Japan Transport Safety Board

# MARINE ACCIDENT INVESTIGATION REPORT (Abstract)

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

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| **Accident Type** | Contact (Bridge) |
| **Date and Time** | 03:12hrs, September, 9 (Monday), 2019 |
| **Location** | Minamihonmoku Hama Road, Keihin Port<br>(approximately 35° 24.7' N, 139° 40.9' E) |
| **Vessel Information** | Cargo ship BUNGO PRINCESS<br>6,736 tons |
| **Summary** | In the situation in which Typhoon No. 15 was approaching and a marine typhoon warning had been issued to the northern part of the Kanto sea area including Tokyo Bay in 2019, the vessel with 16 crew members including the master on board, which was at anchorage off the Honmoku Wharf in the Yokohama district of Keihin Port, dragged anchor due to the increased wind waves with the approach of the typhoon and was swept southward to contact with Minamihonmoku Hama Road (bridge) at around 03:12 on September 9 in the same year.<br>The vessel suffered crushing damage to her starboard side plating and bulbous bow, while the Minamihonmoku Hama Road Bridge suffered crushing and split damage. There were no casualties among the crew. |
| **Probable Causes** | It is considered probable that this accident occurred because when, in the situation in which Typhoon No. 15 was approaching and a marine typhoon warning had been issued to the northern part of the Kanto sea area including Tokyo Bay, the vessel, which was anchored at the Keihin Port Y2 Anchorage with practically no cargo on board, continued to be anchored with single anchor mooring when wind waves increased with the approach of the typhoon, and dragged anchor to contact with the Minamihonmoku Hama Road by being unable to control the hull posture despite setting the main engine to full speed ahead.<br>It is considered probable that the reason why the vessel continued to be anchored with single anchor mooring was due to the fact that the master had no experience of using a plurality of anchors at the same time when anchoring, the fact that he was aware of the problem that the anchors might get entangled with each other and the vessel's maneuverability might be reduced, and |

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| | the fact the he believed that the vessel could withstand the wind and waves by launching an anchor chain with eight sections as an anchor chain for rough weather such as a typhoon by thinking that the effect of the typhoon would exceed his past experience.<br>It is considered probable that the reason why the posture of the hull could not be controlled despite that the main engine was set to full speed ahead was due to the fact that the vessel backed away due to the wind and waves and the propellers lost thrust, resulting in the loss of lift and a sufficient forward thrust. |
| **Safety Actions** | In order to prevent the recurrence of similar accidents, it is considered necessary to take the following measures when evacuating from a typhoon by anchoring.<br>(1) The master should obtain the latest information on the weather and hydrographic conditions to make accurate predictions, and strive to determine and implement response procedures with plenty of time to spare.<br>(2) The master should choose an appropriate anchorage and anchorage method in consideration of the following matters after prior consultation with the operation manager, etc.<br>1. Information on the weather and hydrographic conditions (predictions)<br>2. State of own vessel<br>3. Physical characteristics of the anchorage<br>4. Situation of other anchored vessels at the anchorage<br>5. Socially important facilities around the anchorage<br>6. Advantages and disadvantages of each anchoring method such as single anchor and double anchor<br>7. Status of issuance of evacuation advisories, etc. from the harbor master, etc.<br>(3) The master should extend the anchor chain as much as possible to secure sufficient mooring force with the anchor and the anchor chain. At that time, he should consider using the anchors on both sides (dual anchoring or double anchoring) and using another anchor on the other side as an "anti-sway anchor" as necessary while anchoring with a single anchor. In addition, the master should not only rely on his own experience, but also use the “system to determine the anchor dragging risk” when determining the extension amount of the anchor chain in order to objectively determine the possibility of anchor dragging.<br>(4) While anchoring, the master should maintain and strict watch |

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| | duty in bad weather by monitoring the anchoring situation of his own vessel and surrounding vessels (swinging motion, vessel position, vessel speed, etc.), understanding the weather and sea conditions (changes), and constantly listening to international VHF.<br>(5) When the vessel is hit directly by a typhoon while anchoring, the master, with the understanding that it will be impossible to maintain the vessel's heading with anchors alone, should steer the vessel with the bow facing the wind by preparing the main engine in advance and continuously using the main engine and rudder according to the rapidly changing wind direction and wind speed and maintain the vessel's heading by controlling the swinging motion.<br>(6) The master should bear in mind that it is impossible to steer and control once the dragging anchor has started and when he determines that it is difficult to maintain the vessel's heading with the above measure (5), he should immediately shift berth or move to another sea area without losing any time.<br>(7) The vessel management company should not only enforce the master of the vessels under its management to thoroughly comply with all the matters (1) to (6), but also provide guidance and education by using and specifically explaining the content of the "Guidelines for Preventing Anchor Dragging Accidents" prepared by the Japan Coast Guard and the Maritime Bureau. (Including foreign language versions).<br><br>5.2 Accident prevention measures taken after the accident.<br>5.2.1 Measures taken by the Japan Coast Guard<br>(1) After the anchor dragging accident caused by Typhoon No. 15, the Japan Coast Guard, further in view of the approaching Typhoon No. 19, provided strong guidance to persons related to maritime affairs by issuing a recommendation letter for evacuation out of the Tokyo Bay because additional measures to prevent anchor dragging accidents which could be realistically taken early were necessary. In addition, it enabled the Captain of the Port and Tokyo MARTIS to work together and issue gradual and multiple recommendations to vessels which are likely to cause anchor dragging accidents on prior checking of the anchorage method, guidance on the self restraint from anchoring, transfer of anchor at the initial stage of anchor dragging, temporary stopping and |

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| | holding the navigation*, etc. As a result, the additional measures to prevent anchor dragging accidents functioned effectively, and there was no contact accident involving vessels dragging anchor.<br>(2) In the wake of the oil tanker contact accident with the Kansai International Airport Connecting Bridge occurred due to Typhoon No. 21 in September 2018, the Japan Coast Guard did not only start the operation of new regulations based on the Maritime Traffic Safety Act in the sea areas around the airport as from January 31, 2019, but also selected 40 places in sea areas around Japan as important facilities (facilities that cause disruption of transportation and lifelines and bring disadvantages for lack of alternative means) and implemented restrictions of anchorage in the surrounding sea areas in bad weather, from the perspective of ensuring safety for vessel traffic. However, due to the occurrence of the accident, the Minami-Honmoku Hama Road has been positioned newly as an important facility, and the area with a radius of 2M (excluding some sea areas) centered on the sea bridge of the road has been integrated to the sea area in which measures to prevent anchor dragging have been strengthened to date.<br>(3) In June 2020, the "Experts Investigative Committee on Prevention of Recurrence of Accidents Caused by Dragging Anchors in Stormy. Weather in Tokyo Bay, etc." composed of government, academia, and industry members compiled the report entitled "Measures to prevent accidents caused by anchor dragging in stormy weather in Tokyo Bay, etc." on the verification of the basic matters to prevent anchor dragging accidents, facilities to be preferentially checked and measures to prevent anchor dragging in each sea area and the measures to prevent anchor dragging accident in the typhoon season in 2019 and proposed measures regarding the promotion of evacuation outside the bay, measures for shipboard response, measures for operation management, measures by facility managers, etc.<br>In particular, based on the understanding that it is important to impart a wide range of knowledge and skills regarding measures to prevent anchor dragging accidents to vessel operators, including the vessel masters as the measures for shipboard response, dissemination and enlightenment activities have been promoted by government and private sector together by sending the guidelines (Guidelines for Preventing Anchor Dragging Accidents) ), the leaflet ("Guide to Harborage in Tokyo Bay During Stormy Weather" |

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| | etc.) and holding seminars, so that such knowledge and skills may be securely transmitted to vessel operators.<br>(4) Regarding the expansion and strengthening of the new maritime traffic safety infrastructure to respond to accidents caused by anchor dragging due to the frequent occurrence and intensification of abnormal weather in recent years, the Council of Transport Policy have been considering the current system and measures to be taken since July 2020 in light of the proposal of the above Experts Investigative Committee and submitted a report "The the expansion and strengthening of the maritime traffic safety infrastructure to respond to the new traffic environment such as frequent and severe natural disasters" to the Minister of Land, Infrastructure, Transport and Tourism on January 28, 2021.<br>(5) In response to the item (4) above, the Japan Coast Guard submitted a "Bill for Partial Revision of the Maritime Traffic Safety Law, etc." (creation of a system of evacuation advisories and orders in the three major bays (Tokyo Bay, Ise Bay, Osaka Bay), which was approved by the Cabinet on March 2, enacted on May 25, and came into effect on July 1, 2021.<br>This revision of the law now enables to order or make recommendations to large vessels with high freeboard, vessels with dangerous good on board, etc, to evacuate from the Tokyo Bay when a typhoon approaches, thereby alleviating congestion in the bay.<br>It is expected that the congestion of the bay as a whole including inside the port will be alleviated to thereby prevent anchor dragging accidents by issuing recommendations to evacuate outside the port and the bay in accordance with the anchor dragging risk or seaworthiness of each vessel.<br>(6) In light of the oil tanker contact accident with the Kansai International Airport Connecting Bridge occurred due to Typhoon No. 21 in September 2018, the Ministry of Land, Infrastructure, Transport and Tourism has implemented comprehensive measures to prevent recurrence of accidents in which vessels are washed away by strong wind in stormy weather, such as a typhoon, to thereby contact with other vessels or land facilities (anchor dragging accidents), and, as part of these comprehensive measures, the Maritime Bureau of the same ministry has developed the "System to determine anchor dragging risk" (nicknamed "Anchoring") designed to allow crew members to determine the anchor dragging risk of own vessel at a place scheduled to anchor |

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| | (possibility of anchor dragging) and implement measures to prevent anchor dragging in accordance with the risk (change of the anchorage or the anchoring method) and released and started to operate it on July 1, 2021 (English version August 6). (See attachment (Japanese version only))<br><br>5.2.2 Measures taken by Company A<br>(1) Provision of information and heads-up regarding the accident to all the masters of the vessels under its management<br>A summary and comments (matters to pay attention to, lessons learned, etc.) of the accident were distributed by e-mail to raise awareness.<br>(2) Issuance of the General Instructions to vessels under its management<br>The General Instruction entitled "Anchoring when approaching Typhoon or Rough weather is expected", in which a summary of the accident and the measures to prevent anchor dragging accident of the same type (countermeasures) shown below are described.<br><br><Countermeasures><br>The dangerous of dragging anchor is collision, grounding and/or contact to facilities after uncontrolled condition.<br>Early prediction and detection of the dragging anchor will avoid serious accident. In order to detect dragging anchor as early as possible, below must be followed.<br>1. Consider the weather forecast well and also consider the rapid development of typhoon, then look for suitable Safety Area for Drifting on a top priority as early as possible.<br>2. In case anchoring, keep at least 1NM from other vessel and at least 3NM from facilities if possible.<br>3. Must be entered “Bridge Turning Circle” on the Chart.<br>4. To check if dragging anchor at least once an hour in accordance with Anchor Watch Procedure. Pay attention to Ship’s position, and check if Ship’s position is inside the Turning Circle, to try to notice dragging anchor.<br>5. Consider to use of S/B Eng if wind became over 10-13m/s and Wind Force 5-6, when approaching Typhoon or Rough Weather is expected.<br>6. Weather and Sea Condition must be checked every an hour.<br>7. When anchoring in approaching Typhoon and/or Rough |

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| | weather is expected, below should be reported to company.<br>1) Date and time<br>2) position Lat/Long Anchor or Drift<br>3) Distance to surround vessel<br>4) Distance and direction to nearest obstruction e.g. breakwater, buoy, bridge etc<br>5) wind kts/direction<br>6) gust kts/direction<br>7) wave meters/direction<br>8) swell meters/direction<br>9) any info if any<br>8. SMS Manual ZZ-S-P-07.20.02 should be referred.<br><br>(3) Review and addition of the anchoring procedures (Anchoring) for casting, weighing and keeping anchors in the SMS manual<br>The following content has been added:<br>1. Conduct anchor dragging detection work at least once every hour and strive to detect anchor dragging at an early stage.<br>2. Maintain a safe distance from onshore facilities and structures in accordance with the guidelines for watch-keeping arrangements at the anchorage in stormy weather.<br>3. Consider the time required for weighing anchor in the guidelines for the watch-keeping arrangements at the anchorage in stormy weather.<br>(4) Changes in the checklist for anchor watch duty<br>(5) Heads-up for anchor dragging accident to vessels under management when stormy weather is expected<br><br>5.3 Other accident prevention measures required in the future<br>It is the basic method for a vessel to evacuate from a typhoon to operate the vessel according to the determination of the master, etc, as shown in the items (1) to (6) of 5.1 above in order to prevent recurrence of anchor dragging accidents when it is decided or selected to anchor at the anchorage.<br>On the other hand, when considering the current situation in the Tokyo Bay and others in which a number of anchoring vessels are present in stormy weather and a number of important facilities exist in the coastal area and the sea based on the forecast of "Japan's climate change 2020" published by the Japan Meteorological Agency, although no direct measure to prevent |

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| | recurrence of the accident is available, it is considered probable that the promotion of evacuation outside of the bay will greatly contribute to the prevention of contact with other vessels or onshore facilities caused by vessels with anchor dragging. It is considered essential for the private sector such as cargo owners, management companies, operating companies, agents, etc, and the public sector such as the Japan Coast Guard and port administrators to work together to steadily implement these measures.<br>In order to ensure the effectiveness of the evacuation by recommending vessels to evacuate outside the bay instead of anchoring in the bay and allow the masters on the site to take appropriate measures with time to spare and without any hesitation depending on the situation, it is desirable as an evacuation method during stormy weather such as a typhoon, not only that a common understanding among the relevant parties will be established, but also a stronger coordination and cooperation system to prevent anchor dragging accidents will be built. |

*"Temporary stopping and holding the navigation" refers to a vessel maneuvering method in which the forward power of the engine is used to the extent that the steering effectiveness is not lost in stormy weather and the vessel will remain in the place by receiving wind at a slight angle to the bow.