

Considerations in Establishing a Decision-Making process for Korea's Places of Refuge

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Abstract : To minimize secondary damages from marine environment pollution resulting from marine accidents, International Maritime Organization(IMO) adopted "Guidelines on Places of Refuge(POR) for ships in need of assistance" as Resolution A.949(23) in its 23rd General Assembly in 2003 and recommends Parties to the Organization designate PoR. This resolution suggests that they establish a "Decision-Making process" so as to provide reasonable PoR when disabled ships request use of PoR. Korea has not been performed to introduce a PoR system in the country. Therefore, there is no decision-making process to deal with ships which need PoR. When Korea implements the PoR system in the future, the nation should establish a Decision-Making process to provide reasonable PoR in case ships in need of assistance request for PoR. In order to present what should be considered in the process of establishing a Decision-Making process for PoR in Korea in the future, in this study presents matters which should be considered in the process of founding PoR Decision-Making processes. When Korea tries to conduct POR system so that other countries' PoR Decision-Making process and the relating process of IMO and REMPEC (Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea) were investigated and analyzed. In addition, in times of marine accident in Korea's sea areas, Korea's action manuals for marine accident which regulates management for an accident is analyzed and articles will be presented to be taken into account during establishing final PoR Decision-Making process.

Key words : Places of Refuge(PoR), Decision-Making process, Ships in need for assistance, Marine accident, Marine pollution

1. Introduction

After the tanker catastrophes of Erika, Castro and Prestige, the IMO adopted "Guidelines on Places of Refuge for ships in need of assistance" as Resolution A.949(23) in its 23rd General Assembly in 2003 and recommends Parties to the Organization designated Places of Refuge(Hereafter"PoR")in order to prevent accidents which cause massive marine pollution resulting from failure to find places for repair of severely damaged ship hulls and freight transfer(IMO, 2003).

This resolution includes decision-making process for the use of a PoR and recommends member countries establish a "Decision-Making process" so that they can provide reasonable PoR when ships in need of assistance request for use of PoR.

In Korea, on December 29, 2013 a Gravity High that was test driving at Busan coast collided with a chemical carrier, Maritime Maisie and cause fire to the Maritime Maisie. Due to the effect of northwesterly wind and current Maritime Maisie was drifted to the sea of Japanese jurisdiction and the fire had been controlled 25 miles away from Tsushima

Island. After the control, Hong Kong government and ship owners requested POR and in 2 April 2014 Korea decided to provide one and in 11 April 2014 there was a case where ship in accident entered the port of Ulsan.

Korea is located at a major passage connecting Asian regions and North America with the North Pacific as the center and has a large number of sailing ships, and therefore there is high possibility of marine accidents to happen on foreign ships. Hence, the introduction of PoR, which may minimize secondary damages from marine environmental pollution resulting from marine accidents, is urgent. Nonetheless, Korea does not implement PoR yet because of the issues like protection of the nation's marine environment and collaboration with neighboring countries.

Moreover, Korea is geographically closed to Japan, China and Russia's sea areas, in case of marine pollution by international water marine accident, a lot of nations are contaminated naturally. Therefore, cooperation surrounding nations is essential to conduct PoR system in Korea.

At present, a lot of foreign nations including America and Canada are designating/operating PoR and doing researches.

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As foreign nations' precedent study, Aldo and Olof(2006) did research in details to be considered during assigning PoR and Eric(2010) presented relation between PoR assignment and international law. Anthony(2011) studied into problems while PoR is designated.

On the contrary, the research regarding marine traffic environment and marine accident has been carried out for ages in Korea. Based on this, very few of researches have been done to minimize marine pollution damage and second damage caused by marine accident.

There are Jung et al.(2012) research in international tendency on designating of PoR, Lee et al.(2012) research in the way to introduce domestic PoR by analysis of foreign cases and Lee and Park(2014) in suggestion of appointing domestic PoR. But, no precedent studies have been conducted to PoR policy.

This study presents matters which should be considered in the process of founding PoR decision-making processes. When Korea tries to conduct POR system so that other countries' PoR decision-making process and the relating process of IMO and REMPEC (Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea) were investigated and analyzed. In addition, in times of marine accident in Korea's sea areas, Korea's action manuals for marine accident which regulates management for an accident is analyzed and articles will be presented to be taken into account during establishing final PoR Decision-Making process.

2. Foreign countries' decision-making process on PoR

This chapter investigated and analyzed cases of the USA and Canada where decision making process on PoR has been established in order to reflect matters to be considered when setting up a decision-making process on PoR in Korea.

2.1 The State of Alaska in USA

On September 27 2004 based on IMO's guidelines under Res, A. 949 (23) and Pacific States/B.C. Oil Spill Task Force, USCG(Unite State Coast Guard) organized ARRT(Alaska Regional Response Team) and presented Guidelines for places of Refuge Decision - Making process(ARRT, 2007).

In Alaska, USCG's in charge of PoR related work. In addition, when ships request of PoR, in order to designate the best PoR, ARRT judges whether accidental ship is moved to PoR or not through the Incident-Specific PoR decision-making process.

Table 1 shows Incident - Specific PoR decision - making process consist of total 10 steps in Guidelines for PoR decision - making delivered by ARRT. Furthermore, Incident-Specific PoR decision-making process evaluates ship's condition which tries to use PoR by each stepped procedure and designates proper places.

Table 1 Incident-Specific PoR decision-making process in the state of Alaska, USA

Step	Decision-making process
1	PoR requested
2	Immediate action required by COTP
3	COTP/Unified Command evaluates vessel option
4	COTP/Unified Command selects vessel option
5	COTP/Unified Command evaluates potential PoR based on operational criteria
6	COTP/Unified Command selects potential PoR based on operational criteria
7	Stakeholders provided with PoR options
8	Stakeholders provide ranking of potential PoR options
9	PoR selected
10	The COTP/Unified Command prepares documentation of the decision

As displayed in Table 1 COTP(U.S. Coast Guard captain of the port) manages from accidental ship's initial countermeasure to the final step of prepared document decision procedure.

In step 2, when COTP regards incidental ship's situation as in emergency at the beginning of accident, it can solely order if the ship is moved to ship shelter or not. In the case of unnecessary instant management, COTP assesses incidental ship's condition with ARRT and Unified command comprised of local association.

Weather and sea condition in incidental ship's sea areas is regarded as significant information in order to appointing PoR. NOAA(National Oceanic and Atmospheric Administration) has been asked to provide this information in step 3 and 5. Moreover, media control relating to nationally public interest is considered in step 4.

2.2 Canada

In Canada, Transport Canada takes charge of tasks relates to PoR and prepared for it is guidelines for operating PoR based on Res.A.949(23) recommended by IMO's like other countries.

The purpose of establishing Canadian PoR is to minimize the risk causing from ships that is in canadian sea territory that requests for PoR and prepare international response. In 2003, Transport Canada has announced PORCP(National Places of Refuge Contingency Plan) and operating it. To allocate PoR from various marine accidents REET(Regional Environmental Emergencies Team) including regional maritime affairs and port office is established and based on PORCP regional Contingency Plan is made to allocate and operate PoR(TC, 2007).

Table 2 is PORCP(National Places of Refuge Contingency Plan)s PoR decision-making process.

Canada's PoR decision-making process consists of a total of 10 steps, as shown in Table 2. Marine Safety region of Transports Canada superintends PoR tasks and REET decides whether to move the ship to a PoR by evaluating diverse damages from it is accident.

Table 2 PoR decision-making process in Canada

Step	Decision-making process
1	Obtain the necessary ship information
2	Describe the problem and associated issues
3	Identify the risk assessment team and the stakeholders that may need to be
4	Consulted or kept informed Preliminary analysis of current situation
5	Identify the options
6	Estimate the risk for each option
7	Evaluate and compare options
8	Decide
9	Review and agree on the ship's proposed action plan and monitor the implementation until the situation has been resolved
10	Obtain feedback on the effectiveness of the process

What is noteworthy is that she purpose of Canada's PoR decision-making process is not confined to PoR but to modify and complement relevant procedures in preparation for future similar accidents. Therefore, at the last stage of PoR decision-making process, advice from those who engaged in accident handling is referred to and when revision to the guidelines is needed the relevant procedure is modified. However, content on the media is not included.

3. Korea's marine accident related procedure

Korea has not been performed designate and operate PoR. Therefore, there is no relevant law and regulation on PoR and no decision-making process regarding a ship's request for PoR.

In Korea, based on National Crisis Management Fundamental Guideline to prevent marine accidents such as, ship collision, sinking, explosion and freight spill each region's Maritime of Ocean and Fisheries administration has made An Action Manual for Crisis Management regarding Marine Accidents(ships) and operating it, and in action manual detail response procedures and correctible measures has been regulated.

On the other hand, regarding to marine environmental pollution accidents A Massive Action Manual for Crisis Management regarding Large scale Marine Pollution Accident is made and operated separately(MOF, 2013a)(MOF, 2013b).

Fig. 1 is diagram showing Korea's marine accidents action manual's organization's role and duty.

Looking at the two manuals, as shown in the system diagram of Fig. 1 the central departments have Central Accident Response Headquarters is based in the Ministry of Oceans and Fisheries. They are in charge of crisis management related tasks under the supervision of the Ministry of Oceans and Fisheries and, as an on-site system, local accident response headquarters have been installed in region's Maritime of Ocean and Fisheries administration. There responsibility is to respond to accidents occurring in the sea in collaboration with regional Coast Guards and local governments under the supervision of the head of region's Maritime of Ocean and Fisheries administration.

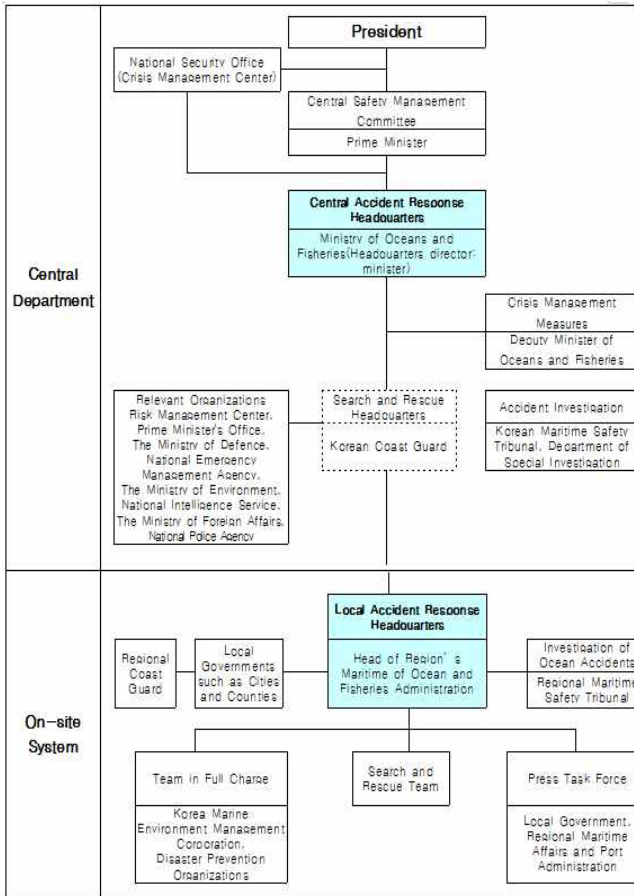


Fig. 1 System Diagram for Crisis Management in Korea

To examine foreign countries' PoR decision-making processes regarding PoR, practical local organizations which can make early response are not in charge but accident response headquarters are installed in each of central departments and accident spots.

Table 3 is the table which shows the roles and tasks on risk management organizations. When accidents occur, Korean Coast Guard only takes charge in examining initial conditions, searching, and life rescuing on the spot of accident, but the overall process of coping with an accident is supervised by region's Maritime of Ocean and Fisheries administration where the accident response headquarters are installed

This is different from a case of foreign countries where an organization which may make an early response in the PoR decision-making process superintends tasks related to accident response.

Table 3 Mission of Crisis Management Organization

Classification	Mission	
National Security Office (Crisis Management Center)	<ul style="list-style-type: none"> Comprehensive management and operation of crisis sign lists Integration and management of crisis information and situations Operation of national crisis evaluation meetings 	
Central Safety Management Committee	<ul style="list-style-type: none"> Deliberation and adjustment of major policies related to safety management Deliberation of basic plans for national safety management Discussion and coordination of disaster and safety management tasks 	
Central Accident Response Headquarters	<ul style="list-style-type: none"> Full charge and coordination of ship disaster response tasks Request for collaboration from central administrative organizations 	
Local Accident Response Headquarters	<ul style="list-style-type: none"> Full charge of disasters in relevant areas Full charge of regional emergency rescues Role division among emergency rescue organizations located in the relevant areas and command and control of disaster sites 	
Accident Response Headquarters by Each Department	Korea Coast Guard	<ul style="list-style-type: none"> Figuring out of initial conditions On-the-spot command of search and rescue tasks
	National Emergency Management Agency	<ul style="list-style-type: none"> Full charge of life rescue and on-the-spot response Support of disaster prevention resources
	The Ministry of Health and Welfare	<ul style="list-style-type: none"> Support such as life rescue and response
Korean Maritime Safety Tribunal	<ul style="list-style-type: none"> Operation of a special investigation team to clarify the cause of a ship accident 	
City and Provincial Disaster and Safety Countermeasures headquarters	<ul style="list-style-type: none"> Support such as life rescue and accident response 	

4. Proposed Korean PoR decision-making process

Based on the foreign precedents and related Korea's marine accident procedure suggested as Table 4 Korean PoR Decision-Making process.

Table 4 Korean PoR decision-making process

Step	Decision-making process
1	Obtain the vessel information
2	Immediate action required by Coast Guard
3	Condition Evaluation Team evaluates vessel option
4	Condition Evaluation Team selects vessel option
5	Estimate the risk for each option
6	Decide
7	Monitor the implementation until the situation has been resolved
8	Obtain feedback on the effectiveness of the process

1) Step 1. Obtain the vessel information

REMPEC Annex V, Canada's PORCP Annex 1 Part 1, and Alaska's Guidelines for Places of Refuge Decision-Making Appendix 1 contain information on disabled ships at an initial stage which is requested from the captain/ship owner and agent when they ask for use of PoR.

Table 5 is basic informations that are requested from a captain/owner or a representative of a ship that is requesting for PoR from USA's Guidelines for Places of Refuge Decision-Making, Appendix 1, Part1.

Table 6 is basic information that are requested from a captain/owner or representation of a ship that is requesting PoR from Canadian PORCP annex1.

The most important information when there is a ship accident is the initial information provided by the disabled ship. However, under the crisis response action manual in Korea, when a ship accident occurs at sea, relevant information and data are not demanded at an initial stage and only initial information on the condition of the disabled

ship was obtained. Ships which use PoR are those with total loss or those that would trigger environmental or sailing risks, except that of lifesaving, and therefore there is enough time to obtain initial information by requesting such information of the disabled ship from the ship's captain/owner and agent.

Table 5 Information on the ship request of Guidelines for PoR decision-making in USA

Information on the ship request	
Information provided by the ship	The location of the place(s) of refuge. (if a specific location is requested)
	The reasons the vessel needs assistance and the specific assistance required.
	A summary of medical and/or life safety issues associated with the incident, including the need to evacuate individuals from the vessel.
	The status of the vessel. (e.g., steering, propulsion, firefighting, capability)
	If the vessel is flooding, status of the vessel's pumping system.
	Types, quantities, hazards, and condition of petroleum products, hazardous substances, and/or other cargo onboard.
	The presence (or suspected presence) of rats or other invasive species onboard the vessel.
	On-scene weather and water conditions and marine forecast.
	Status of notifications completed by master. (e.g., owners, operators, agents, Qualified Individual, class society)

In the case of foreign countries' ship PoR decision-making process, the first step is to write and submit accident related matters to the captain or owner of the disabled ship.

Therefore, Korea Coast Guard, region's Maritime of Ocean and Fisheries administration, and Vessel Traffic Service which will receive information of an accident that needs PoR should be obtain detailed information about the accident from the disabled ship at an initial stage.

As well as in Korea when a ship request for PoR, manual for collecting information to be aware of the situation must be established and be requested from a ship that is in risk.

Table 6 Information on the ship request of PORCP in Canada

Information on the ship request	
Information provided by the ship	<p>What assistance is required from Canada? (for example; lighting, pollution combating, towage, stowage, salvage, storage, repairs...)</p> <p>State the reasons for the ship's need for assistance.</p> <p>Cause and extent of damage or problem(for example; fire ,explosion, damage to ship, including mechanical or structural failure, collision, pollution, impaired stability, grounding...)</p>
	<p>What are the hazards and associated risk and estimated consequences of potential casualty if the ship:</p> <ul style="list-style-type: none"> . remains in the same position, . continues on its voyage, . reaches a place of refuge, . is taken out to sea.
	<p>Ship contact information</p> <ul style="list-style-type: none"> . Ship Identity(name, flag, IMO number) . Master's name and nationality(Still on board?) . Name of person on the ship making the request, date and time . Last port of call . Working language on board . Security(certificate, level) . Local representative of the company . Registered owner . Registered company . If bare-boat charterer . Classification society local representative . Is the ship insured? (Ship's insurers and limits of liability available) . Local P&I Club representative
	<p>Ship particulars</p> <ul style="list-style-type: none"> . Type of ship . Size(tonnage), length, beam and draft of ship, air draft . Year constructed . Propulsion, thrusters . Anchoring gear . Towing Gear . Fuel(type, quantity) . Nature and condition of cargo, stores, bunkers, in particular hazardous goods,(type, quantity, condition) . Ballast

2) Step 2. Immediate action required by Coast Guard

In the Malta General Assembly in 2007, the REMPEC brought into force "Guidelines on the Decision-Making Process for Granting Access to Places of Refuge for Ships in Need of Assistance". The Annex "Who has the authority

to grant access to a PoR?" specifies that the "competent authority" should be a Coast Guard or other national organization with the authority to make access and determination regarding PoR(REMPEC, 2007).

To look at the PoR decision-making process of foreign countries with regard to PoR, a Coast Guard or a local relevant organization which may swiftly access the site of an accident superintends PoR related tasks.

On the contrary, Korea has Accident Response Headquarters in central departments and actual accident sites. In the case of Korean Coast Guard, which immediately access the accident site, makes initial assessment of and response to the situation, takes charge of on-site command for search and salvage. The overall tasks to deal with disabled ships are performed by a local accident response headquarters installed in a region's Maritime of Ocean and Fisheries administration which has control over the accident site.

The response quarters are dualized, that is, the organization for early response and the institution in charge of accident handling are different. Therefore, swift accident handling is difficult.

In in order to prevent further damages from disabled ships and make fast handling of the accident, early access to the ship should be made to provide practical assistance, and an organization which can make early response should supervise PoR tasks.

Therefore, like foreign countries' previous cases and REMPEC's considering facts, Coast Guard should supervise in Korea.

3) Step 3. Condition Evaluation Team evaluates vessel option

A Condition Evaluation Team, which will determine whether to provide PoR and response measures to an accident, shall consist of civilian-government military organizations which may provide assistance for ship handling and other sectors that give influence in relation to the disabled ship, such as, the Meteorological Administration, salvage organizations, and environmental groups. This set-up of Condition Evaluation Team is patterned after examination of other countries' cases.

On the other hand, in the Korea's System Diagram for Crisis Management shown in Fig. 1, the relevant organizations for accident handling are comprised only of national agencies, such as, the Prime Minister's office, the Ministry of Defence, and National Emergency Management

Agency. It does not include organizations like the Korea Meteorological Administration and Korea Hydrographic and Oceanographic Administration which may assess the effects on natural environment, environmental groups, and academic experts.

Each organization and group make different evaluation of the situation in dealing with an accident which occurred at sea and presents varying measures to respond to the accident. Therefore, in forming a team to evaluate the situation, human resources equipped with divers and professional knowledge should be secured from the Meteorological Administration, environmental groups, and the academic world. Such teams will be able to derive efficient and fast measures to cope with the accident by assessing the accident situation from different perspectives.

4) Step 4. Condition Evaluation Team selects vessel option

When a ship in a risky situation requests for utilization of PoR, the procedure for accident response should be established so that PoR may be provided anytime in a reasonable manner according to the response procedure of a scenario related to a risk factor.

However, Korea's action manual for risk management specifies the same measure for fire/explosion/stranding/sinking and only has different measures for leakage of cargo and massive marine pollution.

Major conditions determined by the situation assessment team are;

- . When a ship is moved to a PoR
- . When a ship stays at the current location
- . When a ship continues to sail
- . When a ship is moved to the sea

Therefore, Korean Condition Evaluation Team should consider 4 facts of above and decide appropriate situation for ship in accident.

5) Step 5. Estimate the risk for each option

During this step risk of situation that decided by Condition Evaluation Team should be predicted and apprehend the safest measures to be taken.

6) Step 6. Decide

Once a measure for a ship in accident is decided Condition Evaluation Team should provide every necessary aid to minimize environmental loss.

7) Step 7. Monitor the implementation until the situation has been resolved

If entering to PoR is decided than related organizations and associations should be announced previously to provide necessary measures quickly.

8) Step 8. Obtain feedback on the effectiveness of the process

Ship in accident should follow the decided controls and measures and Condition Evaluation Team should supervise with caution for additional measures after the accident.

Once the accident is over, based on the advice of person who were involved in the case, the adequacy of the related regulations should be judged and edit/correct the flaw if necessary.

5. Conclusion

PoR is necessary to minimize spreading of secondary damage from marine accidents and protect marine environment. And also, by adopting PoR system secures human and material resources, hence quick process of dealing with accidents is possible. Korea has not performed POR system.

Therefore, in this study factors to consider when operating PoR in the future, and factors to consider providing rational PoR when ships in risk request for it has been suggested.

Based on foreign countries PoR decision-making process and REMPEC's PoR decision-making process to suggest factors to consider when establishing decision making process of Korean PoR, following factors are suggested after comparing and analyzing Korean marine accidents action manual.

The followings has been considered from the suggested decision making process.

First, Coast Guard which is in charge of early response tasks from domestic marine accidents action manual should supervise PoR organization.

Second, early information of ships in risk should be requested from the ship's captain or the owner of the ship.

Third, situation assessment team that provides PoR should be consisted of government organization, national weather center, environment group, and academia.

Last, when ships in risk request for PoR, various

response procedures against different elements of risk of requesting for PoR should be established.

Adopting PoR is not some thing that should be done privately, and has to be done by a nation and its government. Therefore, to establish PoR Decision-Making process relationship with an international convention and related domestic laws when PoR has been adopted should be considered additionally.

Also, realistic and efficient response manual is necessary to deal with real life accidents. To establish such manual is to try numerous times of practices following established processes. These practices would allow to discover procedure's problems that occur while handling the accidents. Such problems can be supplemented and quick response against accidents will be possible.

Even though the Coast Guard was reorganized under the Ministry of Public Safety and Security in 28 November 2014, the Ministry of Maritime Affairs and Fisheries have not amended marine accidents action manual yet. In future, based on the amended manual additional study would be necessary for Korean PoR's Decision-making process.

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