Kashima Port Vessel Navigation Safety Guide

(3rd Edition)

1. **Conditions of marine accidents caused by bad weather**
2. **Damage due to tsunami**
3. **Sources of meteorological and marine information at Kashima Port**
4. **Criteria for issuance of recommendations/information transmission systems**
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June 2023

Kashima Port Disaster Countermeasures Council

Introduction

In October 2006, the accident occurred in Kashima Port in which the ore carrier G (98,587 tons, registered in Panama), the cargo vessel O (88,853 tons, registered in Hong Kong), and the coal carrier E (85,350 tons, registered in Panama) ran aground due to bad weather. Based on this series of vessels running aground, a Local Liaison Meeting Based on Accidents Involving Vessels Running Aground in Kashima Port(*) was established by local involved parties, and how to share information and measures to prevent future recurrences were examined. The Kashima Port Vessel Navigation Safety Guide (1st Edition) was compiled as a result.

Large ore carrier that ran aground

* Members of the Kashima Port Local Liaison Meeting
Kashima Port and Airport Construction Office, Kanto Regional Development Bureau
Kashima Marine Office, Ibaraki Transportation Branch, Kanto Regional Development Bureau
Kashima Coast Guard Station, Ibaraki Coast Guard
Kashima Port Office, Ibaraki Prefecture
Kashima Pilot Association
Kashima Futo Co., Ltd.
Kashima Port Vessel Agency Association
Ibaraki Port Radio, TST Corp.

In addition, with the Great East Japan Earthquake that occurred on March 11, 2011, a large number of vessels, including those carrying dangerous goods, staying in the port were hit by the tsunami. Accidents occurred in which vessels drifted and collided with quays and other vessels due to the breaking of mooring lines, etc., causing extensive damage to vessels staying in the port, port facilities, and so on.
Based on this, the Kashima Port Disaster Countermeasures Council reviewed the guidelines for measures to be taken by vessels in the event of a tsunami, reconfirmed the evacuation procedure outside the port, and reconfirmed the recommended methods of communication. The Kashima Port Vessel Navigation Safety Guide (2nd Edition) was compiled as a result.

A large tanker that drifted and collided with other vessels

A cargo vessel that drifted and ran aground due to a tsunami

This guide summarizes the accident prevention measures to be implemented during such extreme weather events, as well as the safety measures to be implemented by vessels entering and leaving Kashima Port during normal times, in order to deepen the understanding of all parties using Kashima Port and enable them to implement more effective measures.

1. Conditions of marine accidents caused by bad weather

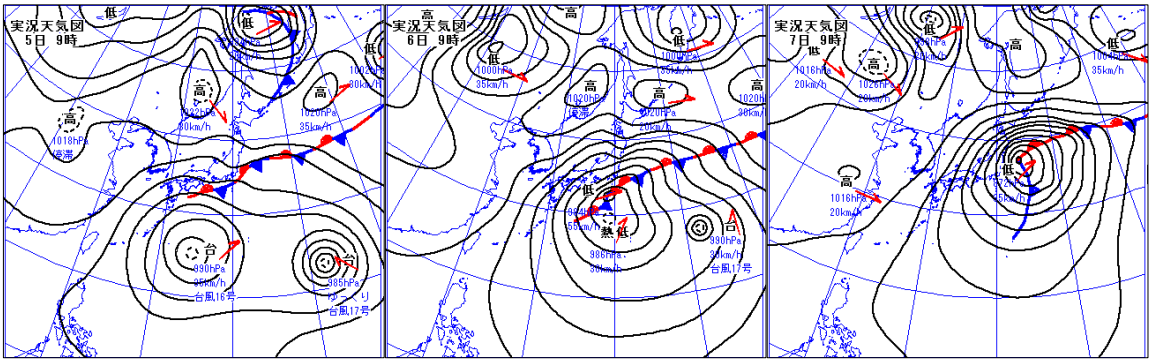
1.1 Past examples of marine accidents

NO	Type	Time/date of occurrence	Location	Vessel name, etc.	Summary
1	Collision	September 14, 1996 5:20 p.m.	In the port	Vessel V Registered in Saint Vincent & the Grenadines, 3986 t	The vessel left the quay at Kashima Port South Public Wharf A and started to sail toward the Kashima Port Central Fairway, but due to the strong winds from the east at that time, it became difficult to maintain the course, and the vessel collided with the berthing Y-Maru and K-Maru and was pushed against the revetment.
2	Grounding (dragging anchor)	1998 January 15 11:30 p.m.	In the port	Vessel S Registered in Belize, 1257 t	The vessel was anchored at an anchorage in the Kashima Port area awaiting permission to berth, and the vessel began dragging anchor due to a developed low pressure system.
3	Collision (dragging anchor)	1998 February 21 3:39 a.m.	Offshore	Vessel D Registered in China, 4462 t	While the vessel was anchoring off the Kashima Port South Breakwater Lighthouse to await berthing, it began dragging anchor due to deteriorating weather and collided with anchored vessel S (14,147 t).
4	Collision (dragging anchor)	1998 February 21 3:39 a.m.	Offshore	Vessel S Registered in Cyprus, 14,147 t	This vessel collided with Vessel D (4462 t), which was dragging anchor, while anchoring off the Kashima Port South Breakwater Lighthouse.
5	Grounding (dragging anchor)	1998 February 21 2:00 a.m.	In the port	Z-Maru Registered in Japan (Ehime Pref.), 497 t	This vessel was anchored off the Kashima Port North Breakwater Lighthouse to await berthing and began dragging anchor before running aground.
6	Grounding (dragging anchor)	1999 March 8 3:55 a.m.	In the port	M-Maru Registered in Japan (Ehime Pref.), 498 t	This vessel, after anchoring at the quarantine anchorage, moved to the North Shore to clean the hold. After that, strong winds and high waves from the northeast caused the vessel to drag anchor and run aground.
7	Grounding (dragging anchor)	2006 October 6 Evening	Offshore	Vessel G Registered in Panama, 98,587 t	The vessel was anchoring off Kashima Port but began heaving up anchor to evacuate offshore under strong winds. When doing so, the vessel began dragging anchor and it became impossible to heave up the anchor. It was not possible to slip anchor or steer the vessel and the vessel ran aground about 5 miles east of Kashima Port South Breakwater Lighthouse. After that, the hull was split into three parts—the bow, the hold, and the stern—by rough seas.
8	Grounding	2006 October 24 Past noon	In the port	Vessel O Registered in China, 88,853 t	The vessel entered Kashima Port and was loading and unloading, but when it was leaving the port to go offshore under strong winds to shelter from stormy weather, it collided with the end of the South Breakwater. After that, the vessel was pushed along the outer side of the breakwater and ran aground on the starboard side.
9	Grounding	2006 October 24 Night	In the port	Vessel E Registered in Panama, 85,350 t	The ship was in port at Kashima Port, but it began moving out to sea to shelter from stormy weather. Due to strong winds, it became difficult to navigate and the vessel was pushed, and it ran aground about 1 kilometer southwest of the end of the Kashima Port South Breakwater.

* Marine accidents between 1996 and 2006

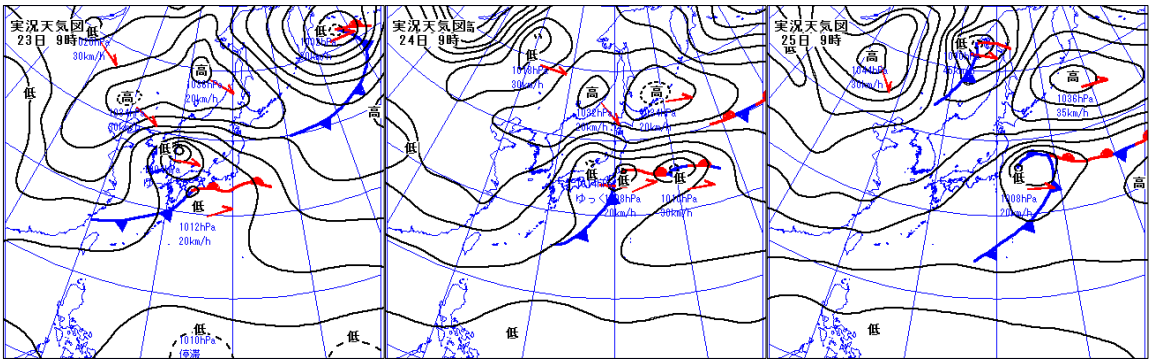
1.2 Pressure patterns

<Marine Accident No. 7>



October 5, 2006 October 6, 2006 October 7, 2006

<Marine Accident Nos. 8, 9>



October 23, 2006 October 24, 2006 October 25, 2006

Fig. 2.1 Weather maps

<Marine Accident No. 7>

Activity at the front, which had stagnated along the southern coast of Honshu, increased as the typhoon approached. In addition, a low-pressure system developed along a front off the coast of Shikoku developed rapidly along the southern coast of Honshu, and advanced further along the Sanriku coast and the eastern sea of Hokkaido.

<Marine Accident Nos. 8, 9>

A low pressure system accompanied by a front passed over the southern coast of Honshu. The low pressure system did not develop much (the lowest central pressure was 1008 hPa), but the isobars were closely spaced with the high pressure system to the northeast of Hokkaido, and strong northerly winds continued to blow mainly along the coastal areas of the Kanto region. The low pressure system moved very slowly and strong winds continued for an extended period.

- When there is a dominant high pressure system on the north side of Japan and a low pressure system passes over the south end of Honshu, strong northeasterly winds often continue to blow near Kashima Port.
- At Kashima Port, where the port entrance faces northeast, the atmospheric pressure distribution requires attention.

1.3 Wind and wave conditions

Table 1.3.1 Observed values at Kashima Port

Factor		Marine Accident No. 7	Marine Accident Nos. 8, 9
Wind direction	(16directions)	N–NE	NW–N–NE
Max wind speed	(m/s)	14.1	15.8
Max significant wave	Height (m)	5.89	6.78
	Period (s)	13.3	11.7

* These are preliminary results. In addition, there are many examples of missing data in both cases, and there is a possibility that peak values have not been obtained.
* Max wind speed: Maximum observed average wind speed
* Max significant wave: Maximum significant wave observed
* Significant wave height and period: Average values of wave heights and periods of 1/3 of observed wave heights
* Wind direction and wind speed were observed at 10 m above ground on the Kashima Port Izumikawa Beach premises

1.4 Other factors contributing to the occurrence of marine accidents

The surface layer of the seabed along the coast of Kashima Port is comprised mostly of a sand and gravel layer formed by the effects of coastal currents and is not well-suited as an anchorage. Vessels frequently drag anchors during stormy weather.

1.5 Cases involving high waves

* [1] The upper row shows the number of occurrences, and the lower row in parentheses ( ) shows the percentage of occurrences. [2] This is a statistical analysis of even numbers hours.

Number of observations	45620(96.1)
Number of missed observations	1864(3.9)

January 1996–October 2006

Table 2.1.1 Frequency table of wave height and period

Period (sec) / Wave height (cm)	Less than 3.0 sec	3.0 –4.0	4.0 –5.0	5.0 –6.0	6.0 –7.0	7.0 –8.0	8.0 –9.0	9.0 –10.0	10.0 –11.0	11.0 –12.0	12.0 –13.0	13.0 –14.0	14.0 –15.0	15.0 –16.0	16.0 –17.0	17.0 sec or more	Total	Cumulative
901 cm or more																		
801–900																		
701–800							1 (0.0)										1 (0.0)	45620 (100.0)
651–700																		45619 (100.0)
601–650										4 (0.0)	1 (0.0)	4 (0.0)					9 (0.0)	45619 (100.0)
551–600							2 (0.0)		7 (0.0)	4 (0.0)	5 (0.0)	5 (0.0)	1 (0.0)				24 (0.1)	45610 (100.0)
501–550								8 (0.0)	15 (0.0)	7 (0.0)	17 (0.0)	2 (0.0)	1 (0.0)				50 (0.1)	45586 (99.9)
451–500						1 (0.0)	2 (0.0)	14 (0.0)	11 (0.0)	18 (0.0)	13 (0.0)	12 (0.0)	2 (0.0)	2 (0.0)			75 (0.2)	45536 (99.8)
401–450						3 (0.0)	17 (0.0)	15 (0.0)	14 (0.0)	18 (0.0)	39 (0.1)	20 (0.0)	14 (0.0)	4 (0.0)	3 (0.0)		147 (0.3)	45461 (99.7)
351–400						23 (0.1)	51 (0.1)	58 (0.1)	26 (0.1)	41 (0.1)	43 (0.1)	22 (0.0)	13 (0.0)	3 (0.0)	3 (0.0)		283 (0.6)	45314 (99.3)
301–350					8 (0.0)	115 (0.3)	103 (0.2)	100 (0.2)	59 (0.1)	95 (0.2)	80 (0.2)	29 (0.1)	8 (0.0)	5 (0.0)	1 (0.0)		603 (1.3)	45031 (98.7)
251–300				1 (0.0)	137 (0.3)	309 (0.7)	194 (0.4)	251 (0.6)	224 (0.5)	207 (0.5)	100 (0.2)	45 (0.1)	25 (0.1)	4 (0.0)	2 (0.0)	1 (0.0)	1500 (3.3)	44428 (97.4)
201–250				61 (0.1)	654 (1.4)	649 (1.4)	519 (1.1)	509 (1.1)	452 (1.0)	331 (0.7)	153 (0.3)	103 (0.2)	32 (0.1)	10 (0.0)	3 (0.0)		3476 (7.6)	42928 (94.1)
176–200			1 (0.0)	183 (0.4)	572 (1.3)	532 (1.2)	544 (1.2)	509 (1.1)	425 (0.9)	266 (0.6)	124 (0.3)	37 (0.1)	16 (0.0)	10 (0.0)	3 (0.0)	2 (0.0)	3224 (7.1)	39452 (86.5)
151–175			4 (0.0)	406 (0.9)	752 (1.6)	819 (1.8)	831 (1.8)	752 (1.6)	476 (1.0)	229 (0.5)	108 (0.2)	29 (0.1)	26 (0.1)	4 (0.0)	1 (0.0)	2 (0.0)	4439 (9.7)	36228 (79.4)
126–150			40 (0.1)	708 (1.6)	1041 (2.3)	1197 (2.6)	1166 (2.6)	869 (1.9)	439 (1.0)	271 (0.6)	103 (0.2)	41 (0.1)	13 (0.0)	2 (0.0)			5890 (12.9)	31789 (69.7)
101–125			150 (0.3)	987 (2.2)	1510 (3.3)	1786 (3.9)	1717 (3.8)	1020 (2.2)	478 (1.0)	242 (0.5)	87 (0.2)	24 (0.1)	3 (0.0)				8004 (17.5)	25899 (56.8)
76–100		1 (0.0)	213 (0.5)	899 (2.0)	1692 (3.7)	2248 (4.9)	2053 (4.5)	1144 (2.5)	418 (0.9)	156 (0.3)	41 (0.1)	10 (0.0)	2 (0.0)				8877 (19.5)	17895 (39.2)
51–75		12 (0.0)	184 (0.4)	658 (1.4)	1415 (3.1)	2140 (4.7)	1935 (4.2)	898 (2.0)	229 (0.5)	84 (0.2)	12 (0.0)	8 (0.0)	1 (0.0)				7576 (16.6)	9018 (19.8)
26–50		6 (0.0)	38 (0.1)	121 (0.3)	338 (0.7)	465 (1.0)	340 (0.7)	110 (0.2)	19 (0.0)	5 (0.0)							1442 (3.2)	1442 (3.2)
25 cm or less																		
Total		19 (0.0)	630 (1.4)	4024 (8.8)	8119 17.8	10287 (22.5)	9475 (20.8)	6257 (13.7)	3292 (7.2)	1978 (4.3)	926 (2.0)	391 (0.9)	157 (0.3)	44 (0.1)	16 (0.0)	5 (0.0)	45620 (100.0)	

Marine Accident No. 7

Marine Accident Nos. 8, 9

Significant wave height of 4 m or more: 0.67% ≈ 2.4 times/year, Significant wave period of 10 s or more: 14.93% ≈ 54.5 times/year, Significant wave height of 4 m or more and significant wave period of 10 s or more: 0.53% ≈ 1.9 days/year

* Significant wave height and period: Average values of wave heights and periods of 1/3 of observed wave heights

1.6 Cases involving strong winds

Marine Accident Nos. 8, 9

Marine Accident No. 7

Specified number of times	47484
Number of observations	45467
Number of missed observations	2017(4.2)

Origin: Kashima Period: January 1996–October 2006

Table 2.2.1 Wind direction/wind speed frequency table

Wind direction Wind speed (m/s)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	All directions	Cumulative
15.0 m/s or more	2 (0.0)	1 (0.0)		2 (0.0)		1 (0.0)	3 (0.0)	1 (0.0)	3 (0.0)							1 (0.0)	14 (0.0)	45467 (100.0)
14.0~15.0	2 (0.0)	1 (0.0)	6 (0.0)		1 (0.0)	3 (0.0)		1 (0.0)	2 (0.0)								16 (0.0)	45453 (100.0)
13.0~14.0	2 (0.0)	2 (0.0)	5 (0.0)	1 (0.0)		4 (0.0)		1 (0.0)	4 (0.0)	10 (0.0)	1 (0.0)	1 (0.0)			1 (0.0)		32 (0.1)	45437 (99.9)
12.0~13.0	4 (0.0)	4 (0.0)	9 (0.0)	6 (0.0)	4 (0.0)	1 (0.0)	2 (0.0)	1 (0.0)	9 (0.0)	6 (0.0)					1 (0.0)		47 (0.1)	45405 (99.9)
11.0~12.0	14 (0.0)	11 (0.0)	8 (0.0)	5 (0.0)	3 (0.0)	2 (0.0)		1 (0.0)	12 (0.0)	13 (0.0)					2 (0.0)	1 (0.0)	72 (0.2)	45358 (99.8)
10.0~11.0	15 (0.0)	16 (0.0)	33 (0.1)	12 (0.0)	6 (0.0)	11 (0.0)	2 (0.0)	3 (0.0)	17 (0.0)	43 (0.1)	4 (0.0)				5 (0.0)		167 (0.4)	45286 (99.6)
9.0~10.0	26 (0.1)	39 (0.1)	76 (0.2)	18 (0.0)	13 (0.0)	10 (0.0)	3 (0.0)	5 (0.0)	38 (0.1)	81 (0.2)	14 (0.0)		2 (0.0)	7 (0.0)	7 (0.0)		339 (0.7)	45119 (99.2)
8.0~9.0	40 (0.1)	115 (0.3)	204 (0.4)	59 (0.1)	21 (0.0)	20 (0.0)	7 (0.0)	10 (0.0)	70 (0.2)	160 (0.4)	40 (0.1)	3 (0.0)	4 (0.0)	17 (0.0)	18 (0.0)	10 (0.0)	798 (1.8)	44780 (98.5)
7.0~8.0	90 (0.2)	268 (0.6)	458 (1.0)	118 (0.3)	53 (0.1)	28 (0.1)	33 (0.1)	17 (0.0)	115 (0.3)	309 (0.7)	76 (0.2)	13 (0.0)	14 (0.0)	46 (0.1)	40 (0.1)	22 (0.0)	1700 (3.7)	43982 (96.7)
6.0~7.0	217 (0.5)	595 (1.3)	778 (1.7)	245 (0.5)	103 (0.2)	70 (0.2)	82 (0.2)	32 (0.1)	175 (0.4)	485 (1.1)	136 (0.3)	31 (0.1)	32 (0.1)	94 (0.2)	81 (0.2)	46 (0.1)	3202 (7.0)	42282 (93.0)
5.0~6.0	399 (0.9)	907 (2.0)	969 (2.1)	466 (1.0)	217 (0.5)	227 (0.5)	166 (0.4)	52 (0.1)	216 (0.5)	685 (1.5)	156 (0.3)	81 (0.2)	102 (0.2)	183 (0.4)	166 (0.4)	91 (0.2)	5083 (11.2)	39080 (86.0)
4.0~5.0	842 (1.9)	1204 (2.6)	1131 (2.5)	624 (1.4)	425 (0.9)	415 (0.9)	322 (0.7)	109 (0.2)	242 (0.5)	1003 (2.2)	177 (0.4)	155 (0.3)	222 (0.5)	345 (0.8)	580 (1.3)	236 (0.5)	8032 (17.7)	33997 (74.8)
3.0~4.0	1331 (2.9)	1285 (2.8)	1103 (2.4)	731 (1.6)	620 (1.4)	448 (1.0)	398 (0.9)	198 (0.4)	289 (0.6)	1536 (3.4)	229 (0.5)	202 (0.4)	355 (0.8)	452 (1.0)	1417 (3.1)	507 (1.1)	11101 (24.4)	25965 (57.1)
2.0~3.0	1217 (2.7)	882 (1.9)	809 (1.8)	564 (1.2)	640 (1.4)	392 (0.9)	389 (0.9)	243 (0.5)	245 (0.5)	1233 (2.7)	190 (0.4)	111 (0.2)	221 (0.5)	308 (0.7)	1483 (3.3)	772 (1.7)	9699 (21.3)	14864 (32.7)
1.0~2.0	486 (1.1)	417 (0.9)	405 (0.9)	329 (0.7)	371 (0.8)	324 (0.7)	246 (0.5)	165 (0.4)	238 (0.5)	238 (0.5)	71 (0.2)	21 (0.0)	46 (0.1)	113 (0.2)	440 (1.0)	430 (0.9)	4340 (9.5)	5165 (11.4)
Less than 1.0 m/s	64 (0.1)	55 (0.1)	67 (0.1)	70 (0.2)	85 (0.2)	67 (0.1)	67 (0.1)	67 (0.1)	71 (0.2)	49 (0.1)	20 (0.0)	8 (0.0)	10 (0.0)	25 (0.1)	53 (0.1)	47 (0.1)	825 (1.8)	825 (1.8)
Total	4751 (10.4)	5802 (12.8)	6061 (13.3)	3250 (7.1)	2562 (5.6)	2023 (4.4)	1720 (3.8)	906 (2.0)	1746 (3.8)	5851 (12.9)	1114 (2.5)	626 (1.4)	1008 (2.2)	1590 (3.5)	4294 (9.4)	2163 (4.8)	45467 (100.0)	

* [1] The upper row shows the number of occurrences, and the lower row in parentheses ( ) shows the percentage of occurrences. [2] This is a statistical analysis of even numbers hours. [3] Wind direction and wind speed were observed at 10 m above ground on the Kashima Port Izumikawa Beach premises

Wind direction N–NE and wind speeds of 10 m/s or more 0.3% ≈ 1.0 day/year

1.7 Cases in which both wind and waves are particularly strong

Looking at the data from the past 35 years (1972–2006), the weather and sea conditions that caused marine accidents Nos. 8 and 9 were exceeded only once.

Subject period (Date and Time–Date and Time)									Max significant wave height (m)	Max significant wave period (sec)	Most frequent wave direction (16 primary directions)	Max wind speed (m/s)
1975	11	10	6	-	1975	11	13	18	7.09	14.8	-	13.7
1980	10	3	6	-	1980	10	5	18	6.52	14.9	-	10.6
1980	11	26	12	-	1980	12	3	10	7.06	13.7	-	11.7
1980	12	23	20	-	1980	12	27	4	6.32	13.4	-	12.1
1986	3	23	4	-	1986	3	25	22	6.67	12.7	-	20.2
1992	11	7	10	-	1992	11	9	22	6.69	12.7	ENE	14.7
1993	3	8	0	-	1993	3	10	22	6.70	13.8	NE	11.8
2001	1	26	4	-	2001	1	28	20	7.33	12.3	ENE	14.8
2005	1	15	14	-	2005	1	18	16	6.21	13.5	NE	12.7
2006	10	23	12	-	2006	10	26	12	6.47	12.0	ENE	15.8

* [1] The values for 2006 are preliminary values. [2] Wind direction and wind speed were observed at 10 m above ground on the Kashima Port Izumikawa Beach premises

Extraction conditions
1. Max significant wave height 6 m or more and
2. Max significant wave period 12 sec or more and
3. Max wind speed 10 m/s or more

* Max significant wave: Maximum significant wave observed
* Significant wave height and period: Average values of wave heights and periods of 1/3 of observed wave heights
* Max wind speed: Maximum observed average wind speed

2. Damage due to tsunami

2.1 Great East Japan Earthquake (Source: Japan Meteorological Agency (JMA) materials)

Occurred at 2:46 p.m. on Friday, March 11, 2011

Magnitude 9.0

Maximum seismic intensity 7 (maximum seismic intensity 6 lower in Kashima, maximum seismic intensity 6 lower in Kamisu)

The first wave struck Kashima Port around 3:32 p.m.

Max tsunami wave around 4:40 p.m., height: 5.7 m

2.2 Major damage to vessels (based on a study by the Kashima Coast Guard)

No.	Vessel type	Gross tonnage	Summary
1	Cargo vessel	499 tons	Mooring lines were broken by the tsunami. The vessel drifted, collided with other vessels, and became unable to navigate.
2	Tanker	160,066 tons	Mooring lines were broken by the tsunami. The vessel drifted and collided with other vessels but was able to leave the port on its own.
3	Tanker	47,027 tons	Mooring lines were broken by the tsunami. The vessel drifted and collided t with the quay. Although the engine room was found to be flooded, the crew members conducted repairs and the vessel evacuated from the port on its own.
4	Tanker	5,998 tons	The vessel collided with the quay due to the tsunami and began to drift due to the breaking of the mooring line. After that, the crew of the ship boarded the ship, found the engine room flooded, and judged that it was impossible to navigate the vessel on its own. With the support of a tugboat, the vessel berthed at the North Public Wharf D.
5	Cargo vessel	499 tons	Mooring lines were broken by the tsunami. The vessel drifted and ran aground in the port. After that, the crew of the ship was transferred via tugboat, and after the vessel was refloated, they evacuated from the port.
6	Cargo vessel	22,089 tons	Mooring lines were broken by the tsunami. The vessel drifted and collided with other vessels but was able to leave the port on its own.
7	Cargo vessel	106,333 tons	Mooring lines were broken by the tsunami. While drifting, the vessel's anchor chain became entangled with other vessels' anchor chains, and the engine room was flooded. After that, the vessel left the port with the support of a tugboat.
8	Cargo vessel	91,178 tons	Mooring lines were broken by the tsunami. The vessel drifted and ran aground in front of the TEPCO water intake. The cargo was removed where it ran aground and the vessel was refloated.
9	Cargo vessel	27,989 tons	Mooring lines were broken by the tsunami. The vessel dropped anchor on both sides, but the starboard anchor chain broke and the vessel collided with the quay. After that, the vessel left the port on its own.
10	Cargo vessel	36,008 tons	Mooring lines were broken by the tsunami. Although the vessel drifted, it was possible to navigate on its own and docked at the quay.
11	Cargo vessel	14,286 tons	Mooring lines were broken by the tsunami. Although the vessel drifted and collided with the quay, it anchored in the South Fairway. After that, the vessel left the port on its own.
12	Cargo vessel	25,448 tons	Mooring lines were broken by the tsunami. Although the vessel drifted, it left the port on its own.

3. Sources of meteorological and marine information at Kashima Port

(1) NOWPHAS : Nationwide Ocean Wave information network for Ports and Harbors

URL https://www.mlit.go.jp/kowan/nowphas/

(2) Ibaraki Coast Guard Office

[1] Maritime Information and Communication System

Computer https://www6.kaiho.mlit.go.jp/03kanku/ibaraki/

Cellular phone https://www6.kaiho.mlit.go.jp/m/03kankuibaraki/

Smartphone https://www6.kaiho.mlit.go.jp/sp/

[2] Telephone service 029-264-0177

(3) Mito Meteorological Office website

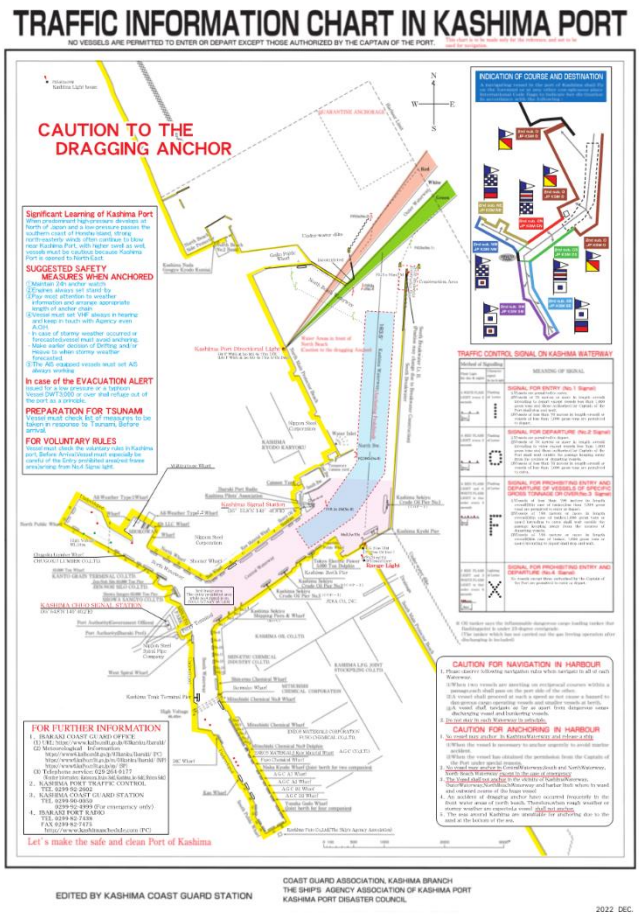
URL https://www.jma-net.go.jp/mito/

(4) Other

Traffic Information Chart in Kashima Port

Japanese version

English version



*** The Traffic Information Chart in Kashima Port is available at the harbormaster's office. It can also be accessed on the Ibaraki Coast Guard website.**

4. Criteria for issuance of recommendations/information transmission systems

(Established on June 5, 2023 by the Kashima Port Disaster Countermeasures Council)

4.1 Response to approaching typhoons

(1) Basis and criteria for issuance of recommendations

[1] Basis for issuance

In cases where it is expected that there is a risk of danger to vessel traffic in the specified port due to abnormal weather or sea conditions, occurrence of a marine accident, or other circumstances, the harbormaster may, when they determine if necessary, recommend that vessels in the specified port or near the boundary of the specified port take necessary measures for the smooth implementation of measures aimed at preventing danger. (Article 39, Paragraph 4 of the Act on Port Regulations)

[2] Criteria for issuance

Recommendations shall be made when the port is expected to fall within the strong wind zone of a typhoon. The types and timing of recommendations are as follows:

- ○ First Warning System (Preparation System)—9 hours before the port is expected to fall within a strong wind zone
- ○ Second Warning System (Evacuation Advisory)—6 hours before the port is expected to fall within a strong wind zone

(2) Method of issuance and cancellation of recommendations

Transmitted to vessels staying in the port via shipping agencies, etc., based on the Kashima Port Disaster Countermeasures Council Typhoon Countermeasure Committee Communication System.

(3) Response at the time of issuance of recommendations

First Warning System (Preparation System)	• Vessels in port shall be prepared for stormy weather and ready for immediate operation if necessary. • Loading and unloading of dangerous goods and port construction work, etc. shall be suspended in principle. • Measures shall be taken to prevent the outflow of construction materials and equipment, etc. • Owners of small vessels and managers of mooring facilities for small vessels shall take measures to prevent unloading and spillage. • AIS shall be turned on at all times on AIS-equipped vessels. • Vessels equipped with international VHF marine radios shall listen to Channel 16 at all times. • Agencies, etc. with a vessel destined for Kashima Port shall communicate with the vessel and coordinate evacuation to another port, etc.
Second Warning System (Evacuation Advisory)	• As a general rule, vessels of 3,000 DWT or more should evacuate outside the port. • Anchoring vessels of 3,000 DWT or more shall heave up anchor quickly and drift and evacuate to safe waters. • Anchoring vessels of 3,000 DWT or less shall coordinate with their agency and be moored at the quay or evacuated to another port. • Vessels mooring and sheltering in the port should take measures such as preparing engines and checking their mooring periodically.

(4) Criteria for cancelling recommendations

If any of the following apply and safety in the port is confirmed, the harbormaster and the committee chair shall discuss and cancel the recommendations.

[1] When the port no longer falls within the strong wind zone

[2] The port still falls within the strong wind zone, but the weather conditions do not meet the recommended criteria due to the approach of a developed low pressure system, and it is clear that the weather will recover.

(5) Other notes

[1] By implementing the standard, the Typhoon Countermeasure Council can be omitted in principle.

[2] If the recommendation time for the warning system is at night (approximately 17:00 to 9:00 the following morning), the warning shall be issued by 16:00 whenever possible.

[3] Vessels staying in port shall secure means of communication with their agency, etc. and pay attention to information from the harbormaster.

[4] Vessels staying in port should not be captive of the timing of the issuance of recommendations by the harbormaster but should take appropriate measures according to individual circumstances, such as preparing for stormy weather and evacuating from the port early.

[5] Even if this port does not fall within a strong wind zone, if the evacuation advisory criteria value for an approaching low pressure system is reached, the evacuation advisory criteria for approaching low pressure systems shall be applied.

[6] Review the recommendation criteria as necessary to make the criteria consistent with the current situation.

[7] The timing of the issuance of this recommendation is based on the data from the Expert Committee on Typhoon Countermeasures of the Kashima Port Disaster Countermeasures Council in June 2004. (*Attached data omitted)

4.2 Response to approaching low pressure systems

(1) Basis and criteria for issuance of recommendations

[1] Basis for issuance

In cases where it is expected that there is a risk of danger to vessel traffic in the specified port due to abnormal weather or sea conditions, occurrence of a marine accident, or other circumstances, the harbormaster may, when they determine if necessary, recommend that vessels in the specified port or near the boundary of the specified port take necessary measures for the smooth implementation of measures aimed at preventing danger. (Article 39, Paragraph 4 of the Act on Port Regulations)

[2] Criteria for issuance

Based on weather forecasts for Kashima Port provided by the JWA, when all of the following conditions are expected to be met, in principle, a recommendation shall be made no later than 24 hours before said weather.

Wave direction	North to east (0–120°)
Wave height (significant wave height)	4 meters or more
Wind speed (average wind speed)	10 m/s or more

Notwithstanding the above criteria, when the harbormaster and the chair of the committee deem it necessary upon consultation, the same recommendation shall be made.

(2) Method of issuance and cancellation of recommendations

Transmitted to vessels staying in the port via shipping agencies, based on the Kashima Port Disaster Countermeasures Council Typhoon Countermeasure Committee Communication System.

(3) Response at the time of issuance of recommendations

Vessels of 3,000 DWT or more (Vessels subject to evacuation)	• As a general rule, a moored vessel shall drift and evacuate to a safe area of sea outside the port. • Vessels anchoring near Kashima Port shall heave up anchor quickly and drift and evacuate to safe waters. • AIS shall be turned on at all times on AIS-equipped vessels. • Vessels equipped with international VHF marine radios shall listen to Channel 16 at all times.
Vessels of under 3,000 DWT (Vessels other than those subject to evacuation)	• Vessels anchoring in or near Kashima Port shall coordinate with their agency and be moored at the quay or evacuated to another port. • AIS shall be turned on at all times on AIS-equipped vessels. • Vessels equipped with international VHF marine radios shall listen to Channel 16 at all times. • Vessels mooring and sheltering in the port should take measures such as preparing engines and checking their mooring periodically.

(4) Criteria for cancelling recommendations

When the average wind speed is less than 10 m/s and safety in the port is confirmed, the harbormaster and the committee chair shall discuss and cancel the recommendations.

(5) Other notes

[1] The order of priority for evacuation is determined by the harbormaster (controller), the pilot, and the tow operator upon coordination.

[2] Agencies, etc. with a vessel destined for Kashima Port shall communicate with the vessel and coordinate evacuation to another port, etc.

[3] Vessels staying in port should not be captive of the timing of the issuance of recommendations by the harbormaster but should take appropriate measures according to individual circumstances, such as preparing for stormy weather and evacuating from the port early.

[4] Small vessels moored in the port shall take measures to prevent drifting such as preparing for stormy weather.

[5] Review the recommendation criteria as necessary to make the criteria consistent with the current situation.

4.3 Responding after the issuance of a tsunami advisory

(1) Basis and criteria for issuance of recommendations

[1] Basis for issuance

In cases where it is expected that there is a risk of danger to vessel traffic in the specified port due to abnormal weather or sea conditions, occurrence of a marine accident, or other circumstances, the harbormaster may, when they determine if necessary, recommend that vessels in the specified port or near the boundary of the specified port take necessary measures for the smooth implementation of measures aimed at preventing danger. (Article 39, Paragraph 4 of the Act on Port Regulations)

[2] Criteria for issuance

When the JMA issues a tsunami advisory, tsunami warning, major tsunami warning, or Nankai Trough Earthquake Extra Information (Megathrust Earthquake Alert) (Megathrust Earthquake Attention).

(2) Method of issuance and cancellation of recommendations

Transmitted to vessels staying in the port via shipping agencies, etc., based on the Kashima Port Disaster Countermeasures Council Typhoon Countermeasure Committee Communication System.
However, because it is expected that this may not be possible due to equipment failure, etc., it is deemed that recommendations from the harbormaster be regarded as issued with the announcement of a tsunami advisory, tsunami warning, major tsunami warning, or Nankai Trough Earthquake Extra Information (Megathrust Earthquake Alert) (Megathrust Earthquake Attention) by the JMA.

(3) Response at the time of issuance of recommendations

When a tsunami advisory, tsunami warning, or major tsunami warning is issued, the captain of a vessel in the port shall take the measures described in Appended Table 1: Measures to Take in Response to Tsunamis (see the next page) in consideration of the time until the tsunami is to arrive, the height of the tsunami, and the performance of their ship.
When Nankai Trough Earthquake Extra Information (Megathrust Earthquake Alert) (Megathrust Earthquake Attention) is issued, they shall take the measures described in Appended Table 1: Measures to Take in Response to issued Nankai Trough Earthquake Extra information (see the next page).

(4) Criteria for cancelling recommendations

When the issued tsunami advisory, tsunami warning, or major tsunami warning is cancelled and safety in the port is confirmed.
With regard to Nankai Trough Earthquake Extra Information (Megathrust Earthquake Alert) (Megathrust Earthquake Attention), when approximately one week has passed in principle from the issuance of the recommendation.

(5) Other notes

[1] Agencies, berth managers, etc. may not have ample time before a tsunami strikes, so they should make efforts to collect information on their own through TV, etc.
[2] When evacuating outside the port, in principle, evacuate to offshore waters with a depth of 50 m or more, eight nautical miles or more from the Kashima Port South Breakwater Lighthouse.
[3] Vessels evacuating outside the port shall turn on their AIS and notify the Kashima Port harbormaster directly or through a ship agency, etc., and shall secure a means of communication with the harbormaster through international VHF, ship telephone, etc.
Notification to the harbormaster shall be made in accordance with the situation and may be made as a post-report.
[4] These criteria and matters concerning tsunami countermeasures for ships and mooring facilities at Kashima Port shall be widely communicated to vessels handled, etc. through shipping agencies, etc. in advance.
[5] Review the recommendation criteria as necessary to make the criteria consistent with the current situation.
[6] For tsunami warnings and advisories, refer to Types of Tsunami Forecasts (from the JMA website).

Appendix Table 1 Measures to be Taken in Response to Tsunami

Categories of Tsunami Prediction			Time Available Before Arrival of Tsunami	Measures to be Taken by Vessels				
				Large Vessels and Medium Vessels (including Fishing Boats)				Small Vessels (Pleasure Boats,Fishing Boats,etc)
				In a port Berthing Vessels		Anchoring Vessels (including Working Vessels)	Proceeding Vessels	
	Height of Tsunami	Expression for huge earthquake		Vessels Carrying Dangerous Cargo	General Vessels (including Vessels for Loading/Unloading and Other Operations)			
Tsunami Advisory	1 meter			Suspend loading/Unloading or Operation Berthing Sheltering or Offshore Evacuation	Suspend loading/Unloading or Operation Berthing Sheltering or Offshore Evacuation	Suspend Operation In a port Sheltering (Offshore Sheltering,if necessary)	Offshore Evacuation (default)	(Skipped)
Tsunami Warning	3 meters	High	No	Suspend loading,/Unloading or Operations Sheltering at Berth	Suspend loading,/Unloading or Operations Sheltering at Berth	Suspend Operation In a port Sheltering	Offshore Evacuation	
			Yes	Suspend loading,/Unloading or Operations Offshore Evacuation	Suspend loading,/Unloading or Operations Offshore Evacuation or Berthing Sheltering	Suspend Operation Offshore Evacuation		
Large Tsunami Warning	5 meters, 10 meters, 10 meters or higher	Huge	No	Suspend loading,/Unloading or Operations Berthing Sheltering or On -terrene Evacuation	Suspend loading,/Unloading or Operations Berthing Sheltering or Evacuation on Terrene	Suspend Operation In a port Sheltering	Offshore Evacuation	
			Yes	Suspend loading,/Unloading or Operations Offshore Evacuation	Suspend loading,/Unloading or Operations Offshore Evacuation	Suspend Operation Offshore Evacuation		

Measures to be taken in Response to The Nankai Trough Earthquake Extra information
When Tsunami Warning or Advisory is issued, priority is given to "Measures to be taken in response to Tsunami"

Categories of Nankai Trough Earthquake Extra Information	Measures to be Taken by Vessels				
	Large Vessels and Medium Vessels (including Fishing Boats)				Small Vessels (Pleasure Boats,Fishing Boats,etc)
	In a port Berthing Vessels		Anchoring Vessels (including Working Vessels)	Proceeding Vessels	
	Vessels Carrying Dangerous Cargo	General Vessels (including Vessels for Loading/Unloading and Other Operations)			
Megathrust Earthquake Alert	Suspend loading,/Unloading or Operations Principle Offshore Evacuation		Suspend Operations Offshore Evacuation	Principle Offshore Evacuation	(Skipped)
Megathrust Earthquake Attention	・Obtaining the latest information on the Nankai Trough earthquake from Japan Meteorological Agency and securing good communications ・Securing “early evacuation methods in preparation for expected tsunami warnings following subsequent earthquakes. ・For small vessels extra moorings ready NB. “early evacuation methods”: Berthing head out as much as possible Readiness to depart immediately when necessary. Securing necessary support for evacuation Securing sufficient crew for evacuation Considering additional measures to be taken				

［Terms and Definitions］

Time Allowance to Tsunami Strike:

Yes: Vessels may have sufficient time to evacuate (to put the vessel in a safe state by offshore evacuation or landing and binding) following the release of a major tsunami warning/tsunami warning

No: Vessels will not have sufficient time to make evacuation (to put the vessel in a safe state by offshore evacuation or landing and binding)following the release of a major tsunami warning/tsunami waring

Large-sized Vessels: Vessels unable to make self-leaving off the port without the assistance of support boasts (tugboats,etc.)and/or pilot service

Mid-sized Vessels: Other Vessels than Large Vessels or Small Vessels

Small Vessels: pleasure/fishing boats: They are small enough to be carried onto land and sheltered (excluding docking)

On-Terrene Evacuation: Crew members take refuge on terrene in high places, as high risk is predicted for in-vessel sheltering before leaving the vessel ,complete securing-vessel-measures where possible,such as securing dangerous cargo and ensuring protection from vessel being swept away

Offshore Evacuation: Choose a wide area where water is deep and away from the coast (if face a difficulties in evacuation, re-choose in a port sheltering.)

In a port Sheltering: Sheltering in the emergency sheltering areas inside the port and resisting tsunami water power by means of anchors or using engines/thrusters

Mooring Sheltering: Resisting tsunami power while berthing by means of enhancement of berthing force or through the use of engines(Acceptance of land workers seeking emergency shelters onboard should be considered.)

[Precautions]

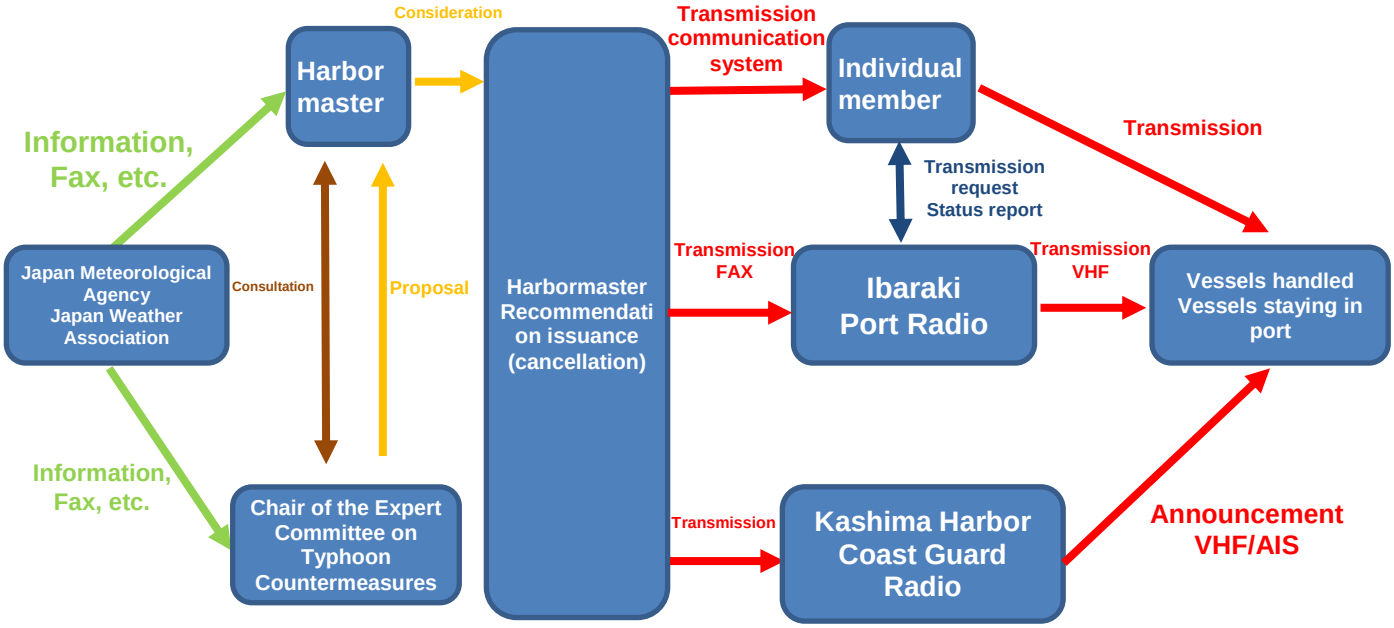
1. Vessels with VHF equipment should constantly monitor VHF channels (International VHF Channel 16).

2. Vessels with AIS equipment should keep the AIS equipment operated, and make appropriate input.

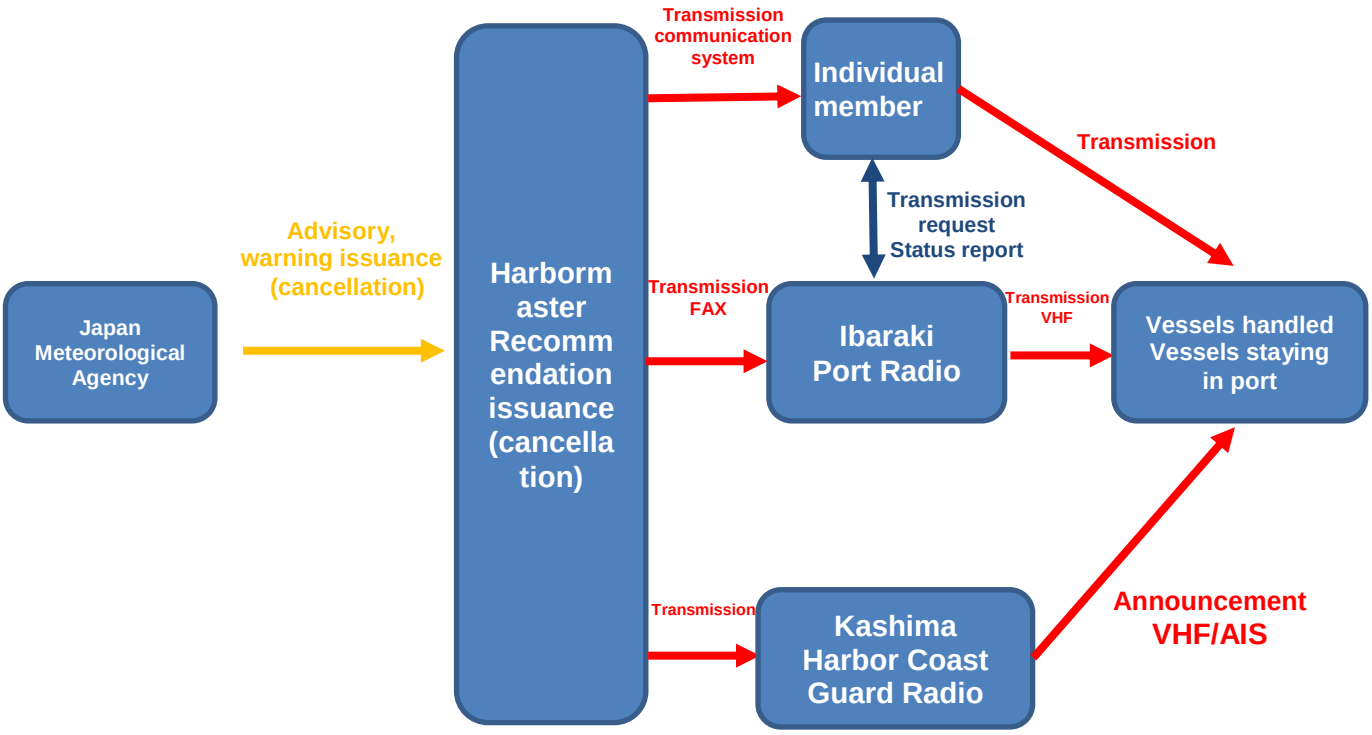
3. Efforts should be made to gather any available information on the tsunami.

4.2 Communication system at the time of issuance (cancellation) of recommendations

(1) In the case of an approaching low pressure system or typhoon

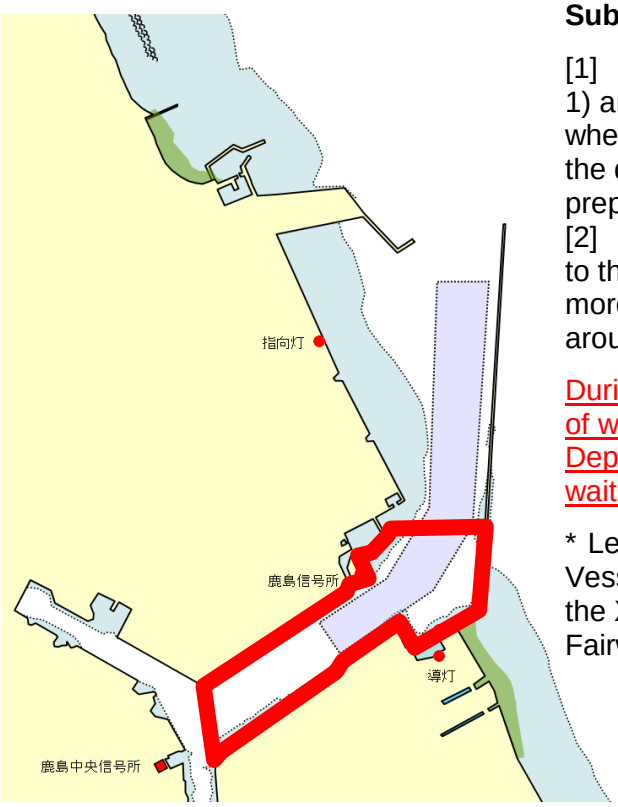


(2) In case of announcement (cancellation) of tsunami warning/advisory, etc.



5. Kashima Port rules for navigation and coordination

Suspension of operations (due to X signal)



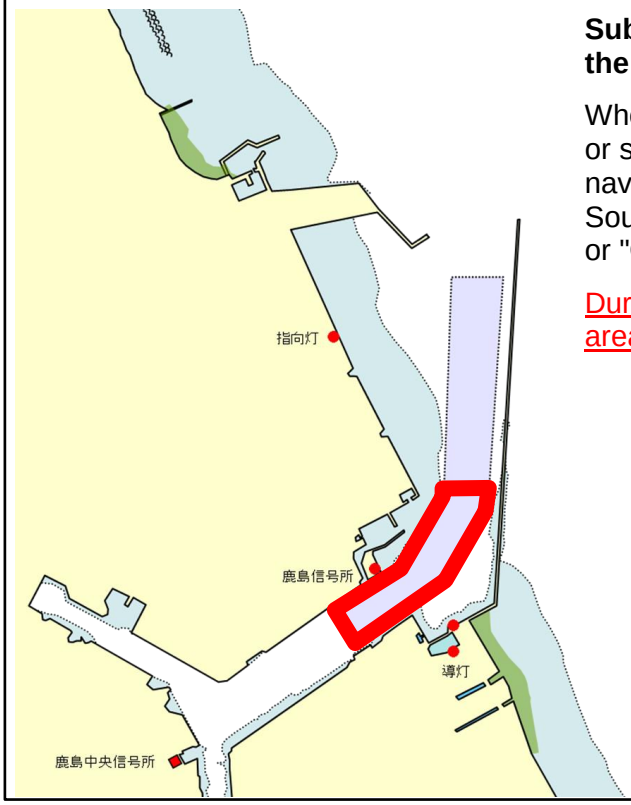
Subject fairway: Central Fairway

[1] The interval from Kashima Crude Oil Pier No. 1 (COP-1) and the Nippon Steel raw material wharf to the point when a vessel with a length overall of 330 m or more leaves the quay, turns around in the Kashima Fairway, and prepares to leave the port
[2] The interval from the Nippon Steel raw material wharf to the point when a vessel with a length overall of 330 m or more leaves the quay to shift in the port, and after turning around in the Kashima Fairway, and prepares to dock again

During the above interval, vessels shall not enter the area of water outlined in red on the left.
Departing vessels in the North and South Fairways shall wait at the quay.

* Legal provisions
Vessels other than those instructed by the harbormaster via the X signal shall not enter or depart from the Kashima Fairway.

One-way operation (accompanying the navigation of specific vessels)



Subject fairway: Kashima Fairway (interval between the bend and the South Entrance)

When a vessel of 320,000 DWT or more enters, leaves, or shifts from the Nippon Steel raw material wharf, and is navigating between the bend (near Buoy No. 6) and the South Entrance of the Kashima Fairway (control signal "I" or "O")

During the above interval, vessels shall not operate in the area of water outlined in red on the left.

One-way operation (accompanying the navigation of specific vessels)

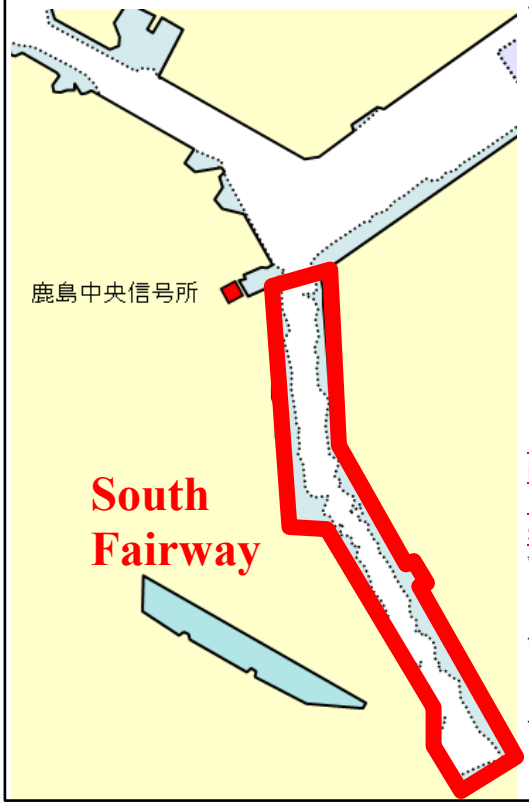
Subject fairway: North Fairway

- The interval when a vessel of 65,000 DWT or more and 220 m or more in length overall is operating in the North Fairway in order to dock or depart from a quay at the Showa Sangyo, Zenno Silo, Kanto Grain Terminal, or Nippon Steel piers
- The interval when a vessel of 32,000 DWT or more is operating in the North Fairway in order to enter and dock at or depart from the Chugoku Mokuzai outgoing berth
- The interval when a RORO vessel with a gross tonnage of 13,000 tons (142 m in length overall) or more is turning around in the North Fairway (in front of the Small Port Entrance) in order to dock astern at the Nippon Steel multi-purpose quay
- The interval when a vessel with a length overall of 70 m or more (excluding vessels with a gross tonnage of less than 1,000 tons) is operating on a temporary course with a course width of 160 m in the North Fairway in order to dock at or depart from the North Public Wharf (including nearby anchorages)

During the above intervals, vessels shall wait outside the area outlined in red (outside the North Fairway) or at the quay.
However, that this shall not apply in cases (*) that do not interfere with a specific vessel.

* Example 1 In the case of entering the fairway following a specific vessel and berthing at a quay closer to the Central Fairway than the specific vessel
* Example 2 In the case of entering the fairway before the specific vessel and berthing at a quay further down the fairway from the specific vessel
* Example 3 In the case when a vessel moored at a quay closer to the Central Fairway than the mooring of the specific vessel departs from quay after the specific vessel passes by

One-way operation (accompanying the navigation of specific vessels)



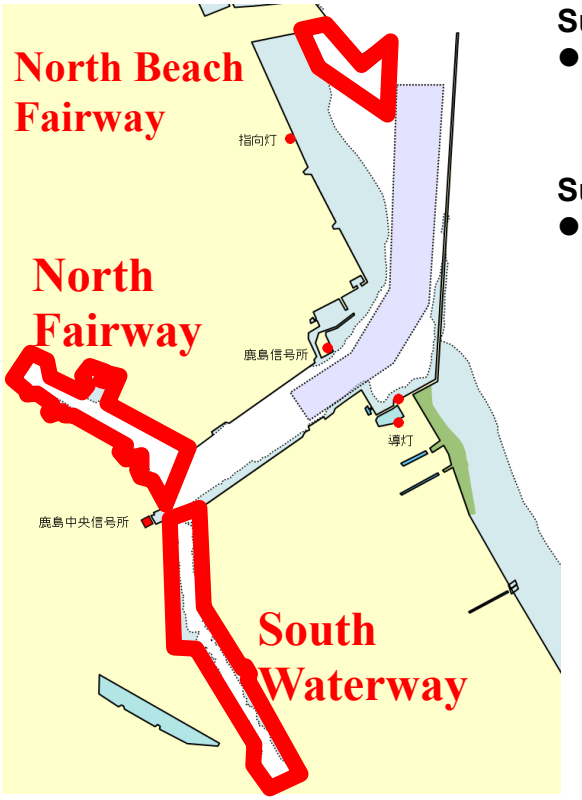
Subject fairway: South Fairway

- The interval when a vessel with a length overall of 180 m or more is operating in the South Fairway in order to enter and dock at or depart from the South Public Wharf
- The interval when a vessel of 40,000 DWT or more or a length overall of 180 m or more is operating in the South Fairway to enter and dock at the Shin-Etsu Chemical quay
- The interval when a vessel with a length overall of 125 m or more is operating in reverse in the South Fairway to leave the Shin-Etsu Chemical quay or Kashima Tank Terminal pier
- The interval when a vessel with a length overall of 138.63 m or more leaves the Kao quay and travels to the area in front of South Public Wharf G/H before completing the turn

During the above intervals, vessels shall wait outside the area outlined in red (outside the South Fairway) or at the quay.
However, that this shall not apply in cases (*) that do not interfere with a specific vessel.

* Example 1 In the case of entering the fairway following a specific vessel and berthing at a quay closer to the Central Fairway than the specific vessel
* Example 2 In the case of entering the fairway before the specific vessel and berthing at a quay further down the fairway from the specific vessel
* Example 3 In the case when a vessel moored at a quay closer to the Central Fairway than the mooring of the specific vessel departs from quay after the specific vessel passes by

Prohibition of navigating in opposite directions



Subject fairway: North Beach Fairway

- Vessels entering and leaving the public wharfs in the outer port shall not navigate in opposite directions.

Subject fairways: North & South Fairways

- Vessels with a length overall of 70 m or more (excluding those with a gross tonnage of less than 1,000 tons) shall not navigate in opposite directions.

Conclusion

In October 2006, three large ore carriers ran aground in Kashima Port due to the approach of a developed low pressure system. And in March 2011, the Great East Japan Earthquake triggered a tsunami with a height exceeding 5 m. Both disasters caused severe damage to vessels and port functions.
At the same time, the lessons learned from these accidents have not been forgotten. Measures to prevent accidents during such abnormal weather events have been steadily built up. With the recent establishment of measures in the case of issued Nankai Trough Earthquake Extra information, further improvements in the safety of Kashima Port are expected.
However, these safety measures, as a system alone, are incomplete, and it is important that the involved parties examine and verify in advance how appropriate evacuation actions can be taken in the event of abnormal weather.
For this reason, we have decided to enhance the contents of this guide by adding a new section on the Kashima Port rules for navigation and coordination.
I would like to conclude by expressing my hope that this guide is used effectively by the involved parties to build substantial and appropriate systems, and that the safety and promotion of Kashima Port are encouraged in a balanced manner.

June 5, 2023

Yuji Adachi
Chair of the Kashima Port Disaster Countermeasures Council
Kashima Port Harbormaster, Chief of the Kashima Coast Guard Station