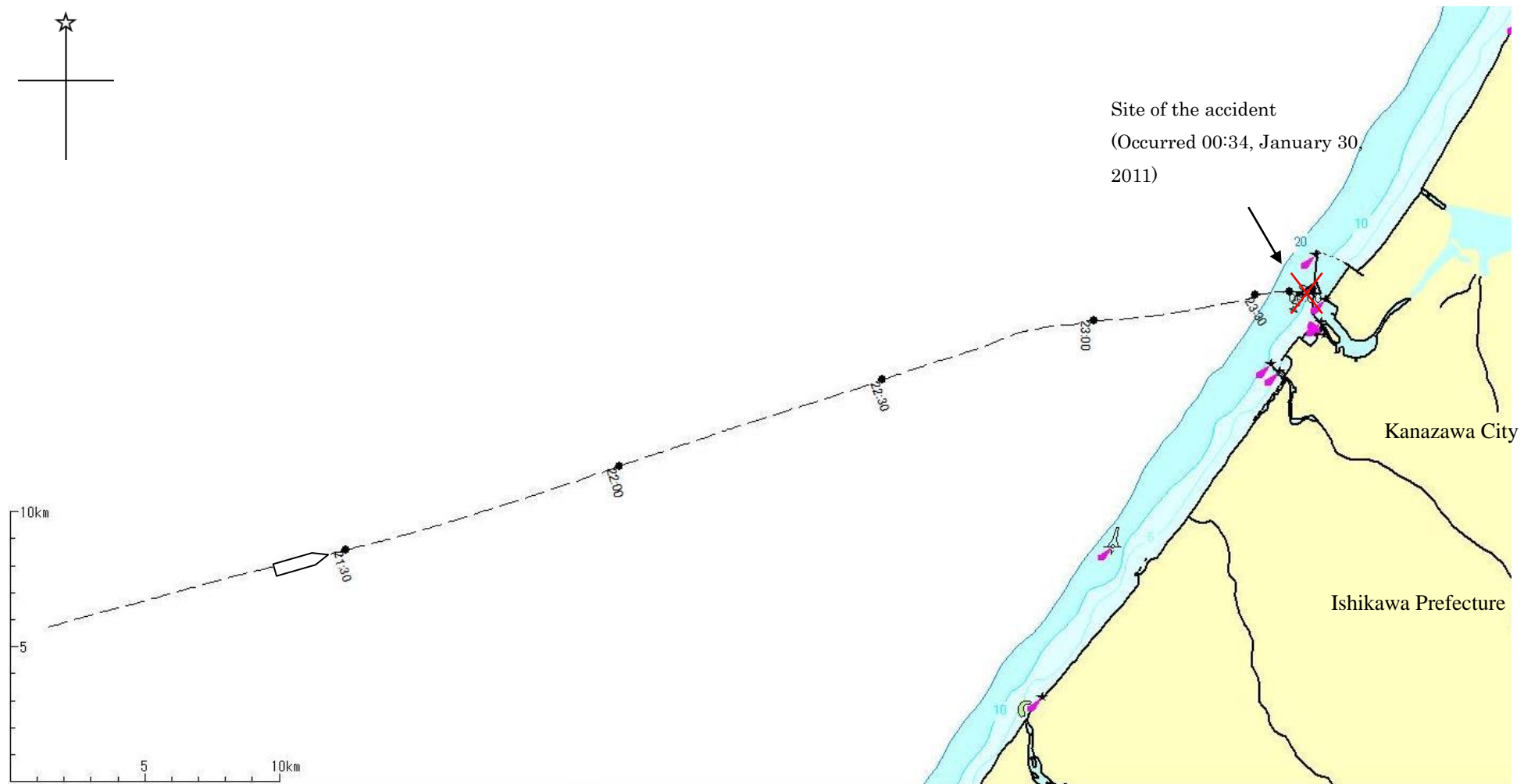
The Kanazawa Port Safety Guide (written in Japanese and English) was developed in order to distribute information related to Kanazawa Port among shipping companies and cargo owners and to promote safety of ships using Kanazawa Port. The guide says, among other things:

- Anchorage inside the west side breakwater area of Kanazawa Port is not allowed.
- There is a danger of anchor dragging as Kanazawa Port faces the open ocean directly and there are factors such as deep waters, sediment material, etc.
- If a ship cannot enter Kanazawa Port due to unfavorable weather or sea conditions (rough weather), the ship should find a harborage at a safe anchorage location other than Kanazawa Port.

Attached Figure 1 Track Chart



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Attached Table 1 AIS Record (Excerpt)

Time (Hour: Minute: Second)	Latitude (North) (°-'-")	Longitude (East) (°-'-")	Heading (°)	Course over the ground (°)	Speed over the ground (kn)
21:29:57	36-32-39.1	136-11-46.4	070	072.6	11.4
21:59:57	36-34-19.7	136-18-34.5	071	071.9	11.3
22:29:56	36-36-02.7	136-25-05.0	070	072.6	11.0
23:00:06	36-37-15.6	136-30-26.8	092	092.3	7.3
23:25:06	36-37-39.3	136-34-05.4	079	088.7	5.9
23:29:57	36-37-45.6	136-34-27.2	347	063.0	2.5
23:34:57	36-37-47.0	136-34-38.8	016	071.0	2.0
23:39:56	36-37-49.3	136-34-52.2	013	051.7	1.7
23:44:59	36-37-49.4	136-35-06.1	315	081.2	2.9
23:50:16	36-37-51.0	136-35-13.0	267	066.4	0.8
23:54:56	36-37-49.9	136-35-15.5	259	118.5	1.2
23:59:57	36-37-49.4	136-35-17.9	273	113.5	0.2
00:04:55	36-37-49.9	136-35-22.2	261	108.2	1.6
00:10:00	36-37-49.3	136-35-27.5	234	107.7	2.1
00:15:00	36-37-49.2	36-35-35.6	241	092.2	1.9
00:20:00	36-37-52.6	136-35-44.6	228	072.0	1.0
00:25:04	36-37-52.6	136-35-46.9	237	048.7	1.5
00:28:04	36-37-53.1	136-35-50.0	238	099.0	1.7
00:34:04	36-37-51.8	136-35-53.0	251	181.4	0.5