

How to Fill out 'Response against Tsunami Checklist'

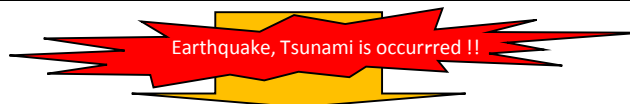
(September 1st, 2016)

Security and Emergency Management Office,
Safety Policy Division, Maritime Bureau (Ver.E1)

Name: _____ 【Port: _____】 **Cargo Ship**

Response against Tsunami Checklist (This the sheet is not authorized as obligation by statute.)

1	Confirming before port entry in advance	Port and Ship Information				
		Port: ①	Berthing direction: Inbound ② / Outbound			
		Berth / Quay: ③	Quay: Seismic design ④ / Non-seismic design			
		Ship name: ⑤	Gross Tonnage: ⑥			
Ship type: ⑦		Crew: ⑧	Cargo: ⑨			
2		Basic Information				
		Safe water area: From (), () Degree ()m Water depth: m				
		Location : Latitude: Longitude: ① Distance from berth to safe water area : nm				
3		Time to arrive safe water area: minutes				
		Place of evacuation area on land : ②		Handling support: Tug (Yes ③ / No)		
	Contact Point					
4	Agent:		Operating company:			
	Stevedore:		Harbor Master:			
	Liner:		Japan Coast Guard:			
	Tug Company:		Other:			
5	Confirm Tsunami information in advance, if possible.		The assumed maximum Tsunami height: m (time of arrival:)			
	Response against Tsunami (Basic Policy)					
5	Warning level	Tsunami height	On berthing		On anchoring	
			Within ~minutes	More than ~minutes	Within ~minutes	More than ~minutes
	Major Tsunami warning	More than 3m				
	Tsunami warning	1~3m				
Tsunami advisory	Less than 1m					



6	Judge if Earthquake, Tsunami is occurred Captain shall Judge	Earthquake Information (Date -)			
		Time	Scale	Place	Seismic Intensity
		h m	M		
		Tsunami Information			
		Major Tsunami warning		Tsunami warning	Tsunami advisory
		Time to arrival of Tsunami		m	Anticipated height
			m		
Captain Judgement					
Emergency departure		Stay alongside		Evacuation to the land	

Basic Response List

(Fill in the as far as practicable)

Keep monitoring the latest information of Tsunami.
(from TV, Radio or VHF)

Confirm Tsunami occurrence indication from
Port master, Harbor administrator, etc...

Emergency departure

*Continue to obtain the information of Tsunami
(from TV, Radio or VHF)

- ① Interruption of cargo work (_____ minutes)
- ② Crew readiness (_____ minutes)
- ③ Standby for departure (Engine and Thruster if provided) (_____ minutes)
- ④ Consider support Tug, handler and Mooring crew are necessary or not
- ⑤ Confirm store landing facilities (Crane, Loading Arm, Bellows Chute, etc...) available
- ⑥ Check the suitability of the departure route (Proximity of hazards and other vessels in way of departure route)
- ⑦ Unmooring or cutting lines (_____ minutes)
- ⑧ Give notice to the shore (relevant departments or the operating company), after departure
- _____ (_____ minutes)

Staying alongside

*Continue to obtain the information of Tsunami
(from TV, Radio or VHF)

- ① Crew readiness (_____ minutes)
- ② Tending mooring lines / Tightening brakes of mooring winches (_____ minutes)
- ③ Standby anchor (_____ minutes)
- ④ Standby engine and thruster if provided (To avoid damaging of lines, Surging) (_____ minutes)
- ⑤ Discuss or instruct for the interruption of Cargo work, etc... (_____ minutes)
- ⑥ Check watertight measures (close all the watertight doors /openings, etc...) (_____ minutes)
- ⑦ Give notice to the shore (relevant departments or the operating company) (_____ minutes)
- ⑧ Check the ways to obtain the latest information.
(Preparing vessel on the advice or the indication from Harbor Master/ Harbor administrator, etc...)
(Check the safe water area in advance for the emergency departure)
(Check the safe area, the evacuation route for evacuation to the land)
- _____

Evacuation to the land

*Continue to obtain the information of Tsunami
(from TV, Radio or VHF)

- ① Crew readiness (_____ minutes)
- ② Check the safe area, the evacuation route, the required time to evacuate etc...
- ③ Instruct crew to evacuate to land (_____ minutes)
- ④ Carry out the required work on board till Evacuation to the land (_____ minutes)
(Disengaging the connections such as loading facilities between the ship and the land) (_____ minutes)
- _____

Attention in case of drifting (Additional points)

When the ship drifts from berth, the mooring may break, and cargo handling facilities, such as cranes etc. may collapsed, therefore crew shall evacuate to the safe area.

7

1. To be considered when filling in the sheet

In preparation for Tsunami occurrence, it is recommended to actively grasp information, in advance, on a daily basis by collecting information from the related organizations, such as Hydrographic and Oceanographic Department of Japan Coast Guard, and Local Observatory of Meteorological Agency. It should be noted that the use of this sheet is not authorized as obligation by statute.

2. How to fill in each item

1 Port and Ship Information

- ◇ The ship agency fills in beforehand.
- ◇ Confirms before entering the port.

① Name of Port

How to fill in: Fill in the name of the port the ship enters.

- ※ It is preferable to fill in the sheet unique to the port of entry, considering that each port may take different response.

② Berthing Direction

How to fill in: Select either “Inbound” or “Outbound,” and encircle it with an ‘O’.

- ※ It is preferable to select the `The easy direction for emergency departure` in case of a Tsunami occurrence, but encircle with an ‘O’ at the direction the ship ordinarily berths.

③ Berth/Quay

How to fill in: Fill in the name of berth/quay to be used.

④ Quay

How to fill in: Select either “seismic” or “non-seismic” type after confirming of the berth design type and encircle it by ‘O’.

- ※ In case there are port quays with seismic design, confirm them as only a reference information, in order to berth in an available quay during an earthquake.

⑤ Ship Name

How to fill in: Fill in the formal ship name.

⑥ Gross Tonnage

How to fill in: Fill in the accurate gross tonnage of the ship.

⑦ Ship Type

How to fill in: Fill in the accurate ship type.

⑧ Crew

How to fill in: Fill in the “crew”.

※ Captain should fill in the number of crews for ordinary operation.

⑨ Cargo

How to fill in: Fill in the cargo name aboard the ship.

⑩ No. of Passenger [for Passenger Ship only]

How to fill in: Fill in the “number of passengers”.

※ Captain should fill in the number of passengers for ordinary operation or capacity .

2 Basic Information on Evacuation

- ◇ The ship agency fills in beforehand.
- ◇ Confirm before entering the port.

① Safe Sea Area

How to fill in: Fill in the location of the safe water area.

Items to be filled in are: the place, angle, and distance of the safe area, and the depth, latitude, longitude, as well as other important items, such as, time to reach the area.

How to confirm: Confirm with the safe water area authorized by Japan Coast Guard or Harbor Master.

Reference information: In case of public quays, confirm the information provided in the Council of Tsunami Response for Ships for each of the regions and Japan Coast Guard directives, or the disaster prevention plan authorized by the regional government or the Harbor Master. In case the quays are privately owned, obtain information through the shippers or the quay owners in addition to the above.

Time to reach the area is the normal time needed for the ship to move from the port to the safe water area.

- ※ It is preferable to confirm about the congestion status of the safe water area and the evacuation routes in advance, with consideration given to the ship conditions like its location and situation and estimated height of tsunami.
- ※ In case that the evacuation area is not authorized, each ship can itself specify it.

② Evacuation Area on Land

How to fill in: Fill in the evacuation area on land, such as upland area and buildings for tsunami evacuation, nearest from the using quay.

How to confirm: Confirm the evacuation area on land authorized by the local government (municipality) where the quay is located.

Reference information: Be sure to confirm the evacuation area directly with the disaster prevention unit of the municipality, or through the information collected from Committee of Tsunami Response for Ships in each region, Japan Coast Guard, shippers or owners of the quay.

- ※ The ship can specify its own evacuation area on land.
- ※ In case that the evacuation area is not authorized, each ship can itself specify it.

③ Handling Support

How to fill in: Select either necessary or not on the requirement of handling support in times of Tsunami occurrence and mark it with a 'O'.

How to confirm: Contact the tug operator in advance and confirm if the tug boats are available at times of Tsunami.

- ※ Ordinarily, while responding to Tsunami by the way of emergency departure or staying alongside, the handling supports, such as the support from the pilot, tug boat and mooring/unmooring crews are required. Even when a Tsunami warning has been announced, such supports may not be available just by the order of a ship because the safety of a handling supporter itself is given priority over others.
- ※ It is preferable to firmly confirm a method and system for emergency departure and staying alongside this with considering the case that handling support may not be available.

④ Mooring or Anchoring Areas in the Port during Emergency Evacuation [for Passenger Ship only]

How to fill in: Fill in the destination of emergency departure in the port or the mooring/handling area.

How to confirm: Confirm the area authorized by Japan Coast Guard or Harbor Master.

3 Contact Points

- ◇ The ship agency fills in beforehand.
- ◇ Confirm before entering the port.

How to fill in: Fill in the contact points of officers in charge, of each organization.

4 Confirming Tsunami Information in Advance as much as Possible

- ◇ The ship agency fills in beforehand.
- ◇ Confirm before entering the port.

How to fill in: Fill in the estimated maximum Tsunami height and arrival time as much as possible.

How to confirm: Confirm the estimated maximum Tsunami height and arrival time with reference to the Tsunami Information Map published by the Hydrographic and Oceanographic Department of Japan Coast Guard, Tsunami estimation provided by each regional government and others.

- ※ Tsunami submergence map prepared by the regional governments may not include information on water level fluctuation at the nearby berths or the direction and speed of Tsunami in the inbound and outbound water area. For the information, to be collected in advance, on Tsunami in inbound and outbound water areas, refer to the Tsunami Information Map published by the Hydrographic and Oceanographic Department of Japan Coast Guard.

Hydrographic and Oceanographic Department of Japan Coast Guard: Tsunami Information Map. For tsunami simulation by various degree of massive earthquake at Nankai Trough, click the link, <http://www1.kaiho.mlit.go.jp/KAIYO/tsunami/>, or search by "Tsunami disaster prevention information"

- Tsunami disaster prevention information showing Tsunami situation at major ports in Pacific Ocean have been prepared.
- Wide area map has been prepared for Tokyo Bay, Ise Bay and Osaka bay.
 - Tsunami Information Map for the flow and ebb tides that denotes the maximum Tsunami height and flowing speed.
 - Charts showing time in terms of fluctuation of Tsunami height, and the flowing direction and speed at a certain point.
 - Tsunami animation showing the Tsunami status fluctuating time to time.

5

Response against Tsunami







- ◇ The captain should fill in.
- ◇ It can be a guideline for Captain to take a decision when Tsunami occurs.

How to fill in: Depending on the arrival time of Tsunami, fill in the choice on the ship status on berthing and anchoring, for tsunami heights with Major warning, warning and advisory. Fill in also the cases of emergency departure, staying alongside, or evacuation to the land.

How to confirm: Select the responding action after confirming the working hours during Tsunami occurrence by consulting with ship agencies and others.

※ Confirm the necessary time assumption for each work item shown on the backside in advance, and fill out the appropriate choice considering each work time.

【Reference】 Classification of Tsunami Warning/Advisory and Action to take

	Height of the assumed Tsunami		Action to be taken	Assumed damage
	Announcement by numerical values (Announcement Criteria)	Expression for large-scale earthquake		
Major Tsunami warning	Over 10m (10m<height)	Huge	<p>A tsunami is expected to hit land, and anybody in the area will be caught in its currents. Evacuate from coastal or river areas immediately to safer places such as high ground or a tsunami evacuation building.</p> <p style="background-color: #f0f0f0; padding: 2px;">Not to think "we're safe here" but to continue to evacuate to a higher place!</p> 	<p>Wooden houses are completely destroyed and washed away, and people are caught up in the water flow due to Tsunami.</p>  <p>(Wooden houses are washed away, caused by over 10 m Tsunami height)</p>
	10m (5m<height<=10m)			
	5m (3m<height<=5m)			
Tsunami warning	3m (1m<height<=3m)	High	<p>"Get away From Tsunami" is a video scene from the awareness to avoid disaster (Japan Meteorological Agency)</p> 	<p>Tsunami attacks low altitude places and flood damage occurs. People are caught up in the flow due to Tsunami.</p>  <p>Provided by Toyokoro Town (2003)</p>
Tsunami advisory	1m (20cm<height<=1m)	(Not indicated)	<p>People in the sea must quickly be out and leave the seashore. Do not come close to seashore or enter the sea until the warnings are lifted.</p> 	<p>People in the sea are caught up in the fast flow, a raft is washed away and small boats overturn</p> 

(Source: HP of Japan Meteorological Agency)

6 Earthquake Information/Tsunami Information

- ◇ The Ship side fill in at the time of Earthquake or Tsunami.
- ◇ Captain takes decision based on the filled out information.

How to fill in: Fill in Earthquake and Tsunami information after they occur and decide the responding action.

How to confirm: Confirm Earthquake/Tsunami information by obtaining information from TV, radio, wireless, contact points and others.

- ※ Obtain instructions and information from the contact points shown in 3 and get information from the TV, radio, wireless and list them up.
- ※ Based on such information, Captain immediately decides to choose from the “Emergency Departure”, “Staying Alongside” and “Evacuation to the Land”, with reference to “response against Tsunami (decision guideline)” shown in 5.
- ※ Confirm Tsunami occurrence indication from Port master, Harbor administrator, etc...

7 Check List (Page 2)

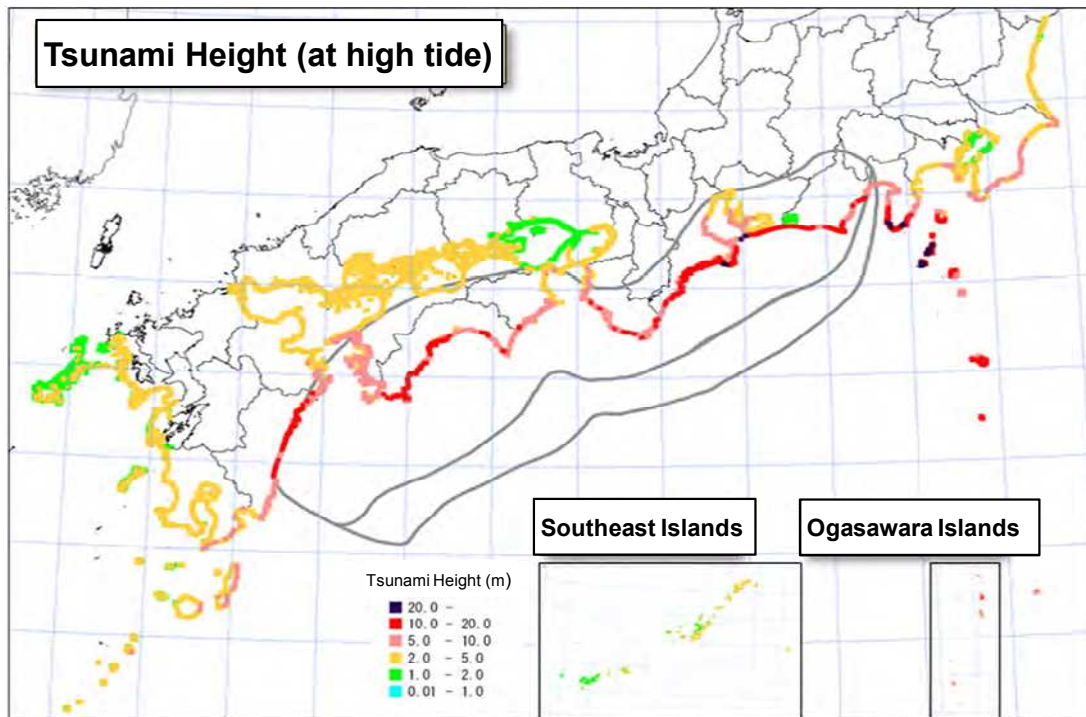
- ◇ The list gives the items exemplarily to be confirmed against the actions shown in 6 such as “Emergency Departure”, “Staying Alongside” and “Evacuation to the Land” which is decided by Captain.

- ※ Each item can be used as it is, however, it is also important to adjust in response to the actual status at each ship operation.
- ※ Filling in the assumed required time for each work, as available, makes it easy to respond against Tsunami.

【Reference】 Basic knowledge about Tsunami

- General information about Tsunami
http://www.fdma.go.jp/en/tsunami/tsunami_en.html
- General information about Tsunami Warning/Advisory
http://www.data.jma.go.jp/svd/eqev/data/en/tsunami/tsunami_warning.html
- Explanation about Tsunami Warning/Advisory and Tsunami Information
<http://www.data.jma.go.jp/svd/eqev/data/en/guide/tsunamiinfo.html>
http://www.jma.go.jp/jma/en/Activities/jishintsunami/jishintsunami_low5.pdf
- Latest Tsunami Warnings/Advisories
<http://www.jma.go.jp/en/tsunami/index.html>
- Pacific Tsunami Warning Center
<http://ptwc.weather.gov/>
- Simulation of the Tsunami Behavior at the Coast for Mariners
(Hydrographic and Oceanographic Department, JCG)
<http://www1.kaiho.mlit.go.jp/KAIYO/tsunami-E/>

【Reference】 Assumed Damage by Tsunami of Nankai Trough Earthquake



Examples of Tsunami Assumption in case of Nankai Trough Earthquake
 {(Large Slip Area + Extra Large Slip Area) is set at (Suruga Bay – Offshore of Kii Peninsula)}

	Maximum Water Level (m)	Minimum Arrival Time (minutes)				
		+1m	+3m	+5m	+10m	+20m
Ibaraki	6m	78	100			
Chiba	11m	31	32	36		
Metropolitan Tokyo	3m	186				
Kanagawa	10m	26	30	62		
Shizuoka	33m	2	3	4	5	7
Aichi	22m	12	18	25	27	
Mie	27m	4	5	7	16	20
Osaka	5m	61				
Hyogo	9m	44	64			
Wakayama	20m	3	4	4	14	
Tokushima	24m	7	13	25		
Kagawa	5m	172				
Ehime	21m	22	26	31		
Kochi	34m	5	6	21	29	
Oita	15m	20	23	28		
Miyazaki	17m	19	21	24	29	
Kagoshima	13m	30	32	35		

※ Quoted from Disaster Prevention HP by Cabinet Office

※ Shows the maximum Tsunami height, minimum arrival time from the assumable cases of earthquake

※ Colors meant for the assumed Tsunami height (■:~1m, ■:1~2m, ■:2~5m, ■:5~10m, ■:10~20m, ■:20m~)

[Reference] Example of Response against Tsunami by Arrival Time (decision guideline)

**This table is just an example for Japanese ship.
Please fill in by each Ship's Captain.(With consult to ship agency in necessary)**

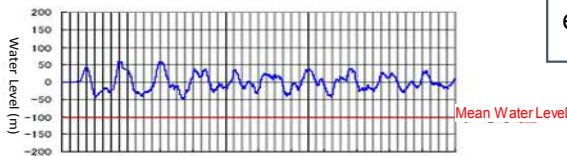
Example of information collecting from related organizations

Table of Response against Tsunami

Tsunami Warning & Recommendation		Time Allowance to Tsunami Arrival	Actions to be Taken by a Ship			
			Ships Berthing in a Port			
			Large/Mid-Sized Ships (including Fishing Trawlers)	General Ships (including Cargo-handling/Working Ships)	Small Ships (Pleasure Boats, Fishing Boats, etc.)	Anchored Ships/Buoy-moorings Ships
Tsunami Warning	Major Tsunami	No	Suspend Cargo handling/Works Essentially, Emergency Departure	Suspend Cargo handling/Works, Evacuate to the Land	Evacuate to the Land	Use of Engine
		Yes	Suspend Cargo handling/Works, Emergency Departure	Suspend Cargo handling/Works, Evacuate to the Land	Grounding-fixing (Evacuate to the Land, if necessary)	Emergency Departure
	Tsunami	No	Suspend Cargo handling/Works Essentially, Emergency Departure	Suspend Cargo handling/Works, Evacuate to the Land or Stay Alongside	Evacuate to the Land	Use of Engine
		Yes	Suspend Cargo handling/Works, Emergency Departure	Suspend Cargo handling/Works, Evacuate to the Land or Stay Alongside	Tie the Lashing Tool, Evacuate to the Land, if necessary	Emergency/Departure
Tsunami Recommendation	Tsunami Advisory	Suspend Cargo handling/Works, Stay Alongside or Emergency Departure	Suspend Cargo handling/Works, Stay Alongside or Emergency Departure	Tie the Lashing Tool or Evacuate to the Land	Note: Use Engine in case of Emergency Departure if necessary	

※Quoted from the materials published by Yokohama Region Maritime Disaster Prevention Measures Council

Time series chart



※Quoted from the materials published by the Hydrographic and Oceanographic Department of the 3rd Regional Coast Guard Headquarters

Tsunami caused by earthquakes in the past

※Quoted from Yokohama regional meteorological observatory

Tsunami submergence assumption map

※Quoted from the materials published by the Coastal Erosion Control Division, River/Sewerage System Department, Land Development Bureau, Kanagawa

【Example of Yokosuka Port】

Fill in the blank table (decision guideline) based on the obtained information.

Response against Tsunami by Arrival Time (decision guideline)					
Warning Level	Tsunami Height	Berthing		Anchoring	
		Within 30 minutes	More than 30 minutes	Within 30 minutes	More than 30 minutes
Major Tsunami Warning	More than 3m	Evacuation to the Land	Emergency Departure	Emergency Departure	Emergency Departure
Minor Tsunami Warning	1 – 3 m	Staying Alongside	Emergency Departure	Emergency Departure	Emergency Departure
Low Tsunami Recommendations	Less than 1m	Staying Alongside	Emergency Departure	Emergency Departure	Emergency Departure

Example of Required Working Time

		Working Time (minutes)
Emergency Departure	Suspend the cargo handling works	5
	Call the crews	2
	Prepare for leaving pier/port (Start the engine and thruster)	17
	Release/cut the Mooring → Departure	5
	Notify the land and operation company after the departure	1
Staying Alongside	Call the crews	2
	Tight and add mooring lines and tighten the brake of mooring winch	3
	Prepare for anchoring	2
	Prepare the engine and thruster as a readiness for mooring the break and drifting	3
	Discuss and instruct to suspend cargo handling	3
	Check the waterproofing, and close the waterproof doors and sea water valves	1
Evacuation to the Land	Notify and confirm with the land and operation company	1
	Count the number of crews and check the tally	3
	Instruct to a complete evacuation to the land	3
	Ship inside works required until evacuation to the land is completed	4