



SPECIAL CIRCULAR

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To the Members

P&I Condition Surveys for Loss Prevention

This is a report on condition surveys carried out in the 2017 policy year (from 20 February 2017 to 20 February 2018). The three areas where defects were found most frequently during the surveys stayed the same over the last few years. The problems will continue to occur unless their causes are eliminated. We would like to inform you of the conditional survey implementation report and details as follows.

1. Objective : Preventing and mitigating accidents

Our condition surveys are conducted by independent surveyors for both vessels presented for entry and already-entered vessels that have reached a certain age.

The objective is to detect at an early stage risk factors that could cause accidents and expose the Members and the Club to P&I claims. Eliminating risk factors prevents or mitigates accidents and maintains the seaworthiness and cargo-worthiness of the vessel above a certain level.

2. 128 vessels surveyed in 2017

In the 2017 policy year, we carried out condition surveys for a total of 128 vessels. This included 55 entered vessels and 73 vessels presented for entry.

We aimed to survey 81 vessels. However, 67.9% of them were actually surveyed. The reason why 26 vessels were not surveyed was the vessels' schedules and the convenience of the ports of call. The surveys for these vessels are planned for the 2018 policy year.

Over 90% of the surveys were conducted in Asia, mainly in Japan, Korea and China, and mainly during docking and anchoring.

3. Defects found on over 80% of the vessels surveyed

Defects or recommendations which required rectification were addressed on more than 80% vessels surveyed, which was 107 vessels out of 128. The number of defects was 308. This means many vessels were likely to have multiple defects.

Many of the defects are highly likely to be pointed out also by Port State Control (PSC), so early rectifications were requested.

The defects of (i) hatch covers (ii) engine room machinery, main/auxiliary engines etc. (iii) oil leakage prevention measures on deck were the most common defects found over recent years, while mooring gears were ranked the 3rd most common in 2017. It is indispensable to establish how to rectify the three most common defects. Defects Warranties were issued to 7 vessels because there was a serious risk of accident and we have warned the owners of a possible restriction in coverage.

4. 163 vessels aimed to be surveyed for 2018

For the 2018 policy year, we are aiming to survey 163 vessels (the number is as of 20th April 2018) including all 26 vessels which were not surveyed in 2017. The survey can not only be used for accident prevention but also for an objective assessment of the vessel's condition. Although our surveys have

been carried out mainly in Asia, it is possible to have them done elsewhere too. Please consult us regarding locations for surveys. We always appreciate our Members' cooperation for successful condition surveys.

5. Special Notes

The details of analysis of condition survey results are as follows:

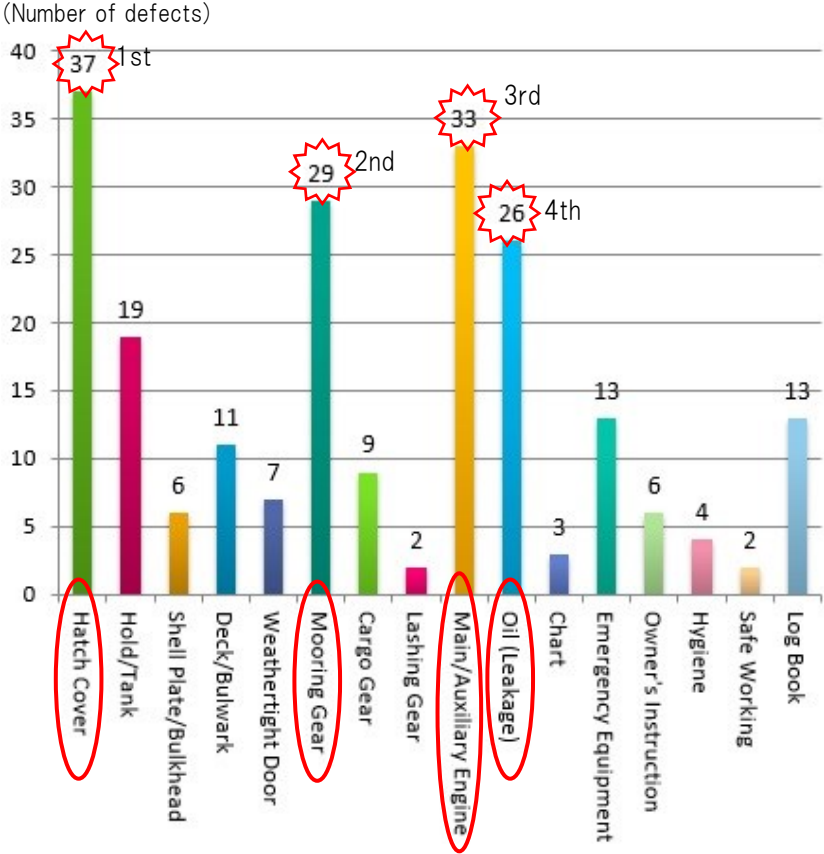
(1) The number of vessels with defects has been increasing every year.

As shown in Table 1, the number of major defects and recommendations addressed was 220. This is in addition to 88 cases of other defects in facilities, hull and documents. There were 308 cases in total. We are concerned that the ship quality has been decreasing every year as shown in Defect Rate (the number of vessels with defects against the vessels surveyed).

Policy Year	Major defects	Other defects regarding facilities, hull, and documents	Total	Vessels with Defects A	Surveyed Vessels B	Defect Rate C=A/B
2015	174	72	246	80	116	69%
2016	250	72	322	98	122	80%
2017	220	88	308	107	128	84%

Table 1: The numbers of defects found

As shown in Graph 1 of the number of defects found in 2017, the most common defect is related to hatch cover coamings (37 cases, 12%). The next most common is the engine room machinery, main/auxiliary engines etc. (33 cases, 11%), followed by mooring gear & devices (29 cases, 9%) and then oil leakage prevention measures on deck (26 cases, 8%). These four defects account for more than 40% of all the defects found.



Graph 1: The numbers of defects under each category

(i) Hatch covers, (ii) engine room machinery including main/auxiliary engines, and (iii) oil leakage prevention measures on deck have remained as the three most common defects over the last few years. We look at these defects in more detail below.

(i) Hatch covers and coamings

(*P12~P15 in our Loss Prevention Bulletin Vol.23)

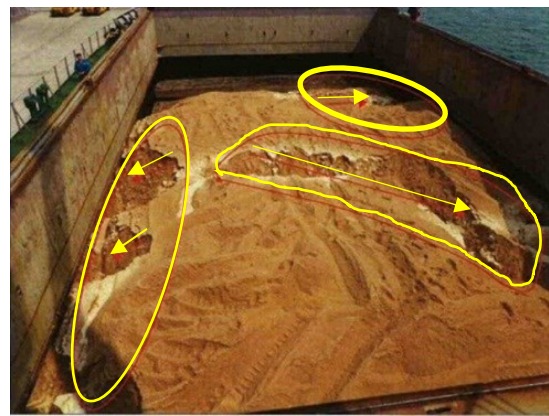
Defects in hatch covers and coamings have been ranked as the most common in recent years. Most of these defects fall into two categories:

- (a) The rubber gaskets on hatch covers are worn, broken or deformed due to deep compression, and hardening or deterioration with ageing.
- (b) The steel structures of hatch cover panels and hatch coamings are partially corroded, worn, damaged, deformed or broken due to deterioration with age and torsion of hull.

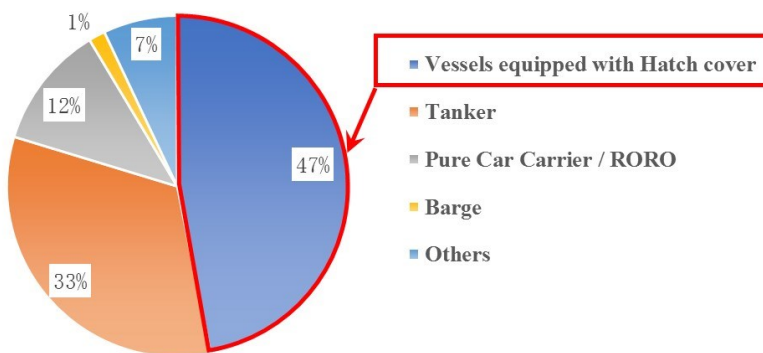
As shown in Graph 2, nearly half the vessels surveyed are equipped with hatch covers. This is one of the reasons why the defects to hatch covers and coamings are ranked first.



Rubber gasket on hatch cover, broken and deformed due to compression and hardening.



Wet damage to cargo caused by lack of weathertightness of hatch covers



Graph 2 Types of vessels surveyed



Poor insulation of electric circuit

(ii) Engine room machinery including main/auxiliary engines

(*P9~P11 in our Loss Prevention Bulletin Vol.23)

The second most common defect is related to the engine room machinery. This includes main/auxiliary engines and examples of defects are; (a) oil and seawater leakage due to deterioration of gland-packing for shaft seals (b) thermal insulation materials coming off pipes (c) poor insulation for electric circuits. The causes of these defects are unclean machinery and poor maintenance.

(iii) Oil leakage prevention on deck

(*P4~P5 in our Loss Prevention Bulletin Vol.23)

The next most common defects are those related to oil leakage prevention on deck. The defects include: (a) mechanical coaming plugs or holding & fixing chains coming off or packings being lost (b) wooden plugs coaming plugs being used instead of metal mechanical plugs (c) mechanical coaming plugs not being tightened.

Defects were caused by lack of inspection and poor maintenance. This is similar to the situation with defects in engine room machinery.



Oil leakage due to deterioration of gland-packing



Mechanical coaming plugs, its holding or fixing chain missing



(2) Understand the risks and take countermeasures.

It was shown that vessels were exposed to the risk of accident as a result of a series of careless mistakes made by ship-managers and crew. The implementation of proper maintenance, ship maneuvering and engine operation based on risk management plays a crucial role in maintaining a high quality of ship operation and management. If we do not recognise the risks for the ship operation, and take proactive countermeasures, we will keep having deficiencies. Even though the risks caused by each defect above mentioned are different, it is worth noting that the causes are common and so are the countermeasures.

We shall now identify links between the defects and risks below and then set out the loss prevention measures, based on an analysis of the causes as discussed in Loss Prevention Bulletin No. 40.

Links between defects and risks

The physical defects caused by (a) malfunction and deterioration of machinery (b) missing, deformed, worn and broken structure parts could be the direct cause of accidents as follows,

- Leakage from hatch cover gasket & coaming:
Wet damaged cargo caused by water ingress whilst sailing in bad weather.
- Oil leakage from Engine room machinery:
 - (a) Delayed discovery and response if the leakage is left and it blends into the background.
 - (b) Falls and injuries of crew. Increase of oily bilge. Fire.
 - (c) Flooding and water ingress if there is a defect of the stern tube sealing device or rupture of piping or frame on the sea water system.
- Defects of coaming plugs and scupper plugs:
Marine pollution caused by spillage of cargo or deck machinery lubricant oil

Causes

[Indirect causes triggered by the crew's or the ship management company's failure of "Do" in PDCA (Plan-DO-Check-Act) cycle of business management.]

Human behavioral characteristics decrease the awareness of safety and cause errors.

- Inadequate instruction and education provided by the ship management company,
- Miscommunication between the ship management company and the ship. Inconsistency in instructions from the supervisor and the ship operation manual.
- Crew's lack of awareness of the importance of maintenance including;
 - lack of information shared during crew handover about the characteristics of the particular ship
 - Insufficient education and training for the crew on board
 - Inadequate work instructions
 - Non-compliance with procedure. Negligence. Inadequate work
 - Use of low quality materials (steel, sealing, parts etc.)
 - Prioritisation errors (insufficient time, overwork, fatigue etc.)
 - Inefficient rounds on the ship [incompetence in using "5 human senses (sight, hearing, taste, smell, and touch)"]

Root causes

(Root causes of errors triggered by the company's failure of "Plan" of PDCA cycle for business management.)

Measures to be taken in order to avoid risks **include minimizing the influence of human behavioral characteristics. Also:**

- Minimise the discrepancy between the business management plan and the safety promotion plan.
The risk, importance, purpose and principle of goals which under a unified policy must be managed by the business administration company, the ship management company and the ship, should be made clear.

- Inadequate recruitment of crew with appropriate qualities and skills.
- Insufficient budget.
- Sufficient time for maintenance work and rest not being incorporated into the navigation plan.
- Inappropriate deployment of personnel.
- Proper educational system consistent with safety promotion plan is not established or implemented.
- Problem solving procedures for accidents and failure are not established.
- Safety Management Systems (SMS) and procedure manuals are not practical or too complicated.
- Planned and regular inspections and maintenance based on the manufacturer's instruction manual are not established.

Prevention measures

In order to **minimize the influence of human behavioral characteristics** and prevent recurrence of accidents and errors, it is necessary to identify the risk, importance, purpose and target to be managed, and promote the safety awareness of the crew by regular training.

Implement the PDCA cycle efficiently for inspection and maintenance as below.

- Firstly, it is necessary to understand the purpose and function of the defective parts or machinery.
- Secondly, establish a plan for regular inspection, repair and maintenance in accordance with the manufacturer's instruction manual and your own management criteria, and
- Lastly, ensure implementation.

In the engine room, always keep 3S; Sort (*Seiri*), Set in order (*Seiton*) and Shine (*Seiso* meaning cleaning). If leakage is found in the engine room clean it urgently and also rectify and eliminate the abnormality immediately.

In March 2012, we issued Loss Prevention Bulletin No. 23 which highlighted the defects frequently found during vessel condition surveys. In the bulletin, we discussed various categories of defects. We also published photos of good and bad practice so that busy officers/crewmembers could see what the problem is and how things should be done instead. We hope this would help members' daily maintenance and safe voyaging generally.

[Relating to Condition Survey]

During the survey, surveyors check items listed in the Condition Survey Report Forms (*), which have been developed jointly with the International Group of P&I Clubs.

(*) the Updated Condition Survey Report Form is available for download on our website below:

<https://www.piclub.or.jp/en/lossprevention/conditionsurvey>

- Survey Criteria

1. Pre-entry surveys: All vessels – 10 years old and over, however also; Any chemical tankers etc. ^[1] – 5 years old and over
2. Entered vessels: All vessels – at 15 years old, however also;
 - (1) Any vessels suffering two or more similar accidents due to un-seaworthiness
 - (2) Any chemical tankers etc. ^[1] - at 5 years old
 - (3) Any reefer vessels^[2] - at 10 years old
 - (4) Any tankers which have carried Heavy Fuel Oil (HFO) as cargo within the last 12 months
 - 10 years old and over; unless;
 - the vessel has undergone our Condition Survey within the last 12 months; or
 - the vessel has undergone a special survey by a Classification Society within the last 6 months; or
 - the vessel has a current CAP 1 or CAP 2 rating issued by an IACS classification society.
3. Re-inspection
 - (1) All vessels surveyed under (1) and (2): Every 5 years
 - (2) Vessels entered at 20 years old and over: Every 2 years
 - (3) In case of the Fleet or Ship Management Company changed

[1] chemical tanker with coated tanks, methanol tanker, product tanker, sulphuric acid tanker, molasses tanker, clean tanker, ore/chemical carrier

[2] reefer, cold-storage/oil carrier

- Note

1. One or two surveyors of the Association's designated organisation will conduct a Condition Survey in accordance with the Association's requirements, focusing on: certificates/ documentation; maintenance; navigation plans; lifesaving appliances; fire control plans; seaworthiness; cargo-worthiness and; other aspects depending on the vessels' types and their special characteristics. A Condition Survey takes between half a day and 2 days at most without causing any delays to the vessel. Our requirements include a weather-tightness test for hatch covers, and the internal inspection of cargo holds/tanks; therefore, it is impossible to accomplish them all without the presence of crew. Upon completion of the survey, the surveyor will brief the Master on recommendations, if necessary.
2. In addition to our criteria stated above, we carry out surveys on vessels suffering claims which may have been caused by a lack of seaworthiness, in order to seek the causes of the claims.
3. It is our intention to carry out the Condition Survey prior to entry with the Association. If this cannot be achieved, we shall carry out the Condition Survey within 30 days of the date of the entry.

Yours faithfully,

**The Condition Survey Committee of
The Japan Ship Owners' Mutual Protection & Indemnity Association**