ISO 9001	ISO 14001	ISM Code	TMSA 3 Elements	OCIMF VIQ
(8.7 – 10.2)	8.2	8	11	2.2 - 4.1 - 5 - 6.6 - 8.19 - 11

RACI MATRIX	Responsibility	Accountability	Consulted	Informed
Office	Initial Incident Coord.	DPA / CSO	Crisis Management Team	FM/ MD
Ship	Ch. Eng. / Ch. Off.	Master	DPA / Crisis Management Team	FM / MD

44.1 Purpose and Scope

This section is a comprehensive document to respond to any emergency that may involve vessels operated by PB Tankers. It is designated to ensure that both shore and shipboard contingency planning are well integrated and proper and consistent actions are taken during an emergency, regardless of its nature and scope coordinate with but not replace:

- Vessel's OPA 90 VRP (when applicable);
- Vessel's Emergency plans as required by local States (as applicable);
- Ship's SMPEP including Emergency Response Service;
- Ship Security Plan.

This section gives emergency in order to:

- set personnel's responsibility /authority in emergency situations;
- Establish efficient flow of emergency communication between all involved parties;
- inform involved communities, charterers, media; port authorities; coast guard; etc;
- train the personnel in order to timely respond to an emergency.

In the aim of:

- Preserving life of the crew;
- Avoid or minimize any possible damage to the environment; and
- Protecting the ship, her cargo and other related property.

The Master has the overriding authority and responsibility to take decisions in this same aim. Economic and other pressure on him should not interfere with his decisions in this respect. Emergency Plans, Contingency Procedures and Instructions given by Company don't relieve the Master and the ship's commanding officers of carefully evaluating the situations and undertaking those actions in line or not with the instructions provided by the Company, but considered necessary for the safety of human life, for environmental protection and the ship as well.

44.2 General

Once the Company has been notified of a vessel crisis scenario and/or emergency, the Incident Coordinator, after assessing the emergency, and or seeking for advice by contacting any other proficient member of the organization, notify additional individuals and/or departments in view towards constituting a Crisis Management Team to meet in the Company's Office Emergency Room. Should an emergency proceed for a long period of time, proper procedures should be implemented to ensure

a rotation of personnel to fill the necessary roles and objectives. Back up human resources should be set up along with the situation development. The Crisis Management structure may be expanded or contracted based on the size and complexity of the emergency and also the quality of attendees. Only positions that are required for an adequate response need to be filled. The team should be kept as small as possible to accomplish the incident objectives and monitor progress. Different positions may be undertaken by a single person.

44.3 Crisis Management Team (CMT)

The crisis management team may be constituted by various members (at least three of them) of Company's office staff and is led by the Incident Coordinator. It will respond to contingencies by giving all necessary assistance and support. It is called by Initial Incident Coordinator and it will meet together as soon as possible in the Company's Office Emergency Room.

The CMT normally includes the DPA/CSO, the Fleet Manager, the Technical Coordinator, the Crew Coordinator, Superintendents (Marine and Technical) and the QE Manager. Other Internal/External members can be appointed as needed (Consultant, Media Coordinator, Lawyers, Advisors, etc.). In case of security-related incident, the Company Security Officer (CSO) will be in charge as Incident Coordinator (usually the DPA is also appointed CSO). When not personally holds the charge, the Media Coordinator shall be appointed directly by MD and notified to the Incident Coordinator.

When in session, the CMT will be in charge for all duties previously covered by the initial Incident Coordinator.

The first act of CMT is to confirm the first person contacted as Incident Coordinator or appoint a new Incident Coordinator on basis of his experience or competences. Also, the CMT will confirm or will re-assign all duties/tasks previously delegated by the initial Incident Coordinator (see following paragraphs). Then, it coordinates any necessary meeting for updates the event status and defines strategies. Verifies the possibility to send a Company Representative "on scene" (usually an experienced Marine and/or Technical Superintendent) to better coordinate the emergency on place between the Company and all concerned parties and to support Master in any decision or action who he will take. Gathers and spreads any useful information to the SAR coordinator, to the Antipollution team, to the Salvage team and any other parties involved in the emergency. Also, it will try to imagine the possible evolution of the emergency, in order to maximize any efforts to preserve the life of involved people, the protection of the environment and the care of properties. The Crewing Coordinator will collect any information regarding the crew's status (injures, missed or death) in order to advise their family and/or Manning Agent(s) and assist them for any eventuality. The main task given to the Superintendents are aimed to ascertain the condition of ship by a visual checking of ship's staff. Moreover, they keep available:

- all the vessel trading certificates;
- as far as possible the available ullage of ballast, cargo or other tanks in order to ascertain any breach in the hull;
- condition of void spaces, deck and engine spaces, accommodation spaces;
- condition of main engine, steering gear and any other vital equipment, especially of all regarding cargo/fuel/ballast transferring and ship's handling.

44.4 Incident Coordinator

In case of any Accident, Incident or hazardous situation, the Designated Person Ashore (DPA/CSO) is to be contacted first and he/she acts as Incident Coordinator. However, all Office's Key

Personnel (at least DPA, CSO, Fleet Manager, Technical Coordinator, Technical Superintendents, Marine Superintendents, Q&E Manager, and Crew Coordinator) are members of **Crisis Management Team** and they could be subject to a initial call in case of shipboard Emergency situation.

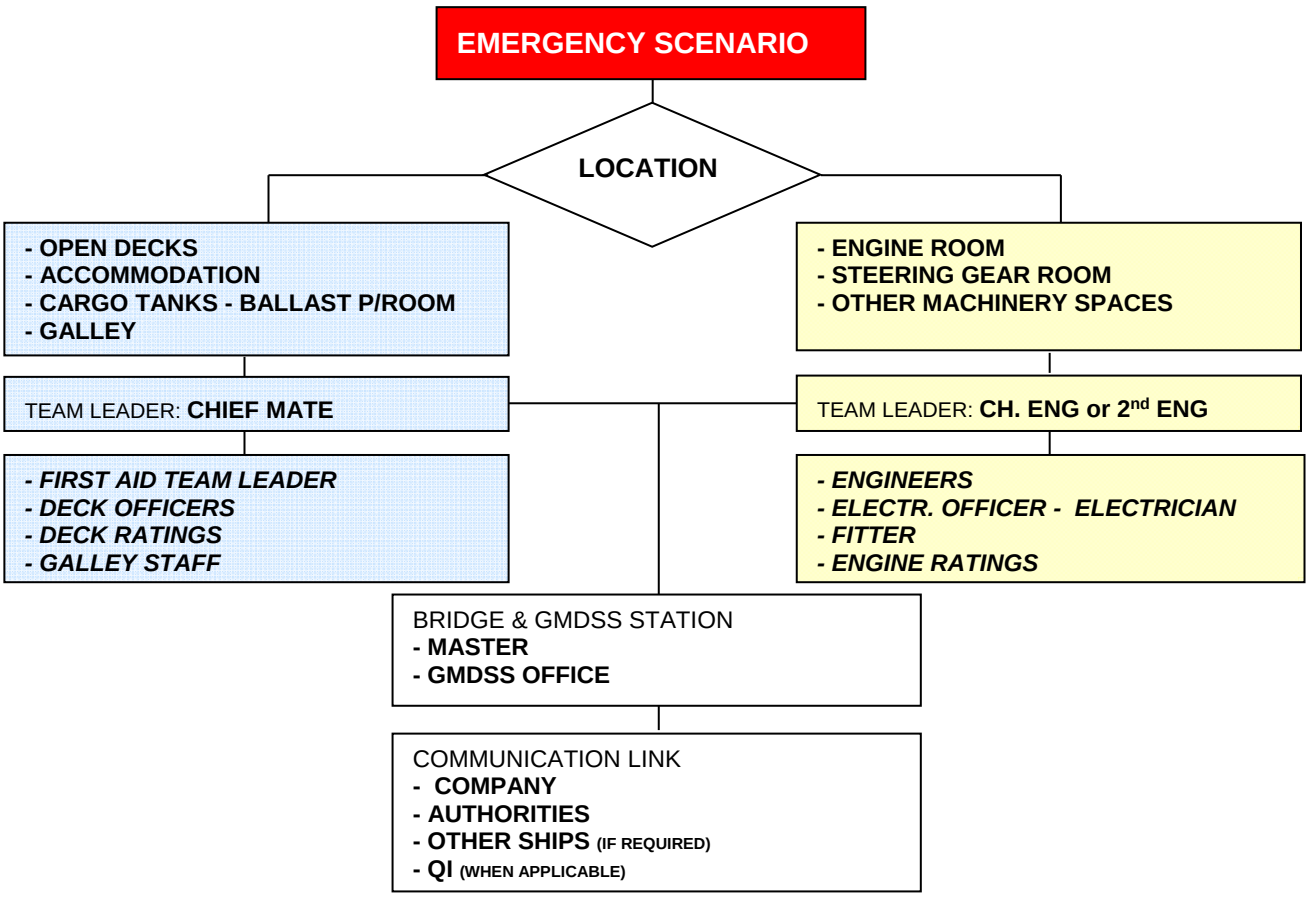
In fact, if DPA/CSO is not reachable, Master shall call the appointed Deputy personnel or the other mobile numbers stated in the MSEQ Manual "Annex 6 - Company Contact Numbers". The first person who answer to the call will act as "**Initial Incident Coordinator**" until DPA/CSO is available again or until Crisis Management Team will be in session. The responsibility of Incident Coordinator are defined in the following paragraphs. If for better manage the Emergency situation a Deputy IC is appointed, his/her specific tasks are to be notified to Master as soon as possible. When the Crisis Management Team will be summoned in the Emergency Room, to avoid confusion in ship/shore communications, all phone calls and emails are to be direct to the following emergency contacts:

Phone: **+39 06 8424 2936**.

Email: **contingencypbtankers@gmail.com**.

The Company Contact Numbers list (Annex 6 to the MSEQ Manual) shall be kept readily available on board in GMDSS room and in Master's Office. Ashore, each Key Person shall have an updated copy of "EMCY 00 - Emergency response booklet" with him/her.

44.5 Vessel Emergency Response Team



The Vessel's Emergency organization comprises all members of the ship's complement who will be directly involved in responding to a general emergency. It includes personnel under training who are additional to normal ship's complement, but does not include supernumeraries.

The Master is in charge of the Vessel Emergency Response Team (VERT). He works with an Emergency Squad that is composed of a number of selected officers and ratings that will take whatever action is necessary and possible to deal with an emergency. On the sounding of the emergency signal or fire alarms, the squad will muster at the designated emergency station from which position they will collect their equipment. Visitors and supernumeraries will muster as instructed by Master.

44.6 Shipboard and Shore Emergency Drills

Emergency drills have the objective of preparing a trained and organized response to situations of great difficulty which may unexpectedly threaten loss of life at sea. It is important that they should be carried out realistically, approaching as closely as possible to emergency conditions. Drills shall stress emergency procedure and equipment, emergency personnel duties, safety equipment tests, and any emergency related practice or regulation.

The frequency and scope of such drills are subject to standards laid down by international convention, applicable national and international merchant shipping laws, Marine industry standards or best practices. The date and the details of shipboard drills and exercises held should be recorded on the form "MSEQ 10 - Emergency Drill Planning" issued every year by Company.

The scope and objectives of drills are discussed time by time directly with the involved Master and included in a pre-briefing 'Drill Scenario' report. In case of complex scenario that actively involve also external parties, a de-briefing report can be prepared.

The result of drills is to be stated each time on form "MSEQ 28 - Drill Report" and kept on board for any auditing / inspection purpose. In case that deficiencies, best practices, training needs and/or suggestions are observed during drills, the form MSEQ 28 is to be sent to the Company for the appropriate considerations. When a SMPEP/VRP drill is carried out, in addition to form MSEQ 28 and the specific scenario Checklist (for instance, checklist n° 6 for fire/explosion), also 'Initial notification' form, 'Follow-up Form and 'Stability and Strength Assessment Notification' form (when applicable) must be filled and collected all together. In addition, a printout of resulting of damage stability calculation by LoadCom can be carried out and send to all concerned parties. Therefore, during all SMPEP/VRP drills the relevant notification forms are to be prepared, although no true communication to third parties (such as Technical Advisor, QI, etc.) will be carried out.

All personnel have to familiarize with their personal life-saving equipment, duties listed on the station bill and the emergency instructions posted in their cabins and on the station bill as soon as possible after joining the ship. This familiarization is to be stated on form "MSEQ 09 - Shipboard Familiarization Checklist". In addition to above shipboard drills, a Ship/Shore Drill (or Table Top Exercise) will be organised by shore Departments at least on six-monthly basis (+/- 2 months) as planned on form MSEQ 10 for each selected ship. The timeframe period depends from the availability of ships and shore Key Personnel. In case of change of a shore key person, a new drill is to be carried out within 4 months after completion of his/her familiarisation/probationary period.

When possible, the Ship/Shore drills are arranged for each flag of managed ships. To stress and verify the response preparedness of involved personnel, both on board and ashore, Ship/Shore drills can be carried out jointly on a previously agreed scenario and/or without any notice. Also, to simulate a realistic event, when is practicable, such drills may be performed out of routinely work time. All communication between Ship, Company and involved third parties must be carried out in order to simulate a real event.

Depending on circumstances, the participation of the appointed Technical Advisor and Qualified Individual are usually required. Also, during major Table Top Exercises the participation of an external Consultant(s)/Supervisor(s), lawyer(s), Media Advisor(s) can be arranged as practicable. In this case, to avoid confusion, the words 'THIS IS A DRILL - THIS IS A DRILL - THIS IS A DRILL' are to be clearly included at header and footer of each transmitted message and form.

The outcome of drills (training needs, corrective/preventive actions, best practices, lessons learnt, improvement areas, etc.) will be discussed at least during Management Review and used to review, procedures, contingency plans, safety/environmental objectives, training programs and/or initial risk assessment library and shared in whole fleet by Circular Letters or Bulletins as applicable.

44.7 Crew and external personnel training on Emergency

Due to the limited number of crew on board, the whole ship's staff is to be involved in the contingency operations at different levels. Therefore, they are continuously trained to respond to various situations in the most professional way. Details of their training are given in Chapter 10 of this manual. Eventual technicians, surveyors, visitors or passengers shall not take any participation in crisis / emergency operations. They will muster as instructed and familiarized on emergency at time of boarding using form " MSEQ 09 - Shipboard Familiarization Checklist".

44.8 Company's Emergency Room

To ensure an optimal response to emergencies, the emergency room is provided with:

- PC, TV, webcam and projector;
- Communication means (telephones, fax, e-mail and Internet terminals);
- Digital Nautical Charts;
- Office equipment (desks, white board, clocks, power charger devices, etc.);
- Digital Ship's specific emergency plans and documentations;
- Digital set of MSDS generic hard copies covering all cargoes handled by managed vessels.

The above-mentioned equipment and arrangements are checked during periodical drills and training stages. The whole digital documentation is reviewed on yearly basis by the MSEQ Department and updated as necessary.

44.9 Roles and Responsibilities

a) Ship Master

The Master (or in his substitution the Officer who has taken the command of the ship) is responsible to:

- As per Company Policy, he/she take immediate measures to protect the on-board people, then the environment and property.
- Mobilise the onboard emergency team and do whatever can be done to mitigate the emergency.
- Push the VDR record button in order to save the voyage / communication data related to the event. On Master's discretion, the VDR data can be recorded at every direct or indirect situation that could require a Company or Authority investigation. Apart if such data are already provided by VDR, voyage data are to be saved also on ECDIS on (of course, on equipment

that allow this kind of operation).

- Contact the Designated Person Ashore (DPA/CSO) or call the Emergency Number (who answer will become the Initial *Incident Coordinator* (IIC)).
- Inform the relevant Coastal State authority, third parties and mobilise the nearest assistance available.

b) Initial Incident Coordinator (IIC)

If the first Company Representative contacted by ship is not the DPA/CSO, he become the Initial Incident Coordinator. Using the Emergency Response Booklet (EMCY 00), he try to gather the most important information from the ship. The IIC is responsible to:

- Assess the initial situation and notify to the DPA/CSO (if different),
- Mobilize the Crisis Management Team as needed;
- Alert Flag Administration, QI, Technical Advisor, P&I Club, Charterers and all involved parties as needed;
- Receive information by MD about the appointed Media Coordinator if any;
- Co-ordinate various activities carried out ashore and emergency communications until Crisis Management Team is in session;
- Stay in contact with the Master throughout the event, advising the Master of the efforts being performed from the shore-side.
- Prepare the initial statements to the DPA/CSO and/or to Crisis Management Team;
- Appoint or delegate specific duties/task to other Company Representatives until the Crisis Management Team is in session;
- Also, he can appoint the person(s) who will collect all in / out communication (fax, e-mail and telex).

c) Other tasks assigned to Designated Person Ashore or his Deputy

In addition to the tasks already planned or assigned to the DPA/CSO as Incident Coordinator, the following tasks remain within his competence. Whenever the DPA/CSO is not able to undertake immediately the role of Incident Coordinator, the following responsibilities shall be transferred to the Deputy DPA/CSO. He remains in charge until the DPA/CSO will be available again or substituted by a more experienced member of CMT, when the team will be in session:

- Keep the Fleet Manager and the MD informed about all activities. If the event provokes media interest, the DPA/CSO will update the Media Coordinator throughout the event.
- Review any generated media statements prior to submit it to the MD.
- Once the crisis has been resolved, the DPA/CSO is responsible to coordinate all documentation from the Crisis Management Team and the Master for a formal, written report. This report is to be submitted to the Managing Director prior to sending to any external agency or authority.
- Review the effectiveness of the organization, procedures and instructions with a view towards implementing improvements to the safety & environmental management system.

d) Quality and Environmental Manager

The QE Manager is responsible to:

- Provide any shore-based support as necessary and assist the DPA/CSO to ensure the safety of the crew.

- In cooperation with Crewing Coordinator, inform the IC about the type and level of training of the crew and the emergency equipment onboard the vessel as the event requires.
- Provide about manuals, procedure, guidelines, monographs, drawings related to the ship or to the event;
- Complete a periodical statement of the event and circulate it to the DPA/CSO, IC and other Crisis Management Team participants;
- Coordinate and maintain incident documentation including – communication logs; incident reports; situation status reports; etc., which will be critical to post-incident analysis.

e) Technical Coordinator

The Technical Coordinator is responsible to:

- Manage any technical claims with the P&I Club and / or Hull & Machinery Underwriter.
- Inform and liaise with classification society / emergency response service;
- Appoint experts and consultants on technical matters as directed by the IC
- Inform the IC about any recent vessel deficiencies (If relevant)
- Coordinate the efforts of the Superintendent and report to the IC.

The Technical Coordinator may be assisted by the Fleet Manager or by Technical Superintendent for the following aspects/ activities:

- Plan, arrange, negotiate and appoint shipyards for any needed repairs.
- Assist the vessel with any action necessary to minimise the consequences of the event.
- Provide vessel technical records, (such as open Avrep, vessel continuous repair list, list of work done and work planned for the next month, etc.), to the IC.
- Provide copies of the vessel's certificates received from Classification Societies and issuing authorities to the IC.

f) Crew Coordinator

Crew Coordinator is requested to participate in the Crisis management for Co-ordinating efforts to notify family / next of kin of each crew member's status and provide a list of all crew members on board and their condition to the IC.

g) Media Response Coordinator

The Media Response Coordinator is responsible to:

- Ask to the MD about any limits on information to be released;
- Obtain approval from the MD for media releases;
- Develop material for use in media briefings;
- Monitor media (including social) for new press release, broadcasting news;
- Inform media and conduct media briefings;
- Maintain current information summaries for distribution to Crisis Management Team.

h) Fleet Manager

In case of major event, the Fleet Manager will take care of the highest interest of the Company. Otherwise his personal expertise will allow him to provide an efficient support to Crisis Management

Team in any area, depending on circumstances.

i) Company Security Officer

In case of security-related incident, the Company Security Officer (CSO) will be in charge as Incident Coordinator. According to the Ship Security Plan, the CSO is responsible to coordinate the Ship Security Officer in any action dealing with security. Furthermore, the CSO shall liaise with competent authorities in this respect.

l) On-scene Coordinator

As Company representative, the On-scene Coordinator is responsible to facilitate every decision making on place. For this purpose some decision delegation could be assigned to him/her directly from Owner or his/her legal Representative. He/she report directly to CMT board.

The On-scene Coordinator is to be equipped with following equipment as a minimum:

- A mobile phone able to perform International calls;
- A Lap-top computer with internet facility;
- An intrinsically safe digital camera.

m) Secretary and Switchboard operators

Responsible to follow the IC or DPA/CSO instructions and to arrange Hotel accommodation and food, as required. Secretary and/or Switchboard operator shall arrange fly tickets and transportation for travelling superintendents or other external people in case it is required.

44.10 Key personnel and substitutes

SHIPBOARD PERSONNEL		
Key person	**Substitute**	**Task / Responsibilities**
Master – Team Leader	Chief Officer	As defined on Muster List for various emergency situations
Ch. Officer – Em. Squad Leader	2nd Officer	As defined on Muster List for various emergency situations
2nd Officer – GMDSS Operator	3rd Officer	As defined on Muster List for various emergency situations
Ch. Engineer – Support team leader	1st Ass Engineer	As defined on Muster List for various emergency situations
3rd Officer – First Aid Leader	As appointed	As defined on Muster List for various emergency situations

SHORE-BASED PERSONNEL		
Key person	**Substitute**	**Task / Responsibilities**
DPA/CSO – Incident Coordinator	Initial Incident Coord. - Deputy DPA/CSO	Assess the initial situation and notify to the DPA/CSO (if different); Mobilize the Crisis Management Team as needed; Alert Flag State, Classification Society(ies), ERS/Technical Advisor, P&I, H&M, Media Management Advisors, Manning Agents, Repair Yards and Oil Majors' vetting departments. Receive information by MD about the appointed Media Coordinator, if any; Co-ordinate various activities carried out ashore and emergency communications until

		Crisis Management Team is in session; Stay in contact with the Master throughout the event, advising the Master of the efforts being performed from the shore-side; Prepare the initial statements to the DPA/CSO and/or to Crisis Management Team; Appoint or delegate specific duties/task to other Company Representatives until the Crisis Management Team is in session; Also, he can appoint the person(s) who will collect all in / out communication (fax, e-mail and telex); Keep the Fleet Manager and the MD informed about all activities. If the event provokes media interest, the DPA/CSO will update the Media Coordinator throughout the event; Review any generated media statements prior to submit it to the MD; Once the crisis has been resolved, the DPA/CSO is responsible to coordinate all documentation from the Crisis Management Team and the Master for a formal, written report. This report is to be submitted to the Managing Director prior to sending to any external agency or authority; Review the effectiveness of the organization, procedures and instructions with a view towards implementing improvements to the safety & environmental management system.
Fleet Manager	Deputy DPA/CSO or QEM	Provide any shore-based support as necessary and assist the DPA/CSO to ensure the safety of the crew; In cooperation with Crewing Coordinator, inform the IC about the type and level of training of the crew and the emergency equipment onboard the vessel as the event requires; Provide about manuals, procedure, guidelines, monographs, drawings related to the ship or to the event; Complete a periodical statement of the event and circulate it to the DPA/CSO, IC and other Crisis Management Team participants; Coordinate and maintain incident documentation including – communication logs; incident reports; situation status reports; etc., which will be critical to post-incident analysis.
Technical Coordinator	Tech. Superintendent	Manage any technical claims with the P&I Club and / or Hull & Machinery Underwriter; Inform and liaise with classification society / emergency response service; Appoint experts and consultants on technical matters as directed by the IC; Inform the IC about any recent vessel deficiencies (If relevant); Coordinate the efforts of the Superintendent and report to the IC; Plan, arrange, negotiate and appoint shipyards for any needed repairs; Assist the vessel with any action necessary to minimise the consequences of the event; Provide vessel technical records, (such as open Avrep, vessel continuous repair list, list of work done, and work planned for the next month, etc.), to the IC; Provide copies of the vessel's certificates received from Classification Societies and issuing authorities to the IC.
Crew Coordinator	QEM	Crew Coordinator is requested to participate in the Crisis management for Co-ordinating efforts to notify family / next of kin of each crew member's status and provide a list of all crew members on board and their condition to the IC.
Media Response / Switchboard Operator	As appointed	Ask to the MD about any limits on information to be released; Obtain approval from the MD for media releases; Develop material for use in media briefings; Inform media and conduct media briefings; Maintain current information summaries for distribution to Crisis Management Team.

In case of a long vacations or prolonged unavailability of above mentioned shore-based Key Persons,

a suitable and documented handover is to be prepared by departing person to highlight all pending or in-progress situations, allowing to Deputy/Alternate figures to operate in full autonomy.

44.11 Office Organization

44.11.1 Staff Turnover

Sufficient staff to deal with emergency shall be always available. For this purpose at least one person of Technical Department and one person of MSEQ department shall be available at all times.

When dealing with an emergency, the Incident Coordinator shall arrange period of rest involving substitutes persons as required.

44.11.2 Travel Arrangement

The Support Secretaries are responsible for arranging all kind of tickets, hotel accommodation, VISAs and safe transfer on board of personnel who need to travel.

Following travel agents are used by PB Tankers to provide flight tickets and other required travel arrangements:

Monday to Saturday 09.00 – 13.00	**BARBARO TRAVEL**	TEL +39 331 5758465

In the event that a Company Representative has need to urgent travel when the Company travel agency is closed and usual other providers are unreachable (i.e. night time, no internet connections, etc.), the following international travel agency could be used:

24hrs a day 365 days / Year	**GRIFFIN MARINE**	TEL +44 20 78149966 FAX +44 207 8149979 e-mail: sales@griffintravel.com e-mail: 24hours@griffintravel.com

44.12 Ship's Alarms

Whenever there is an emergency all people on board will be warned by appropriate signals. The signals for emergency situations are the following:

GENERAL EMERGENCY	**Seven or more short blasts followed by one long blast**
FIRE	**two long blasts followed by continuous sound of rings**
ABANDON SHIP	**Master's order by ship's loudspeaker followed by a continuous ring of ship's alarm bells until the abandon ship is completed**

The "abandon ship" order will be given in case of real need to abandon. (See Muster List)

The Master is the only person who has the authority and the responsibility to give the order to abandon the ship. This order is given in clear wording directly by the Master.

44.13 Actions to regain control of situation

The detailed circumstances of an actual emergency will differ in many cases from those envisaged; however, preparedness planning ensures that basic action can be taken quickly and that decisions on how to tackle any additional problem can be made in an orderly manner. In the event of the ship being placed in danger, the Master must:

- Assess the situation and risk to the crew, the ship and the environment.
- Decide what action is to be taken immediately by the crew.
- Decide what further action will to be taken by the crew.
- Decide if outside assistance is required.
- Inform shore management and shore authorities.

The Company provides operational and crisis and emergency procedures and instructions. However the **Master has the overriding authority and responsibility to make decisions with respect to the safety of personnel and ship**, for the protection of the environment and to request the Company's assistance as may be necessary. Maritime safety and the protection of the marine environment must be the shipmaster's prime concern in all situations that arise**.**

Economic and other pressures on the Master should not at any time interfere with the decisions he must take regarding safety and pollution prevention.

The Company has identified the potential emergency and crisis situations that may affect the safety of persons, of the ship or cargo, or cause damage to the environment and has established plans to describe how the ship staff should deal with them.

The following potential emergency situations have been identified by PB Tankers:

- Abandon ship.
- Fire*: Fire while alongside a berth;
  Fire in engine room;
  Fire in Cargo Spaces (Cargo Tank and Pumproom, where fitted);
  Fire on open decks (including cargo decks);
  Fire in accommodations.
- Man Overboard- SAR Operations and Recovery procedures.
- Collision.*
- Stranding and Grounding.*
- Structural failure / Flooding.*
- Major Flooding.
- Breaking away from jetty.
- Ship disabled and emergency towing.
- Main engine failure.
- Steering gear failure.
- Bridge/navigation equipment failure.
- Bridge ME control system
- GMDSS station failure
- Electrical power failure / Black-out.

- Oil - Bunker spill / pollution
- Toxic gas release.*
- Toxic liquid release (at anchor or at sea).*
- Toxic liquid release (at terminal).*
- Chemical spillage and toxic vapour release
- Explosion.*
- Jettisoning of cargo.
- Inert Gas System failure during cargo operations.
- Cargo hoses burst or pipe leaking.*
- Enclosed space rescue.
- Search and rescue operations.
- Unexpected list.*
- Tank/Hull failure leakage or overflow.*
- Heavy weather damage.*
- Medical Emergency (injury and/or sickness, including exposure to cold/hypothermia cases)
- Salvage.
- Loss of stability at berth.
- Uncontrolled venting.*
- Helicopter evacuation.
- Security Incidents. **

(*) Procedures referred to in the highlighted topics above are also discussed in the SMPEP and VRP because in these cases pollution is likely to occur.

(**) All Security Incidents and related matters (including drills and trainings) are treated by separate Plan.

Recommended actions cannot be considered as action plans to be strictly followed by the crew, as it is not possible to foresee in detail what might occur in all such emergencies. They are therefore to be considered as a list of possible development of these situations and consequent actions that the crew might apply after having made all the necessary evaluations.

44.14 On-Board Communications

Communication on board is done using portable radio sets as far as possible. The use of radio sets enables all the squad leaders and the Master to be aware of what is happening in the various locations on the vessel. This improves the coordination of the response of each squad. All communication is directed to the Master. The other squad leaders will listen-in and act accordingly.

44.14.1 Requesting assistance from third parties

Regulations allow any vessel in distress to use any means at his disposal to attract attention, make known his position, and obtain help. Type of signal and priorities:

- A **distress** signal indicates that a vessel is threatened by a grave and imminent danger and requests immediate assistance.
- An **urgency** call indicates that the calling vessel has a very urgent message to transmit concerning the safety of the station or the safety of a person.

- A **safety** call indicates that the vessel is going to send an important navigational or meteorological warning.

The signals are sent on the authority of the Master, and have priority over all other transmissions in the following order:

1. Distress - Signal is MAYDAY MAYDAY MAYDAY
2. Urgency - Signal is PANPAN PANPAN PANPAN
3. Safety - Signal is SECURITÉ SECURITÉ SECURITÉ.

The Master and/or the officer responsible for the use of the radio station send messages according to procedures written in the Radio Regulation. A copy of that book is on board of all managed vessels by the Company.

44.14.2 Notifying the Authorities

In case of any emergency the Master should immediately inform the nearest coast government agency or port authority. The SOPEP/ SMPEP and the VRP contain details of port and flag state authorities to be contacted in case of an emergency. The Master should send a message using the format described in these plans that is in compliance with the IMO requirements.

IN ANY CASE, EVEN IF THE MASTER'S NOTIFICATION WAS OF MINOR NATURE & THE EMERGENCY IS DEALT SOLELY WITH THE PERSON WHO RECEIVED THE CALL, THE COMPLETE REPORT MUST BE DISCUSSED WITH THE DPA/CSO AT FIRST AVAILABLE OPPORTUNITY.

44.14.3 Instable political situations and temporary access to Intern. News providers

In case of sudden revolt, coup, civil war and/or complex terrorist attack, the official channels of communications provided by the common media (phones and mobile lines) and information sources (TV, radio broadcast, internet, including shipboard HF/MF frequencies) may be compromised or interrupted. If a ship is in port or in the territorial waters of a State during such events, she could be in a confused situation, where information on latent or actual threats are unavailable or too fragmented to allow an appropriate (or immediate) decision.

Fortunately, satellite systems in which the vessels are equipped are difficult to be obscured and communications with the Company are usually ensured.

However, to give to the Master the opportunity to be informed in real time about surrounding scenario and to allow to him/her to base or to take possible immediate actions, as soon as the Initial Incident Coordinator is informed about such events, he/she will immediately contact an IT Dept. representative, requiring a direct internet access from ship's terminals to the main international News broadcasting providers (i.e. Reuters, CNN, BBC World News, RAI News 24, France 24, Al Jazeera, etc.).

Obviously, since the above-mentioned situations are Security concerns, they will be treated according the 'Ship Security Plan' and the internet access to the International News providers will be kept open as long as necessary.

44.15 Involved Parties Notification

In case of incident the Master shall immediately inform DPA/CSO to quickly summon the Crisis Management Team, then the other parties listed below, including those specified in the C/P and/or Voyage Orders. If he/she is temporarily unavailable, the call is to be switched to Deputy DPA/CSO,

Fleet Manager, Technical Superintendent and/or Charterer Manager, using the Contact List provided on board. The Company, as Ship Manager / Operator will have the entire responsibility to manage all the process related to any casualty involving all managed vessels. The communication flow is the following:

- **Master** notifies to: Company, Qualified Individual (if applicable), Terminal/Port Authority, Fire-Fighting/Salvage (if applicable and required), Charterers and other concerned parties as identified in the C/P and/or Voyage Orders.
- **PB Tankers** informs (as applicable) Flag State, Classification Society(ies), ERS/Technical Advisor, P&I, H&M, Media Management Contractors, Manning Agents, Repair Yards and Oil Majors' vetting departments.
- If ship is in USA/Canada/Panama area, the appointed **Qualified Individual** informs involved parties as per 'Vessel Response Plan (VRP)' and 'Salvage & Marine Fire-fighting (SMFF)'.

The Master addressed to the PB Tankers the initial notification which should contain the following information that COMPLIES WITH THE VRP / SMPEP. The first message should contain at least the following information:

A. Name of the vessel.
B. Date and time of the report.
C. Date and time of the event.
D. Geographical position of the vessel.
E. Course.
F. Speed.
G. Weather conditions.
H. The essential details of the event.
I. The degree of danger to personnel, ship and environment.
J. Kind of assistance required.
K. The parties already notified by the Master.
L. Company Incident Co-ordinator name.
M. The parties the Master requires the incident co-ordinator to contact.
N. Miscellaneous information.
O. The time of the next calls to the company and phone number to be used.
P. Communication system to be used (E.G. Coastal station, Satellite system, GSM Phone).

As above indicated, when the Crisis Management Team is summoned, to avoid confusion and/or loss of information, all communications from/to the vessels will be managed in the Emergency Room using following contacts:

- by email to: ***contingencypbtankers@gmail.com***;
- by phone to: ***+39 06 8424 2936***.

44.15.1 Telephone Emergency and Hot Line

Two emergency telephone lines and one Hot Line are provided. The emergency lines are both used for external communications from PB Tankers Emergency Room while the Hot Line is dedicated solely for the communication between the ERT (Emergency Room Telephones) and the involved ship.

To avoid misuse of the Hot Line, this number will be communicated to the Master when the incident or emergency situation is notified.

44.16 Media Management

It is PB Tankers policy to keep the Master's energy and action concentrated on the resolution of the contingency. Therefore, the PB Tankers' will nominate a Media Coordinator and one official spokesperson each and every time it is required. The spokesperson can be either the MD, the Media Coordinator or DPA/CSO. Press/media consultants (e.g. MTI Network) may be called to assist the official spokesperson and the company in dealings with the media.

No one, except the Media Coordinator is authorised to release information to Media, even the Master who will be kept informed on developments by the Incident Coordinator.

Suitable training for dealing with media will be periodically arranged by the Company. However, the following standard phrase can be used in case of undesired external call:

"THANKS FOR YOUR CALL.

AS YOU CAN IMAGINE EVERYONE IN THE OFFICE/ ON BOARD ARE EXTREMELY BUSY AT THE MOMENT. OUR COMPANY HAS ESTABLISHED AN 'INFORMATION CENTRE' TO DEAL WITH ALL CALLS, THEY HAVE ALL THE LATEST INFORMATION AND IT WILL BE HAPPY TO ASSIST YOU.

THE NUMBER THAT YOU REQUIRE IS AS FOLLOW:

(only 'MTI appointed Spokesman' or 'Company appointed Spokesman' number, if it is appointed).

I AM SORRY BUT NOW WE HAVE TO FREE UP THIS TELEPHONE LINE.

THANK YOU AGAIN"

44.17 Emergency Organization Review

After the contingency has been overcome, any member of the Crisis Management Team may request that a debriefing meeting of the organization be held to review the effectiveness of the organization, procedures, and instructions – with a view towards implementing improvements to the Crisis Management structure. The Emergency Organization will be also tested at every favourable opportunity (at least once a year) or when few team members are changed. Annual Ship/Shore drills on a specific scenario or Table Top Exercises can be useful to verify the suitability of Emergency Procedures and the preparedness of each CMT on his duties.

44.18 Business Continuity Plan

If a serious event involving the Company headquarters (long interruption of electrical power, fire, flooding, structural damage, etc.) may lead in temporary unavailability of premises, to avoid a disruption to the business, the essential data have been digitalised and loaded on external servers (including different back-up servers) and web-based clouds, easily to be reached from any device linked to internet. They are:

- Ship-shore email service (Microsoft Outlook) that include 'group email addresses' divided by

each Department;

- MSEQ Management System, including contingency plans and ships' drawings (EASY Marine and Microsoft OneDrive);
- Planned maintenance system and purchasing management (INFOSHIP);
- Crewing management (OMNIA and MPS);
- Emergency publications and contacts on servers.

To allow the access to mentioned data, Top Management and Key Figures are suppled of following personal devices:

- Portable PC (with webcam and microphone);
- Mobile phone;
- Portable Wi-Fi modem;
- Emergency Booklet (form Em.cy 00).

Therefore, in event of a temporary unavailability of Company premises (more than 12 hours, less than 2 weeks), business activities and safe ship-shore operations can be remotely carried out and effectively maintained initially from the home of each key person, then from an alternative premise identified by Company. If this scenario may happen, after an emergency meeting carried out with Top Management, following actions shall be carried out:

- Notification by each Department to direct partners/stakeholders as follows, highlighting the importance to use the 'group email addresses to avoid lack of communications / loss of information:
  - Top Management: Company Members, Business Partners, Banks/Financial Providers, Legal Advisors (including Supervisory Body), Accountability Department, Press/Media Consultants, Chamber of Shipping,
  - MSEQ Department: Fleet, QI, Flag State Administration, Emergency/Salvage Providers, Security Providers,
  - Technical Department: Classification Body(es), Technical Advisor(s), Critical Equipment Makers, Technical Service/Maintenance providers, Ship/Repair Yards (as applicable),
  - Crewing Coordinator will inform Manning Agency, Training Centres, Company Physician(s), Labour Unions, Crew members currently in vacation,
  - Chartering/Ops Department will inform Charterers, Brokers, Agencies, P&I Clubs, Insurance Providers, Bunker Suppliers,
  - Purchasing Department will inform Spare/Consumable Suppliers, Victualling Providers and other stakeholders,
  - General Support personnel will inform RSPP, Local Postal Office, Courier Service,
  - IT Department will increase routine checks and tests to ensure that ship-shore communications are always ensured and all web-based data are constantly available to all involved parties.
- Agreement of a daily video conference to discuss the progress of activities and/or to assign new tasks;
- According to circumstances, evaluate the possibility to add an explanatory note on Company's web site.

The plan is based on a risk-based assessment on possible scenarios (RA-295) and, during drills,

table-top exercises and other emergency simulations such procedures are tested and reviewed as necessary.

44.19 Standard Information

In every crisis situation and incident, it is important to have a uniform or standardized structure in place to capture the information in an accurate, concise format. PB Tankers has developed specific emergency check lists / forms to facilitate the process of documenting the event for use during the incident, as well as for use in any future reports or legal proceedings.

44.19.1 Emergency Check Lists

PB Tankers, has developed appropriate emergency check lists that are controlled under the MSEQ Management System. Emergency Check Lists are intended to assist shipboard personnel in ensuring that all corrective, preventive and mitigating actions are taken in emergency.

Check lists must be compiled and by the Master or by qualified Officer. All items of the check lists should be ticked off by pen when the required action has been effectively taken.

All compiled check lists must be archived on board and attached to the relevant report of accident. All check lists should be also signed by the Master or Chief Engineer (as appropriate) even if their signature is not clearly required.

44.20 Emergency Preparedness, Initial Contingency Plans and Response

To follow is a description of possible casualty events that could occur on board, and the emergency response procedures to be considered. For most of the casualty descriptions, there is a corresponding checklist located in numerical order at the end of this manual. This information is provided as a training and exercise tool for onboard education as well as for guidance during an actual emergency event.

44.20.1 Abandon Ship

Every vessel is provided with a *Life Saving Appliances - Training Manual*. The manual describes all actions to be taken in case of abandoning the ship and the proper use of appliances on board the vessel including the lowering at sea of lifeboats and life rafts in heavy weather conditions.

The order for abandoning ship is verbally given by the Master. The order will be used only in case of the real need to abandon the vessel. The Master is the only person who has the authority and the responsibility to give the order to abandon. When such decision is taken the officer of the watch updates the vessel position. If applicable, he makes it available to radio room. On hearing the abandon signal every person on board should:

- Collect and wear appropriate clothes, then cover all over with waterproof cloth.
- Wear the life jacket.
- Take the personal thermal protective equipment (there is one per cabin).
- Take a good drink of water and try to bring one unopened bottle of water.
- Reach the assigned muster station and execute orders given by the team leader.

All crew members shall carry out their emergency duties as described in the Muster List

44.20.2 Fire

The risk of fire breaking out on board a vessel cannot be eliminated but will be much reduced if all precautions are taken. The Master should ensure that:

- Fire-fighting drills are regularly made.
- Firefighting equipment is accessible at all times.
- Emergency escapes are not obstructed.
- Prompt and correct action are taken.

If a fire breaks out when the ship is in port, the Port Authority and Fire Brigade should be informed immediately. Whenever possible an attempt should be made to extinguish the fire or limit the fire by using appropriate systems available on board. Openings to the space should be shut at once to reduce the supply of air to the fire and to prevent the spreading of the fire. Combustible materials feeding the fire or threatened by it should be isolated. If possible, combustible materials within the compartment afire or within compartments adjacent to the fire should be removed.

If a space is filling with smoke and fumes, any personnel not equipped with appropriate breathing apparatus should get out of the space without delay. If possible, they should escape by crawling on hands. Precautions should be taken against spontaneous re-ignition. Nobody, unless wearing proper breathing apparatus, should enter a space in which a fire has occurred before the space has been fully ventilated. The direction of the wind should be carefully considered so that you can benefit from the appropriate change of course of the ship. This will avoid smoke enter spaces which cannot be closed. It will also protect emergency squads from heat, smoke or gases.

Fundamental actions to be taken

- Raise an alarm using the closest fire alarm call point.
- Inform the Officer of the Watch or duty officer about the location and the extent of the fire.
- Try, if feasible, to extinguish the fire with the nearest portable appliance, otherwise join the Shipboard emergency team at Muster Station.
- If in port, the Officer of the Watch will follow the emergency procedure agreed with loading Master or given by local authorities.
- At sea, the Officer of the Watch updates vessel's position.

44.20.3 Fire while alongside at berth

In case of fire while alongside a jetty, it is probable that the vessel will be towed away to avoid the fire extending to shore installations. Due to many accidents occurred to ships where emergency wires were involved, OCIMF no longer recommend their use when alongside. However, many Oil Terminals still require emergency wire positioning during port stay. Therefore, please clearly define their use during Ship/Shore Safety Meeting or ask in advance the Local Agency. When required, emergency towing wires are to be always properly posted, rigged and adjusted according to ship's draft.

Actions to be taken by the shipboard personnel:

- Inform Master, Chief Engineer and shore representative.
- Master will inform port authority.
- Stop all cargo pumps.
- Disconnect hoses as quickly as possible.
- Keep engine ready to manoeuvre and prepare the vessel to leave the dock.

- Try to keep fire under control until shore fire brigade reaches the scene. Normally the commander of the fire brigade will take charge of all operations. They are experienced and better trained than crew to fight fires. Therefore, ship crew should follow their suggestions and co-operate with them as much as possible. It is advisable to allocate a shipboard officer with the fire brigade team.
- If there is any risk of pollution, apply relevant SMPEP or VRP procedures.
- Apply relevant procedures which were agreed with terminal representatives and which should also be in compliance with local emergency procedures.

44.20.4 Fire in Engine Room

If the alarm is activated by the automatic fire detection system, the duty engineer must refrain from entering the Engine Room (ER) alone. Before entering the Duty Engineer should inform the Deck Officer on Duty and should ensure that condition are safe for entry.

If a fire is noticed, the fire party will act as follows:

- The Chief Engineer will take the command of the fire party. He will keep the Master informed about the situation and will agree with him a common strategy. It is important that decisions be taken quickly and effectively.
- If dense smoke is noticed, firemen will wear fireman protective equipment and use breathing apparatus.
- Firemen will first assess if there are any casualties.
- Ventilation should be stopped at once in E.R. and accommodation spaces. All air intakes serving the ER (doors, skylights, ventilation ducts) should be closed.

If a large fire has occurred, evaluate the need to use the fixed fire fighting installation, being aware that before releasing the extinguishing agent, the following is to be carried out or checked:

- Ensure that ER ventilation is stopped and all air intakes serving the ER (doors, skylights, ventilation ducts) closed,
- Close all fuel valves using emergency closing valves.
- Stop all pumps using the relevant emergency stops.
- Ensure that no people are in the engine room.
- Activate the fire-fighting fixed system according to operating instruction and when authorised by the Master.
- Provide for boundary cooling by using the emergency fire pump and remove combustible material placed around the ER should be moved in a safe area.

44.20.5 Fire in Cargo Spaces (Cargo Tank and Pumproom, where fitted)

If the alarm is activated by the automatic fire detection system**, the duty officer must refrain from entering the space alone**. *Before entering the cargo pump room, he will evaluate if it is safe to do so. If a fire is noticed, the Master should be informed before any person is authorised to enter the cargo or ballast pump room.* ***The fire party will act as follows:***

- The Chief Officer will take the command of the fire party. He will keep the Master informed about the situation and will agree with him a common strategy. Decisions shall be taken quickly.
- firemen will wear fireman protective equipment and use breathing apparatus.
- Firemen will first assess if there are any casualties.

- If the vessel's equipment permits the flooding of cargo tanks with foam, evaluate well in advance the possibility of covering cargo surface with foam to cool down the cargo surface and to minimise the risks of self-ignition.
- Ventilation should be stopped at once in accommodation, twin deck and cargo pumps. All air intake flaps should be closed.
- All cargo Press-Vacuum valves should be set in normal position.

If a large fire has occurred in the cargo pump room, it would be necessary to use the fixed firefighting system ensuring that no one is inside the space. Fixed systems shall be used in accordance with the instructions displayed on the control station. Using fire pumps, keep boundaries of cargo tanks or cargo pump room as cool as possible. Monitor cargo tank temperature as far as possible. Pay particular attention to those tanks where cargo temperature is rising over the safety limits (self-reacting and ignition cargoes).

44.20.6 Fire on Open Decks

The Chief Officer will take the command of the fire party. He will keep the Master informed about the situation and will agree with him on a common strategy. It is important that decisions are taken quickly. Use of water for extinguishing a fire in the open deck may have opposite effect because water may spread the fire in other locations. The ship's command must previously evaluate what extinguishing mean is most suitable for that fire.

The fire party will act as follows:

- Assess if there are any casualties.
- Evaluate the possibility of covering cargo surface with foam.
- as toxic gases may develop, firemen will wear protective equipment and breathing apparatus.
- Make gas masks readily available with proper filter.
- Stop ventilation in accommodation and pump room at once. All air intake flaps to be kept closed.
- All cargo Press-Vacuum valves should be set all in normal position.
- As far as possible, all cargo valves and pumps should be closed.
- Monitor cargo tank temperature as far as possible. Pay particular attention to those tanks where cargo temperature is rising over the safety limits (self-reactive or self-ignition cargoes)

44.20.7 Fire in Accommodations

The Chief Officer will take the command of the fire party. He will keep the Master informed about the situation and will agree with him on a common strategy. It is important that decisions be taken quickly.

The fire party will act as follows:

- Assess if there are casualties.
- Insulate electrical energy to the area.
- Close all ventilation flaps.
- The firemen will wear fireman protective equipment and use breathing apparatus.
- Use water spray inside the accommodation.
- Support squad will cool down boundary surfaces from outside. If applicable, combustible material located around the boundaries of the area in fire should be moved in a safe area.

44.20.8 Man Overboard - SAR Operations and Recovery procedures

Referring to the preparedness, response and management of 'Man Over Board' emergency, recovery procedures and, in general, to SAR operations, please refer to '**Rescue & Recovery Plan**', prepared for these specific purposes.

The contents have been developed in accordance with SOLAS Regulation III/17-1 (as amended by IMO Resolution MSC 338(91) and successive) and based on "Guidelines for the development for plans and procedures for recovery of persons from the water (MSC.1/Circ.1447)".

Such procedures, recommendations, suggestions and best practices have been integrated with the recovery guidance stated in the Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, MOBILE FACILITIES, which is available on board both digital and paper.

In addition, following related documents have been considered:

- MSC.1/Circ.1182 "GUIDE TO RECOVERY TECHNIQUES";
- MSC.1/Circ.1185/Rev.1 "GUIDE FOR COLD WATER SURVIVAL".

44.20.9 Collision

Following a collision or grounding, if the point of impact is outside of the engine room spaces, the Chief Officer will establish the extent of the damage. He will report to the Master and take whatever action necessary to deal with the damage and to stop the inflow of the water.

If the point of impact is within the engine room spaces, the Chief Engineer will carry out the same actions. The Master and the Chief Officer will calculate the effect of the damage on the vessel's stability and stress before ordering any redistribution of the weights.

The Master will ask for the "Emergency Response Service" from the classification society in accordance with the procedures contained in the SMPEP and/or VRP-SMPEP.

The SMPEP/VRP procedures should be used to deal with collision and/or grounding incidents.

In case of collision or immediate risk of collision the Officer of the Watch shall:

- Raise the general alarm and inform the Master.
- Steer to minimise the effect of collision.
- Stop engines.
- If during the night, bear in mind damaged electrical circuits when switching on lights.
- Alert the fire squad.
- Assess if there are any casualty.
- Update vessel position and make available it to radio room.
- Sound all ship compartments immediately.
- If exists a risk of pollution apply relevant SMPEP/VRP procedure.

44.20.10 Stranding and Grounding

The general guidelines given in the above paragraph are applicable also if the vessel is aground or is stranding. If the Officer of the Watch realises that the vessel is going to ground or strand, he will steer to minimise the effect of the grounding. In case of stranding or grounding the Officer of the Watch shall:

- Raise the general alarm and inform the Master.
- Stop engines.
- Switch on all lights during night time.

- Alert the fire squad.
- Assess if there are any casualty.
- Update vessel position and make available it to radio room.
- Sound all ship compartments immediately.
- If exists a risk of pollution apply relevant SMPEP/VRP procedure.

44.20.11 Structural Failure / Flooding

Consistent ship's structural failure on a tanker usually depends from an improper cargo/ballasting operation or as consequence of collision, grounding or heavy weather damages. In this case the master have to take any appropriate action to avoid o reduce further damages to the ship and assure its safe buoyancy. However, a direct consequence of all above situations can be a flooding. If one or more spaces, which normally provide buoyancy, become flooded the action to be taken depends upon the location of the flooded compartment and the extent of the damage(s).

Flooding of machinery spaces could result in a major loss of buoyancy and total loss of propulsion. If the ship is loaded, the resulting loss of buoyancy may be sufficient to give rise to concern that the ship will sink, although such an eventuality may not occur.

In case of flooding, the following actions are taken:

- The concerned Officer raises the alarm and informs the Master.
- The Master and the Chief mate refer to the ship's stability information to determine what action is necessary to improve the buoyancy.
- The Master contacts the classification society asking for the Emergency Response Service assistance according to procedures described in the SMPEP

It is emphasized that engine bilge may be discharged overboard only under Master's order and responsibility. If this is the case the Master bears in mind that this water could contain some oil. He applies the procedures described in the SMPEP / VRP.

44.20.12 Major Flooding

If major flooding occurs, sound the general alarm and assess the severity of the situation – whether or not the vessel should be abandoned.

When Major Flooding occurs:

- Close watertight doors, if fitted; sound all bilges, tanks and void spaces.
- Isolate power supply to all circuits running through affected areas.
- Shore up area to stem water flow (i.e. emergency patching).
- Check bilge pump for operation – rig emergency cargo pump to pump out water.
- Check any auxiliary pumps for back up operation as required.
- Make ship's position available at radio station and other emergency communication facilities – update as necessary.
- Broadcast "distress alert (PAN PAN)" and message "(MADAY)" if vessel is in grave and imminent danger and immediate assistance is required, otherwise, broadcast an "urgency (SECURITE)" message to ships in the vicinity.
- Check the vessel's stability situation, if possible.

- Consider any potential reactions between water and cargo.
- Maintain detailed record of events.

44.20.13 Breaking Away from Jetty

The vessel could be obliged to leave the berth at once for many reasons, such as:

- Preventive measure as per weather forecast and expected dangerous situation (hurricane forecast, heavy swell, etc.).
- A request from a responsible authority or terminal responsible.
- An emergency situation due to an unpredictable event (i.e. fire ashore, breaking of mooring lines).

The Chief Engineer ensures that the main engine and other necessary equipment is always ready to supply all necessary power to manage an emergency situation. He will follow always the Master's instructions. The main engine will never be immobilized without Master's permission.

The procedure for emergency stop of cargo operations must be agreed with the terminal's loading master and understood by all officers on duty during cargo operations. The Master is responsible to inform port authority, terminal representative, local agents and the company with all required information to solve the problem. The Master shall seek for help as far as necessary from tug company, pilots, mooring company. Other actions to be undertaken are:

- Summon the crew.
- Check for missing people and identify the reason.
- Disconnect cargo hose(s), close valves and put on blank flanges.
- Ensure that all cargo containment openings are closed.
- If there is a risk or pollution occurred, implement immediately SMPEP/VRP procedures.

The Master orders immediate un-berthing when in an imminent, dangerous situation where there is insufficient time to apply usual procedures.

44.20.14 Ship Disabled and Emergency Towing

The failure of the main engine or the steering gear will result in drifting under the influence of the wind and current. All owned or managed vessels are provided with the book *Peril At Sea And Salvage,* which gives information about the correct handling of a disabled vessel.

During a towing operation, following measures are to be considered:

Before Towing:

- *If the own vessel is the Towing vessel*:
  - a) All towing Equipment must be certified, suitable and Class Approved;
  - b) The towing operation should be started only after approval from Owner and P&I;
  - c) Before link connecting shackle must be regularly checked, well maintained, that can be opened easily;
  - d) Get ready properly tools such as chisel, crowbar, claw hammer, axe, knife etc;
  - e) In adverse weather conditions, it is important choosing the adequate maneuvering to approach the vessel to be towed;
  - f) If the vessel to be towed is a small ship/craft, before commencement of towing ops, it is always necessary the Owner and P&I authorization and a L.O.F signed by Master of the

vessel to be towed;

g) All crew from the vessel to be towed, must be transferred on the towing vessel;

h) The towing operations must be always conducted keeping a safety speed i.e.: 5 kts;

i) It would be better an allowance of 300/400 m that between the two vessels and do not keep the rope tight, but with a slack as a shock absorber;

j) All operations must be conducted under the supervision of the MSEQ Dept, Tech. Dept and Class Registry.

- *If the own vessel must be towed*:

a) The chaffing chain must be passed through the chain stopper and the panama fairlead;

b) Get ready two synthetic ropes connected with a SWL 50t connecting shackle, one scalloped on one side and another rigged on deck with one messenger line and one light buoy in case of contingency;

c) During the towing operations, the towing equipment must be checked hourly;

d) The vessels must keep in touch over all the time;

e) A safety speed of 5/6 kts must be kept for all the duration of the ops;

f) Get ready properly tools such as chisel, crowbar, claw hammer, axe, knife etc.

During Towing:

- The towing rope or chain could be broken: check the condition before the operation and checked regularly during the ops consider to reduce the towing speed if weather condition will deteriorate; apply grease to fairleads;
- Check the communications regularly. In case of complete black out on towed ship, the optical signalling must be used (flag and/or Aldis flashing);
- Broadcast "Securitè" message every 30 minutes by VHF;
- Display properly signals.

The Company has moreover supplied all vessels with the booklet *Emergency Towing Procedure* that provides information for a safe towing of the vessel. Consult them well in advance and in the emergency.

44.20.15 Main Engine Failure

In case of main engine power failure the Officer of the Watch shall:

- Inform the Master.
- Use the rudder to best advantage.
- If in shallow water prepare anchors.
- Update vessel position.
- Show Not Under Command lights or shapes.
- Plot vessel's position every 5-6 minutes and identify the drift.
- Broadcast the "Safety" message.

44.20.16 Steering Gear Failure

The use of the engine when the steering gear has failed should be carefully evaluated by the Master.

With full or emergency power astern it is possible to bring the stern of a single screw ship up into the

wind. If the rudder is jammed in hard over position, careful manoeuvring ahead can keep the ship's head into the weather.The effect of propeller revolutions on a free flapping rudder is such that the rudder will generally go to a hard port or starboard position with either ahead or astern revolutions and will stay there as long as the engine revolutions are maintained.

It is important to warn the engineers repairing a damaged steering gear before any engine movement.

Consider the use of the bow thrusters at low speed to steer the vessel to safe port/waters.

In case of steering gear failure the Officer of the Watch shall:

- Inform the Master and the Chief Engineer.
- If in shallow water, prepare anchors.
- Using the emergency steering gear try to steer outside the traffic area
- As far as possible stop the vessel in a safe area.
- Update vessel position.
- Show Not Under Command signs.
- Plot vessel's position every 5-6 minutes and identify the drift.
- Broadcast the "safety" message.

44.20.17 Bridge/navigation equipment failure

Nowadays, maritime navigation depends increasingly from electronic devices. They are entered so deep into the daily routine that often part of personnel involved in watchkeeping on bridge is unprepared to effectively detect and/or deal with their sudden malfunctioning.

Bridge personnel more exposed to these kinds of problem are the youngest people that have started their professional life working exclusively on such equipment and learning the principles of traditional navigation only at school, often with few possibility to practice with them in real life on board.

However, the possibility that one or more devices can break during their operation is already taken into account and for this reason many of these are duplicated. Where Bridge Team may be less experienced is to face the sudden loss of a particular type of information or, worse, to the complete loss of power of all equipment of the bridge.

It is a remote but not an unlikely scenario. Shipping Industry has reported in the past situations where the electrical power was completely loss on bridge. It was due to sea wave smashing on bridge windows (possible on ships with bridge ahead), a serious fire in engine room (and subsequent depletion of Em.cy generator fuel / battery power), in case that a lightning hits bridge structures damaging seriously all electronic devices, or in case of piracy attack with firing on bridge/main mast structures, and subsequent damage to equipment/antennas.

This kind of event may carry the ship many decades back, sometimes leaving the Bridge Team bewildered to take a quick and effective response to this emergency situation.

Therefore, for each main device, below you will find some suggestions on how to deal to these emergencies, trying to carry the ship to the closest port in a safely manner.

IMPORTANT: According to the aim of this procedure, please keep in mind that all below information/recommendation are focused on Bridge activities and therefore, further actions to be carried out on deck or in engine room are not included.

GPS failure:

Since it is an electronic device that receives electromagnetic signals, GPS is vulnerable to

interference/distortions generated by low-power jammers (such as spurious harmonics like active Radio/TV antennas), by damages on GPS antenna cables and by ionospheric effects. The latter are correlated with sun-spot cycle and are particularly prevalent at high latitudes.

Almost all vessels have integrated bridge systems, which enable automatic execution of a passage plan acting on autopilot. If this system is operating at time when jamming occurs, the vessel's course and heading will follow the distorted signal without informing the Officer on Watch, with extremely hazardous consequences.

Therefore, in order to ensure a proper monitoring of navigation and to allow to the personnel on duty to recognise that GPS service is being denied, following alternative monitoring techniques shall be effectively applied as a minimum and as practicable:

- Proper parallel-indexes on Radars shall be always in place. The position must be monitored directly on Radar PPI (that is set on antenna position and not affected by wrong GSP signal) and monitored as frequent as close to the coast;
- A secondary fixing methods shall be always used as indicated into the MSEQ Proc. Chapt. 25 and at prescribed intervals;
- In case of complete loss of GPS signal, a new planning shall be initialised from last position considered accurate and successive position obtained by an alternative methods (Radar distance & bearing, visual bearing, dead reckoning and/or celestial observations) shall be manually entered on all affected devices (ECDIS, AIS, GMDSS apparatus, etc.). The frequency of such fixing shall be carried out in compliance with Company procedures. However, according to the circumstantial situation, the Master may increase such frequency.

Gyrocompass failure:

The following actions are to be carried out as a minimum in event that gyro compass is out of order:

- Where 2nd gyrocompass is available, activate it. Otherwise, following measures are to be taken;
- Bridge Watch Condition III called. Change over to hand steering and use magnetic compass, adjusted with compass deviation/error values;
- Consider the possibility to reduce speed as necessary or until the situation will be under control;
- According to weather conditions, refresh the calculation of compass error and carry it out at any favourable opportunity (at least once a watch). In case of doubt, the operation can be performed more times during the same watch;
- To avoid mistakes due to erroneous data entered, it is a good practice to set both RADARS in 'Course-up';
- Consider that this failure affects also other navigational and communication equipment which have a gyro feed (especially Radar/ARPA and ECDIS): where is possible, enter manual heading on them;
- Plot positions more frequently in order to verify the 'course made good' kept by ship, allowing the correction of steered heading accordingly;
- In coastal waters, make good use of parallel indexing technique to keep vessel on charted track;
- Also, set GPS on True Course display and compare the indicated value with the heading shown on magnetic compass. It can be useful in case that compass error cannot be verified by

observations;

- The gyro repeaters placed on bridge wings can still be used for relative/polar bearings, which will be then adjusted with the value of the magnetic heading;
- When the situation is under control, the Master can decide to pass in Bridge Watch Condition II;
- Inform the Company Office about possibility to repair on board or to arrange proper Technical Service at next port;
- Proper information about Gyro unavailability shall be notified to pilots/port authority at next port.

Speed Log failure:

Despite the habit on board to take always in consideration the ship's speed provided by GPS, some apparatus need the value of 'Speed Through the Water (STW)' in order to give appropriate indications. They are:

- RADARS: ARPA data – The STW is the basic data to enter kinematic values of own ship's vector in ARPA calculator and, therefore, it affect the correct indication of target's relative motion, target's effective speed/course, CPA and TCP. The use of speed over ground (SOG) instead of STW can distort these indications, exposing ship to serious risk of collision;
- ECDIS: Squat data – Some ECDIS apparatus are able to calculate the squat value comparing STW and SOG in order to determinate the correct value of water's mass flowing below the keel. The missed STW data can wrongly modify the resulting Squat value, exposing ship to grounding;
- ECDIS: Manoeuvring data – Starting from STW and SOG, the ECDIS is able calculate the value of ship's lateral drifting, especially in the determination of 'wheel over point' and 'future point' when ship turns at a Way Point. In case of wrong or missed entry of STW, the ECDIS gives improper indications to the Officer on Duty, exposing the ship to take ground, especially in case of automatic 'change of course' carried out by ECDIS/Autopilot interface;
- ODME – Discharging data – The dilution of waste water in the surrounding area is strictly related to the ship's STW. Therefore, a failure of Speed Log can compromise the correct discharging value of ODME, exposing ship to legal action/penalties/detention.

In case of failure of Speed Log, the STW can be graphically calculated starting from SOG (effective speed) and the value of an eventual current acting in the area (if it is known) or using RPM, Pitch Propeller and ship's Slip values (but this method is less effective).

When the STW is calculated, it shall be manually entered on all affected devices (obviously, where it is practicable).

ECDIS failure (both primary and backup):

On ships where ECDIS is the primary means of navigation, the simultaneous failure of both apparatus (Primary and Backup) represent a severe limitation for navigation.

In order to face to this type of emergency situation, our ships are provided with a tailored portfolio of General Paper Charts, selected in order to allow to the ship to safely reach the closest harbour's Pilot Station. Since they are considered a means to be used in emergency situation, at least the Paper Charts affecting the trading area of the ship must be kept always updated and corrected, including T&P notices.

If a specific paper Chart is not available on board, an official printable nautical chart (also known as 'Print on Demand – PoD' chart) can be required to Chart supplier. It will be received on board by email in PDF already divided in A4 paper format in order to be easily printed.

Also, since a potential loss of electrical power can affect all other bridge's electronic devices, all Deck Officer shall be able to restore immediately the traditional navigation principles and tools. To do so, following actions are to be carried out:

- Bridge Watch Condition III;
- Consider the possibility to hand steering and/or to reduce speed as necessary or until the situation will be under control and/or until the traditional navigation is restored;
- The proper paper chart(s) is to be taken and the last available ship's position is to be immediately fixed on. Later, further position are to be fixed at regular intervals (refer to MSEQ Proc. Chapt. 25), through visual/radar fixing in case of coastal navigation or by dead reckoning / celestial observations in case of open sea passage;
- The ship position and all other navigation parameters (speed, wind, eventual current, etc.) are to be properly recorded on Official Log each hour. In case of 'Open Sea' passage (over 20 NM from nearest coast), where position fixing is not easily to be detected by visual/RADAR observation, it shall be carried out at least at every change of watch;
- When the situation is under control, the Master can decide to pass in Bridge Watch Condition II;
- 'No Go Areas' and any other useful information are to be carried out on paper charts in use;
- Verify that chart(s) has been updated to last warnings/T&Ps available on board.

Also, keep in mind that in case of ECDIS failure, the course track on Radars will disappear. Therefore, parallel-index monitoring is to be increased as far as practicable. Another suggestion is to load the Way Points of approved Passage Plan on a programmable GPS prior to beginning each voyage. In this case, the 'Course Made Good (CMG)' can be easily detected and followed and, if the interface with equipment allows it, the course track can be restored on radar(s).

RADARS failure (both S and X band):

Usually on board ships are fixed 2 Radars: similar but with some difference in emitting frequency:

- The radars named S-Band (or decimetric) emit radio-waves long about 10 cm. They are able to detect long-range targets and they are less affected by sea/weather clutters (sea waves/spray, rain snow, etc.) versus X-Band radars. However, they could not recognise targets close to each other (especially if they are far) and the coast line is less detailed as displayed on X-Band. Therefore, the S-Band radars are most useful in exploring sea surface during open sea passages.
- The radars named X-Band (or centimetric) emitting radio-waves long about 3 cm and thus more accurate of S-band to detect targets close to each other, to locate targets closer to sea surface and to better detail the coast profile. However, it is easily affected by sea/weather clutters and may be not effective on long distances. For these reasons the X-Band radars are preferred in coastal/approaching navigation. Also, X-Band radars are intended to identify and display SART signals.

These specific characteristics must be kept clearly in mind in case of failure of one of radar, especially if you are in bad weather or engaged in a coastal voyage, in a heavy traffic area or in a port approach.

However, since radars are the primary anti-collision means, if the capability to calculate the kinematic

data of surrounding ships is lost, the ship is seriously exposed to the risk of collision.

Fortunately, almost all radars are equipped with ARPA (Anti-collision Radar Plotting Aids) device and its failure is rare. However, if it should happen and the capability of radar to measure range and bearing of targets is not compromised, using 'Plotting Sheets/Manoeuvring Boards', the officers on watch (with proper practice to safely do it) can be able to calculate graphically the kinematic data and take appropriate actions. The worst scenario is the complete failure of both radars. In this case, the ship loss completely the capability to detect and measure the range of targets, then to calculate (automatically or manually) their kinematic data. Therefore, the following actions are to be carried out:

- Bridge Watch Condition III;
- According to the surrounding traffic situation and/or weather conditions, reduce speed or stop the engine until situation become under control. During this period, the eventual use of 'Not Under Command (NUC)' signals is to be considered. In this case the ship's status on AIS is to be updated;
- Change over to hand steering;
- The lookout shall be increased, especially in night time;
- Give proper caution to all ships on starboard side, especially for those with a constant bearing or with a little angular change.
- Broadcast Safety Warning using appropriate GMDSS equipment (SAT C telex, HF/MF and/or VHF DSC transmission, etc.), informing them about ship's condition and requiring wide berth and sharp lookout.
- Inform the local VTS (as applicable), asking assistance;
- On basis of ship's height above the sea level and weather conditions, try to calculate the apparent distance of horizon (range of visibility). It will be useful to empirically define the distance of other vessels;
- Anticipate all manoeuvring in due time, avoiding any change to portside (of course, unless it is necessary to avoid a collision). The best method is to is to alter course until ship's bow is toward the crossing ship and adjust the heading in order to cross her slipstream at safe distance;
- When the situation is under control, the Master can decide to pass in Bridge Watch Condition II with an additional lookout/helmsman.

IMPORTANT: In this circumstance, the AIS could be extremely useful to detect ships in the area and take some indications about their range and bearing. However, following considerations are to be done:

- Since AIS work on VHF frequency and their signal could be distorted by jamming (see also GSP paragraph), such information must be used with due thriftiness and supported by visual identification;
- Depending on where you sail, there may be many boats (sometime small ships) that do not have AIS, so a good lookout with binoculars is essential.

Complete failure of all electronic equipment on bridge:

Referring to the premise made in the introduction paragraph, this is the worst scenario that the Bridge Team may face during sailing. Fortunately, this emergency situation may occur only in few circumstances and so, it can be deemed a rare event. However, since in the shipping industry similar cases have already been reported in the past, it is right to consider them.

First of all, it is important to ascertain if the loss of electrical power is complete (dead ship condition) or only bridge equipment are affected.

Because, if propulsion is not compromises, the ship may still brought to the nearest port in sufficient safety conditions, although it have been lost any capability to easily find her position, to steer using gyro compass, to communicate with various means, to detect surrounding ships, to receive weather forecasts / warning information.

Therefore, we can assume three sub-scenarios for which specific measures can be defined:

a) Failure of bridge equipment but the electrical power and propulsion are still working;
b) Loss of main electrical power and propulsion. Generator and emergency batteries still working;
c) Complete loss of propulsion and electricity (dead ship condition).

- **Sub-Scenario a)**

Starting from all above indications given for the failure of each equipment, the suggestion can be:

- Bridge Watch Condition III;
- Hand steering (on bridge or from steering gear room);
- Steer using magnetic compass;
- Establish a proper communication between Bridge, ECR and (eventually) steering gear room;
- Adjust speed according to the surrounding situation/weather conditions;
- Increase lookout;
- Fix on paper charts the last available ship position and start navigation using them;
- Apply the specific suggestions about the failure of each bridge equipment as stated above;
- If some GMDSS equipment still working, broadcast Safety/Urgency message as applicable and try to establish a contact with the closest MRCC and/or VTS.
- If the ship is eventually equipped with IRIDIUM apparatus (as antipiracy device), it can be used to establish a contact with Company and/or Authorities;
- Keep ready the ALDIS lamp with portable battery for communications with other ships;
- According to surrounding traffic situation, evaluate the possibility to switch on the NUC signal. If lamps on mast are out of order, hoist the portable lamps taking electrical power from the first available plug.

- **Sub-Scenario b)**

If weather conditions are acceptable, at beginning, this sub-scenario is less worse than the previous one, since all bridge devices are still operating thanks to Emergency Generator and batteries.

However, according to the distance from shore, the Master must manage as far as possible the use of such equipment in order to optimize their performance and try to prolong Generator/Batteries autonomy by the accurate use of linked devices, because it might not be sufficient until the arrival of SAR units. Therefore, following actions are to be taken immediately:

- Bridge Watch Condition III;
- Bridge Team ready to hand steering and to use magnetic compass. Proper calculation of magnetic deviation is to be carried out in advance;
- Switch on/hoist NUC signals;
- Inform Company, Authorities and other involved parties;

- Broadcast Urgency/Distress message (as appropriate) from all available devices and take note of eventual acknowledge (shore station or ship);
- Start to collect any possible information about weather forecast;
- In order to minimise the consumption of E/G fuel, optimise the use of bridge equipment (e.g. keep only one radar and ECDIS on);
- If it is practicable, switch off periodically the E/G, using emergency batteries only, and try to transfer by cans suitable gasoil from engine room tanks to E/G tank to increase its autonomy.
- Increase the frequency of position fixing and start to calculate eventual current data acting in the zone (speed and direction), considering the prevailing winds. All data are to be recorded also on a paper log (e.g. bell book) in order to be still available when electrical power will be no longer available;
- The gathered data are to be transmitted regularly to Company/MRCC, in order to allow to them a proper coordination of rescue operations and to have sufficient information to reach the ship even if the data flow may be interrupted.

- **Sub-Scenario c)**

Usually, the 'sub-scenario c)' is the direct consequence of the 'sub-scenario b)', especially when the ship is far more than 3-4 sailing days from any rescue units.

The ship is in danger and at the mercy of the elements. The emergency Generator and batteries are off and the ship is in complete blackout at sea.

However, as long as other displeasing factors do not prevail (such as bad weather conditions, proximity to hazardous objects, etc.), the ship can be still considered the safest place where the crew can remain. Awaiting rescuers, Bridge Team can still do something:

- Verify if one or more above actions are applicable/practicable;
- EPIRB can be activated in order to allow the ship's detection and monitoring by the involved SAR centres when the transmission of data will be interrupted;
- Carry out position fixing using traditional methods, tools and publications (relative/polar bearings, sextant, paper tables, almanacs, plotting ships);
- ALDIS lamp and pyrotechnics signals are to be kept ready in event of sighting of approaching ship or aircraft;
- During night, in fog or in rough sea, especially when it is reasonable that rescuers are approaching the ship, a SART may be triggered to facilitate the identification of the vessel.

Obviously, these devices have not a long autonomy. Therefore, to save energy their use is to be done sparingly.

Conclusion

Despite today the technology allows a quickly and safely navigation, the ship largely depends from the availability of electrical power and it is still exposed to the risk of malfunctions and breakage of electronic equipment and devices. Therefore, in the evaluation of overall risks, these two aspects shall not be underestimated.

Consequently, the training of bridge personnel should not be targeted only to the correct use of equipment but also to acquire proper competencies able to identify their malfunction or breakage and to carry out proper actions. Therefore, Deck Officers need to be familiar on limits and typical failures affecting each equipment, on how to detect possible malfunction, on how to face and remedy to their

breakdown and to the eventual routine maintenance that may avoid them.

Since on board are already scheduled periodical ECDIS Drills, during which the Bridge Team has to face to a possible breakage of interfaced equipment, the content of this instructions can be used to create additional scenarios and to increase the Officers' knowledge about the measure to be placed to keep the ship safe to sail and to reach the closest port.

Also, these drills are useful to keep trained Bridge Team and accustom OOWs about the use of traditional tools and methods, without any application of electrical power.

Drills should last long enough to allow the effective use of manual/visual ancillaries (e.g. pelorus, sextant, etc.) paper nautical charts and publications (tables, almanacs, plotting sheets, etc.).

Then, the use of software, digital publications and electronic spread-sheets able to simplify these calculations must be strongly discouraged by Masters.

44.20.18 Bridge ME Control System

In the event that there is a telegraph failure, the Officer of the Watch shall call the Master and perform the following:

- Inform the Engine Control Room (if attended) or the Engineer on duty (if ECR unmanned).
- ME Control switched to the engine room.
- Shift from automatic to manual steering.
- Emergency order transmission system with engine room tested again (if applicable).
- Enhance communication with Engine Control Room by internal phone system or other means.
- Inform the Company.
- Check position of vessels in the vicinity.
- Check that “not under command” lights / shapes are ready.
- Continuous watch on channel 16 VHF.
- Note time of failure.
- Check cause of failure.
- Check if spares required.
- Check if shore service engineer required.
- Enter facts in the deck log book.

44.20.19 GMDSS station failure

All our ships are provided with all required apparatus to safely operate in area A3.

However, since during the ocean passages and in a lot of sea areas the coverage of communications is ensured only by satellite, the most important apparatus are the INMARSAT C (or simply SAT C) terminals. In fact, in case of failure of both SAT C terminals, the ship is unable to transmit and receive any Emergency / GMDSS messages by LES.

Therefore, the Company and Shore-based Maintenance provider are to be immediately informed. DSC transmission tests shall be carried out on all other GMDSS apparatus (HF/MF and VHF) and they must be kept ready for use. Additional training on their use and, mainly, on the ‘International Code of Signals’ shall be carried out to all Deck Officers. As far as practicable, the navigation planning may be arranged in order to be within the MF/HF frequency range. In case of emergency situation, the activation of EPIRB and/or SART shall be considered.

Also, to ensure that no other communication apparatus have suffered damages, additional functional checks/tests shall be carried on all communication equipment, including AIS, LRIT and SSAS.

A pre-formatted message for major emergency situations may be prepared and saved on email

computer in order to be easily updated and quickly transmitted if necessary.

Another aspect that to be considered is the loss of MSI and long range Forecasts (Maritime Safety Information) messages. In this case, the NAVTEX stations are to be set in order to include all relevant MSI warnings and Forecasts stations. In case of change of NAVAREA, the new stations are to be manually changed in order to be sure that they are effectively selected. If available, the access to specific MSI / NAVAREA's websites are to be requested to the Company and activated.

44.20.20 Electrical Power Failure / Black Out

In case of electrical power failure, notify the Master and exhibit 'Not Under Command' lights or shapes. Local authorities and any other vessels in the area shall also be informed. At the same time, the Master shall determine if any danger exists to the vessel, ship or crew.

Following actions shall be taken:

- If there is a danger of grounding, consider salvage or anchoring.
- Investigate and locate the defect.
- Check that the power source prime mover is operating.
- Ensure emergency power supplies are operational.
- Check reserve power / preference trips sets.
- Set all standby pumps to manual start up.
- Restore switchboard power.
- Restart all required pumps and auxiliary machinery.
- Check that the appropriate ship side valves are open.
- Restart ventilation fans for engine room and accommodation.
- Prepare for sea going condition – i.e. all systems normal.
- Restart main engine.
- Set standby pumps to auto mode.
- Check sewage system.
- Inform bridge that power mode is restored.
- Document incident in log books.

When electrical power failure occurs, the Master shall report to Company the following information:

- Date and time of failure.
- Vessel's position and situation at the time of failure.
- Relevant circumstances surrounding the failure.
- Cause of failure.
- Whether power is restored satisfactorily and correction action taken.
- Duration of power failure and any potential delays.
- Whether or not assistance is required.

a) Engine room actions

In automated ships, a blackout (main power source failure) is resolved by the automatic starting and connection to the main switchboard of the generator in stand-by. If the vessel is equipped with an

emergency generator, this will also start automatically and connect to the emergency switchboard.

If the automatic arrangement fails, the engineer on duty will go in the engine room and:

- Switch the automatic system to manual.
- Start the stand-by or any other available generator manually.
- Connect the generator to the main switchboard.

On traditional manned engine rooms, the resolution of the blackout is detailed in a standing order issued by the Chief Engineer for every ship.

If both the stand-by generator and the emergency generator fail to start, emergency batteries will supply power to the emergency circuits only.

The emergency generator reserve fuel tank must be always provided with sufficient fuel to guarantee the minimum running hours required by SOLAS (18 hours). The minimum quantity of fuel allowed and the limit level are to be clearly marked on fuel tank.

b) Bridge actions

The OOW should be aware that at any time the vessel can blackout and although emergency power may be available, a time lapse will occur before full power is restored.

Emergency lighting, communications, steering, whistle, and some navigation aids will be still available but the OOW must be clearly informed on available equipment for each individual vessel. Under the responsibility of the Master, a list of navigational and communication equipment available in the event of a blackout is to be posted on the bridge. In case of blackout the OOW will:

- Inform the Master.
- Continue the watch using the apparatus powered by batteries.
- Show the proper signals according to Collision Regulations 1972
- Consider that the gyrocompass and the steering gear are inoperative.

c) Starting from dead ship condition

It is one of the worst condition at sea, under which the main propulsion plant, boilers and auxiliaries are not in operation due to the absence of power, usually caused by an important emergency situation. If the time elapsed from loss of power is more than 8 hours or there are damages to specific machinery, it is possible that compressed air, starting current from batteries etc. is not available for the recovery of the main power supply, for the restart of the auxiliaries and for the start-up of the propulsion plant.

Assuming that the equipment for start-up of the emergency diesel generator is ready for use and ships' machinery installations are designed to allow a gradual restart from dead ship condition, following steps are to be used:

- Disconnect/unplug all electrical/electronic equipment and devices that are not necessary during the start-up, avoiding damages caused by possible electric high peak/shock wave on restart;
- Reset emergency power buss to normal ships power and Move switch from emergency generator to reset to normal
- By using battery/spring load, start the emergency/backup generator. Now enough power for emergency lighting/air compressors/fuel/lube oil and main engine cooling pumps is available;
- Start the air compressor and run until cylinder is filled with enough pressure (usually

15/30bar);

- Simultaneously start the engine cranking with air, fuel /lube oil pumps and cooling pumps;
- Achieve rated RPM and rated voltage on generator and charge the MSB.

When main power is restored and no potential dangerous situation is reported (incoming bad weather, drifting to shoals/shallow waters, etc.), all disconnected/unplugged electronic equipment are to be gradually switched-on and must be checked and reset as necessary, paying utmost attention that all alarms and setting are according to instructions and procedures and no default parameters are loaded. Otherwise, priority resume propulsion must be given.

When all check and tests are successfully carried out the Main Engine can be re-started and sea passage can be resumed. As soon as possible, all departure tests required by SOLAS Reg. V, CFR and Italian Decree 435/91 are to be carried out.

44.20.21 Toxic Gas Release

The releasing of toxic vapours could put at risk the safety and health of the crew and of any other people. It is very important in case of toxic vapours release that the Master immediately informs the authorities in order to protect and safeguard the health of all persons. The person who discovers a toxic cargo release will inform immediately the officer on duty.

The officer on duty must:

- Raise the general alarm.
- Inform the Master.
- Stop all cargo pumps and close all valves.
- If alongside inform the loading Master and implement emergency stop procedure as agreed.
- If at sea steer to avoid toxic gases to come close to the accommodation spaces.
- If at sea inform the engineer of the watch to close the requested sea chest.
- Assess if there are any casualty.
- Stop ventilation and close all unnecessary air intakes in order to stop toxic gases from entering accommodation and engine room.
- All personnel should wear gas masks fitted with suitable filters.
- Keep fire-fighting equipment ready.

Inform coastal/port authorities following SMPEP/VRP procedures

44.20.22 Toxic Liquid Release – At Anchor and at Sea

The releasing of toxic vapours could put at risk the safety and health of the crew and of any other

Whenever there is a toxic liquid release, raise the general alarm and inform the Master. Assess if there are any casualties and ensure that personnel are in the proper protective clothing with masks with suitable filters.

- If the vessel is at anchor, notify any vessels in the immediate area of the situation and consider moving the vessel away from any other vessels in the area.
- If at sea, steer the vessel to avoid toxic gases from coming close to the accommodation spaces.
- Keep fire fighting equipment ready.
- Inform coastal / port authorities following the SMPEP / VRP procedures.

- Any clean up will be done in accordance with the instructions provided in the *Chemical Data Guide for Bulk shipment by Water*, copy of which is kept onboard.

44.20.23 Toxic Liquid Release – At Terminal

If a toxic liquid release occurs while the vessel is at a terminal, raise the general alarm and inform the Master immediately. If the release occurs during cargo operations, stop all cargo pumps and close all valves. Inform the loading Master and the terminal. Implement the emergency stop procedure as agreed in the pre-transfer conference. Following actions shall be also taken:

- Assess if there are any casualties and ensure that personnel are in the proper protective clothing with masks with suitable filters.
- Close all unnecessary air intakes in order to stop toxic gases from entering accommodation and engine room.
- Consider if vessel should be moved away from the terminal to avoid toxic vapour contamination of the local public.
- Keep fire fighting equipment ready.
- Inform coastal / port authorities following the SMPEP / VRP procedures.

Any clean up will be done in accordance with the instructions provided in the *Chemical Data Guide for Bulk shipment by Water*, copy of which is kept onboard.

44.20.24 Chemical spillage and toxic vapour release

The following incidents may cause chemical spillage and consequent release of toxic vapour:

- Volatile liquid leakage while loading / unloading or while draining the lines.
- Vapour release through tank pressure relief valves.
- Spillage resulting from inadvertent cargo hose disconnection.
- Pipework fracture.
- Mechanical failure of equipment or instrumentation.
- Vapour release through tank raiser (malfunctioning of PV valve).
- Spillage from cargo flex. Hoses or load/disch. arms.
- Release from vapour return line/hose.

In case of vapour release, the first requirement is to detect the source of emission and to alert the Officer of Watch or the shore installation as soon as possible. The second requirement is to minimise the emission isolating the source.

The control of liquid spill and vapour emission will be carried out activating the appropriate equipment such as: emergency shutdown of cargo pumps - valves - water spray using main fire line and nozzles. All air intake into accommodation spaces, service spaces and control rooms must be closed. If at sea, hazardous vapour emission must be carried away from Accommodation and Engine Room intake by manoeuvring the ship, according to the wind direction.

In the event of a spill, the characteristic of the different chemical products should be considered when deflecting or dispersing vapours. It should be noted that vapours evaporating from chemical spill will tend to lie low, since only few are significantly lighter than air at ambient temperature.

A vapour cloud may be safely dispersed by wind. Where possible, personnel should remain upwind of the spillage. A water spray may be used on **unignited** leaks to assist in the dispersion of vapours from volatile chemical spill and can also be used to deflect the vapours away from an

ignition source. This technique will be used:

- When chemical vapours are compatible with water.
- To dilute vapours below their lower flammable limit.
- To protect ignition sources controlling the direction of the flow of the flammable vapour clouds.
- To divert flammable clouds from sensitive areas, such as confined spaces where a detonation may occur at ignition.
- To assist the diversion of toxic clouds from areas occupied by people.
- To absorb some vapours into solution in the water.

The performance of water sprays, in diluting and controlling the direction of vapour clouds, reduces with increasing wind velocity. Water sprays are not suitable to act as an impenetrable barrier; they only dilute vapour clouds passing through them by mixing with air. Effectiveness of water spray containment or dispersal should be always be checked using a portable gas detector.

Personnel conducting the controlled dispersion of flammable or toxic vapour clouds and personnel checking on the vapour concentration actually present should wear protective clothing to protect them in the event of ignition.

They should also wear self-contained air-breathing apparatus. The air-breathing apparatus should be of the positive pressure type to minimise the ingress of toxic gases through the face/mask seal. The communications equipment used must be intrinsically safe for use in flammable atmospheres.

The personnel should always be directed to respond upwind of such clouds.

However, it is recognised that this is not always possible and may be required to enter a vapour cloud to locate and isolate the source of the leakage. Should this be necessary, lifelines should be used and personnel kept protected by water spray. A Rescue Team, equipped with protective clothing and breathing apparatus, should be ready for immediate intervention.

The best refuge from potential fire, explosion or toxic hazard is within the ship's accommodation or inside a designated pressurised safe shore building where is protection from toxic vapour. Consideration should be given to wind direction to decide the safest escape route (which is normally across the wind) and the safest under-cover protection.

44.20.25 Explosion

An explosion on board may have immediate and continuous threat of fire, pollution, and injuries. Depending on the severity of the explosion, the following steps should be taken:

- Sound fire alarm and send crew to fire stations.
- Call Master and advise the engine room.
- Stop all cargo, bunker, and ballast operations.
- Inform the Company and provide for VDR data saving.
- Evacuate from the area all non-essential personnel and passengers.
- Check for missing crew and for injured crew.
- Call for assistance (by available means) as per Master’s instruction by radio
- If At sea, fix the ship’s position. Inform other vessels in the vicinity and report to nearest coastal station;
- At sea, exhibit “not under command” lights / shapes;

- Assess damage to vessel and cargo.
- If there is serious damage to hull, prepare lifeboats.
- Establish cause of explosion.
- If explosion is followed by fire, refer to the appropriate response via checklists.
- If the situation is under control, check draught, stability and stresses.
- Notify interested parties, including Class, P&I, H&M
- If pollution has occurred, refer to SMPEP / VRP for additional reporting requirements.

44.20.26 Jettisoning of Cargo

The jettison of cargo is an extreme measure justified only as a means of saving life at sea or ensuring the safety of the vessel. A decision to jettison should therefore not be taken until all the alternative options have been considered in the light of available information on stability and reserve buoyancy.

If it is necessary to jettison the cargo the following precautions should be taken:

- Contact shore authorities (Company, emergency response service, coastal state contacts).
- Display light or shapes according to COLREG 72 as amended.
- Inform the Engineer Officer in charge of the watch.
- Fix ship position before commencing the operation and keep it updated.
- Warn ships in vicinity on VHF channel or other means available.
- Keep continuous watch on channel 16 VHF.
- Provide for VDR and ECDIS data saving (where possible/applicable).
- Stop all cargo operations and close all unnecessary valves.
- Close all accommodation doors and openings (keep ventilation on closed-cycle recirculation).
- Set up fire hoses in order to create a water fog curtain in the vicinity of jettisoning point to dissipate and prevent the return of vapours toward the ship.
- Fire fighting system operational and fire station manned.
- Fire fighting equipment, breathing apparatus and resuscitation equipment readily available.
- Personnel involved in the operations must wear protective equipment.
- Potential sources of ignition are identified and isolated.
- The ship should keep the wind speed from astern or move astern so that the superstructure and afterdecks remain clear of the cargo vapour.
- The cargo hoses are to be lowered to the sea level as close as possible and properly rigged.
- Manifolds not connected to cargo hoses used for the jettison must be blanked and fully bolted.
- Engine sea suction in use is on opposite side of the discharge.
- Alert engine room personnel. Depending on the circumstances, they should change engine room sea suctions from high to low and/or port to starboard.
- Close all non-essential inlets.
- Discharge the cargo through underwater discharge.
- If discharging is from deck level flexible hoses should be rigged to extend below the water surface and ensure that the discharge is done from the leeward side.
- Take all safety precautions usually observed in where flammable and/or toxic gases are present. (Stop ventilation, close air intakes, make ready gas masks etc.).

- Fill in an ullage report before jettison and after jettison.

44.20.27 Cargo Hose Bursting – Cargo Pipe Leaking

Piping leakage or hoses bursting will usually cause the release of cargo on deck. When piping or hoses burst, cargo could also be released at sea.

As soon as the duty officer is informed about the contingency will:

- Inform the Master.
- Stop all cargo pumps.
- If alongside, implement emergency stop procedure as agreed with loading Master.
- Assess if there are any casualty.
- Drain all cargo lines to the most convenient cargo tank or to the slop tank.
- Stop ventilation and close all unnecessary air intakes in order to stop toxic gases from entering accommodation and engine room.
- As soon as the leak is stopped, implement clean-up procedure immediately.
- Clean-up team should wear appropriate protective clothing including breathing apparatus.
- Keep fire-fighting equipment ready for use.
- Inform coastal authorities following SMPEP / VRP procedures.

44.20.28 Entry and Rescue in an Enclosed Space

According to SOLAS requirements (as amended by IMO Res. A.1050(27)) and Company MSEQ Procedures 10 and 17, it is Company intention to ensure that all relevant personnel with enclosed space duties are familiar with relevant equipment, receive proper training to carry out their duties and identify and understand the hazards associated with entry into enclosed spaces, in order that any necessary enclosed space entry will be done in as safe a manner as possible.

In the event of a real rescue of a victim(s) from an enclosed space, the Rescue Team must be mustered as quick as possible. If a lack of breathable atmosphere is ascertained, the Rescue team can face with following two basic situations:

(i) The victim is still breathing when the rescue team arrives;

(ii) The victim has stopped breathing.

In either situation, the rescuers must administer oxygen or air to the victim in the shortest time possible. When a person has been overcome by hydrocarbon gas, permanent brain damage could be noticed if oxygen will be supplied over four minutes from the loss of consciousness. Therefore, a thorough knowledge about the resuscitation techniques is crucial to save the victim(s).

In order to minimise additional risks, the Rescue Team that may operate in an enclosed space will consist in 3 persons with following main duties:

- 1 Officer duly trained and confident with First Aid/Resuscitation techniques and in strictly contact with personnel in attendance outside the enclosed space;
- 2 Ratings trained in moving of injured people and able to hoist up an incapacitated or unconscious person in tight spaces. They may operate with breathing apparatus.

However, in the case that more people are to be rescued, the consistency of Rescue team can be properly sized

The checklist EMCY 29 is to be used to assist the personnel on site to cover all aspects which may be forgot in the heat of the moment.

In order to be always ready to face a similar emergency situation, a specific drill on 'Entry and Rescue in an Enclosed Space' must be carried out in a safe manner at least **every 2 months**, taking into account, as appropriate, the guidance and the recommendations developed by the flag Administration and/or by the International Organizations.

The aim of such drill is the familiarization of crew members about :

- the familiarization with techniques to clearly identify the areas considered confined/enclosed spaces and for recognizing, evaluating and controlling hazards associated with entry into enclosed spaces specific for Oil/Chemical Tanker;
- the shipboard areas identified as confined/enclosed spaces;
- the identification of the hazards likely to be faced during entry into enclosed spaces;
- recognition of the signs of adverse health effects caused by exposure to hazards during entry;
- the knowledge and check of additional personal protective equipment required for entry & rescue;
- the check and use of communication equipment and procedures;
- the check and use of instruments for measuring the atmosphere in enclosed spaces;
- the check and use of rescue equipment and procedures; and
- the first aid and resuscitation techniques specific for enclosed spaces.

Therefore, in preparation of such drill, the Master and Chief Officer have to arrange suitable scenarios, taking in consideration the worst situation that Rescue Team/crew could be face. It have to include the simulation of rescue, transportation and lifting of a dummy with stretcher and Rescue crane from an enclosed space, in order to train the team to cope with all the difficulties they might face in this type of rescue. The applicable outputs of such drills will be used to review Risk Assessments/Procedures accordingly, improving safety measures on board.

The evidence of drill will be recorded using the form 'MSEQ 28 - Drill Report' where will be entered the description of scenario, the list of participants, the best practices / lesson learnt highlighted, the training needs reported, any suggestion for improvement.

To the MSEQ 28 will be attached also following forms in order to demonstrate the:

- EMCY 29 - Entry and Rescue in Enclosed Space: familiarisation on the actions to be carried out in event of a real emergency situation;
- MSEQ 18 - Enclosed Space Entry Permit: familiarisation about the procedures for a safe entry into an enclosed space;
- TEC 03 - List of Portable instruments: training on use and testing of portable gas detectors.

For such purposes, the briefing/debriefing of drill is to be used for a specific training to crew members. In addition, recognised CBT videos can be used as support (please strictly refer also to MSEQ Proc. Chapts 10 and 17).

44.20.29 Search and Rescue

Search and rescue (SAR) comprises the search for, and provision of aid to, persons who are, or are feared to be, in need of assistance. The two operations - search and rescue - may take many forms, depending on whether they are both required, on the size or complexity of the operation and on the available staff and facilities. Every vessel owned or managed by the Company is supplied with the IMO *IAMSAR Manual - Vol III*. The manual covers the search for, and rescue of any person in distress at sea.

Master and Officers should be familiar with the content of the manual. It should be always consulted whenever the vessel participates in search and rescue operations.

Large instructions, suggestions and best practices are available in the Company **'Rescue & Recovery Plan'**.

44.20.30 Unexpected List

Unexpected list of the vessel may be caused by flooding of compartments or loss of stability. Possible actions are:

- Call Master.
- Stop all cargo/ballast/bunker operations.
- Sound general emergency alarm.
- Ascertain cause of the unexpected list (Failure of hull plating, failure of a bulkhead, etc)
- Measure list angle.
- Alert vessel's crew.
- Consider stopping / altering course of the vessel.
- Assess effect of list on hull machinery, pumps and pipes.
- Assess vessel sea-worthiness and extent of problem.
- Exhibit light/shapes if necessary.
- Check crew for absence/injury.
- In case of oil spill refer to SMPEP or VRP plan if within USA territorial waters.
- Send navigational warnings to vessel in the vicinity.
- Continuous listening on channel 16 VHF.
- Switch on deck lights.
- Sound all tanks and bilge and compare soundings with departure soundings
- Secure isolation valves.
- Fix vessel position on chart, log it and pass to radio room, satellite terminal and other automatic distress transmitters, updated as necessary
- If necessary determine assistance needed tugs/salvage/navy/rescue
- Inform the Company.

Please refer also to the next paragraph about the loss of stability while at berth.

44.20.31 Tank failure, leakage or overflow

In case of tank failure, leakage, spill or overflow with pollution or risk of pollution, the Master should refer to the relevant chapter of the ship's SMPEP or VRP. In these circumstances there may also be safety and health hazards that depend exclusively on the characteristics of the cargo. These hazards are evident if the leakage, spill or overflow concerns flammable or toxic cargoes and affects the inner compartments of the vessel (ballast double bottoms or tanks and void spaces).

The instructions given in the following paragraphs may be beneficial in order to avoid injuries to the personnel and further damages to the ship and environment. In case of spillage or overflow, please refer to specific instructions included in the relevant ship's SMPEP or VRP.

ATTENTION: Chemical dispersants are an important option which should always be considered in the most effective 'first stage' of a response strategy. However, their usage is regulated by each

Government that have identified several approved products and different modes of intervention.

In case of spill at sea, the use of oil dispersant from ship is to be authorized by local Administration.

a) Leakage of Flammable Products

When hydrocarbons are detected in a ballast compartment (double bottoms or tanks) or void space, precautions are to be taken in order to avoid fire or explosion.

It should be noted that, due to the complexity of the tank structure, an explosive atmosphere may exist even if hydrocarbon level readings are outside the explosive range. It is essential that readings are taken at different levels at as many points as possible. The Master assisted by the Chief Mate, assesses the situation and decides on the most appropriate corrective action.

- If a hydrocarbon leak into a water ballast tank or void space, the first step is to check the atmosphere in all ballast tanks, cofferdams and void spaces to measure the flammable gas content/hydrocarbon level, ensuring that readings are taken at as many different points and levels as possible.
- The affected tank or void space is sounded regularly. All tanks are checked for possible cargo ingress.
- The Chief Mate rechecks cargo quantities in all tanks surrounding the affected area. He compares these results with the figures recorded at the end of loading in order to identify the source and degree of leakage.
- According to the assessment of the situation, the Master considers the following options:
- Continuous ventilation of the tank, with regular soundings to check leakage rate.
- Inerting the tank, while continuing to monitor the leakage.
- Filling or partially filling the tank with ballast water.
- Fitting all tank openings and vents with flame screens.
- Transferring the spilled liquid from the D/B into an appropriate cargo tank.
- Employing a suitable combination of the above options.
- Once the leaking cargo tank has been identified, the Master considers transferring the cargo to another cargo tank(s). The chosen transfer method must be safe taking into account the explosion hazards, and minimise contamination of space(s).
- Prevailing factors such as stress, trim, stability and loadline are taken into account when deciding to either fill the D/B tank with ballast water or to transfer the cargo.

As far as possible, entry into the tank should be prohibited until it is safe for entry and there is no further possibility of oil ingress. However, if it is deemed essential to enter the tank for any reason, such entry must be carried out in accordance with the procedures outlined in the **Health and Safety** procedures of this manual.

b) Leakage of Toxic Products

If the leakage concerns toxic products, in addition to the precautions considered in the preceding paragraph, additional precautions should be taken in order to avoid injuries to the personnel due to the toxic characteristics of the cargo. In case of flammable or toxic leakage, analyze atmosphere in adjacent tanks. Evaluate if shore support is necessary (transferring the cargo to another ship; sea cleaning; stability and stress calculations, etc.). Interested parties shall be informed about the event and possible health & safety hazards.

44.20.32 Heavy Weather Damage

Weather forecasts shall be regularly received, at least twice each day. The voyage planning should be adjusted to avoid dangerous heavy weather areas such as hurricanes. When the heavy weather cannot be avoided, the Officer of the Watch shall reduce the ship speed and/or alter the course to reduce the slamming, pitching and vibrations as much as possible.

He shall inform all the shipboard personnel to allow them to take the necessary actions to avoid damages and/or injuries so that the vessel is in safe conditions under every respect. He shall ensure that all deck openings are closed and all moveable parts and objects are secured.

Actions to be performed when heavy weather is likely to be encountered are reported in the "Navigation in heavy weather or in tropical storm areas" checklist always available on the bridge as guidance.

44.20.33 Medical Emergency

Ship's crew shall be trained to face to medical emergency on board. Such emergency may include, injures, sickness, poisoning, exposure to cold climate / hypothermia (related to crew member(s) and/or to person(s) recovered from sea). Therefore, drills with proper scenarios are to be carried out according to Company Drill Planning (form MSEQ 10). In order to provide proper first aid / initial medical assistance on board, the Company vessels are equipped with a hospital facility, medical chest (including medicines and other medical/surgical equipment according to standards prescribed by the World Health Organisation (WHO) and Flag State requirements.

At least one crew member (usually Master) has to hold the Medical Care training course. In any case, the Master remains responsible for the detention of substances considered narcotics and for the distribution of medicines. However, under his/her supervision, he/she may delegate the distribution of ordinary medicines and the keeping of medicine inventory to a qualified officer that acts as 'Medical Officer' (see also the MSEQ Proc. Chapts 19 and 20).

Medical assistance

Vessels are equipped with the guidelines 'International Medical Guide for Ships'. Ships that eventually carry harmful Chemical substances are equipped also with the Medical First Aid Guide for use in accidents involving Dangerous Goods (MFAG).

The Master and the officer responsible for the medicine chest consult these books whenever a person on board is ill, or is involved in an accident. The Master does not hesitate to ask medical advice if necessary and by any means available such as:

1. Through the agency if in port.
2. Through the international radio medical service when at sea (i.e. CIRM).
3. From vessels in vicinity which might have a doctor on board.

If there are language difficulties, the Master will use the Medical Section of the International Code of Signals, to communicate with other stations. The Admiralty List of Radio Signals – Vol. 1, contains information about coast stations offering the radio medical service. In case that a sick person is to be evacuated by helicopter, please refer to the next paragraph on this matter.

Any illness/injury shall be communicated to the Company (DPA / Crewing Coord.), recorded in the appropriate Logs (i.e. Ship's Official Logs, Medical Log, etc.) and all forms required by flag Administration are to be prepared (including possible Incident Report), especially in case of disembarkation (see also the following paragraph 'Medical Evacuation').

44.20.34 Salvage (see also previous subparagraph 44.20.14)

a) Lloyd's Open Form (LOF) of Salvage

LOF is an internationally known salvage contract, based on the "no cure no pay" principle, which fix the compensation to be granted to the salvors. The no cure no pay provision has the effect that if the salvor does not save the vessel or her cargo, he receives no payment for his services.

As a rule LOF shall be undersigned by the Master in his capacity of chief of the common adventure, who engages in this way individually and separately the interests of the safety of the life, of the vessel and of the cargo. The responsibility of the salvage operations' burden is totally on the rescuer, who will receive compensation only in case of success.

In particular cases (for example when the rescuer cannot materially board the vessel) it is possible that the LOF shall be stipulated by telex or even by radio. A LOF can be agreed orally or by radio by sending the following message: "ACCEPT SALVAGE SERVICES ON BASIS LLOYD'S STANDARD FORM LOF (current edition) NO CURE NO PAY ACKNOWLEDGE REPEATING FOREGOING. MASTER .....". Log date/time of transmission and text in Radio logbook and Navigation logbook.

b) Master responsibility

Master has authority to ask salvage services and reach an agreement with salvors whenever he deemed it necessary. He must not constrained by commercial pressures.

When a ship managed by the company suffers a casualty, or is otherwise in a position of peril, the Master must decide as a matter of urgency whether assistance, including salvage assistance, is needed or if the situation can be handled using the ship's own resources. The Master should immediately assess the dangers to which the ship is exposed and the urgency with which assistance is required from outside sources. It is better to overreact on the side of the safety and pollution prevention than delay action in the hope that the situation will improve. When making judgments, it should be considered that the situation would not improve.

Engaging salvors does not alter the authority of the Master. He remains in command of the ship despite the presence of a Salvage Master and he should therefore ensure that he is fully aware of the action taken in the rendering of salvage services. Even though services have been accepted and assistance is being rendered, the salvor must cease his service if requested by the Master.

The Master should co-operate fully with salvors, and in so doing exercise due care to prevent or minimise damage to the environment. He should take in account of any advice given by the salvage Master. If in doubt the Master should not hesitate to advise them, bearing in mind his overriding authority.

Where time and circumstances permit, the Master together with the owners will agree with the salvors to the terms on which the salvage services will be rendered with the authority of other parties with interests in the vessel who will benefit from the salvage services. Therefore, when salvage services are required, it is important that the Master informs owners as soon as the casualty occurs to avoid increasing of salvage services fees.

It is stressed that the Master only has authority to reach an agreement in cases where the vessel, her crew and cargo on board are in imminent danger and there are no reasonable opportunity to contact the Company. In the event that the assistance is immediately necessary the Master should follow, as far as possible, the general guidance stated in the next paragraph.

c) Recommendations to Master

Avoid accepting unconditional or generic assistance offers, or services offered by means of power

obviously inadequate, but require rather the signature of a salvage contract at the conditions “no cure - no pay”.

For the salvage contract avoid using unusual or unknown forms proposed by local rescuer. Resort to “Lloyds Standard Form of Salvage Agreement - No cure No pay (LOF)” and fluently called “Lloyds Open Form” or abbreviated to “LOF”. Reject any possible rescuer’s demands to introduce changes to the LOF form or additional clauses not foreseen in the form.

When the LOF has been undersigned, the responsibility of the operations is transferred to the rescuer who has stipulated it. Therefore, reject absolutely any further offer of intervention of extraneous means, inviting them if necessary to contact the rescuer that has stipulated the LOF.

When salvage operations have commenced under the responsibility of the rescuer’s Salvage Master, refrain to carry out engine’s stress or other measures which could cause damages to the vessel except for those precisely requested (if possible in writing) by the Salvage Master.

Record in the logbook (bridge, engine, and radio) or in another document, a careful and objective diary of each and every salvage operation, without emphasising or minimising the importance, reporting also the weather. This will be used later to discuss the compensation with rescuer.

At the end of the salvage operations, do not accept the “redelivery” of the vessel through countersignature of the relative certificate submitted to the Master by the rescuer. If the vessel has not been really brought in the position of redelivery foreseen in the LOF form, or in any case, if she is not in a totally safe condition, the Master will not accept the redelivery of the vessel.

44.20.35 Loss of stability at berth

A loss of stability at berth may be caused by a non-observing of loading/discharging procedure, equipment malfunction or defects. Possible actions to be carried out are as follows:

- Stop all cargo/ballast/bunker operations
- Call the Master
- Inform the Terminal,
- Inform the Company, Local Agent and Port Authority
- Muster all crew. If necessary sound general alarm and/or the established signal agreed with the terminal in the Ship/Shore Safety Check List (SSCL)

In order to ascertain the cause of loss of stability, shipboard personnel have to:

- Sound all deck and engine tanks and void spaces (cargo, ballast, bunker, etc.) and compare the resulting measures with the planned ones;
- Check bottom flat of pump room (where fitted) and bilge areas, especially on side where the ship is listed;
- Ensure that sea chest and other hull's opens are free of leakage;
- Assess effect of loss of stability on hull, machinery, pumps and pipes;
- Verify that the fitted gauge/level sensors in all tanks or void spaces working properly;
- Verify that all automatic valves on cargo, ballast and bunker lines are in correct open/close position;
- In case of oil spill refer to SMPEP or VRP plan if within in USA territorial waters;
- In case of flooding, refer to the instructions stated in the above paragraphs;
- Warn the vessel in the vicinity;
- Check and secure isolation valves;

- Assess the effect of the wind and sea condition;
- If necessary determine external assistance needed (tugs, class surveyor etc.);
- Consider the possibility to rectify the situation by corrective tanks.

In any case, during transferring of liquids on board (cargo, ballast and bunkering operations) must be planned and programmed so as to avoid exceeding in free liquid surfaces, allowed draught, trim or list requirements while at the same time keeping shear force, bending moments and metacentric height within the prescribed limits.

44.20.36 Uncontrolled Venting

There are preventive measures and actions to be taken regarding vent valves and pipes.

Preventive Measures

- Vent valves and pipes are regularly maintained.
- When applicable and possible, vent valves are tested before starting cargo operations.
- Where isolating valves are provided, check that they are correctly set.
- Tracing steam/oil to vent and cargo pipes opened and checked (for certain types of cargo and/or cold climates).

Actions In Case of Uncontrolled Venting

- Stop cargo operations and inform the terminal.
- Inform the Master.
- Try to close manually the vent valve acting on its test lever or beating the valve body with a no sparking tool.

When the Vent Valve Cannot Be Repaired

- Empty the tank.
- Wash the tank and discharge residues ashore.
- Gas free the tank.
- Repair the vent valve.

44.20.37 Helicopter evacuation

General guidelines

At first instance, most ship's managements tend to underestimate the possibility of a helicopter rescue at beginning of an emergency situation. Should one become necessary, there are specific steps that must be taken to ensure a safe crew's evacuation.

Basically, there are three hoisting scenarios: abandoning ship, a medical evacuation to remove a sick or injured crewman or transfer survived people on board to another place. In the latter, the ship is secure and manoeuvrable, so the focus is on coordinating the hoist and monitoring the victim’s medical condition. In either case, there are some basic rules, the first being doesn’t panic.

If the ship is sinking, issue a Mayday on VHF channel 16 and activate the EPIRB. Be prepared to switch to another radio frequency, such as 21A or 22A, when instructed. If beyond shore-based VHF radio range, call by satellite phone. Make sure you know the number for the SAR center or Coast Guard in the area you are sailing.

Don PFDs or survival suits, activate chemical lights, strobes or signal lights on the vessel and those attached to PFDs or survival suits. Get your ditch bag ready, including handheld VHF radio, flares,

strobe and smoke signals.

Assess the situation and describe to authorities the conditions aboard the ship (this will help the rescue crew determine what supplies to bring along). Is the ship flooding? If so, tell the Coast Guard so that additional pumps and life rafts can be brought to the scene. Is anyone sick or injured? If so, affix a tag to the victim with a note on injuries. Is there a nurse or EMT aboard? If so, pass that information along. If time allows, pack a resalable plastic bag with the victim, containing identification, medication and personal contact information.

Prepare the ship as though anticipating a hurricane, keeping in mind that an helicopter can send 60- to 70-knot winds straight down onto the deck. Secure hatches, lower flag staffs and antennae and any other light object. They too can be sucked into the helicopter engines and create problems.

The wind direction is an important factor. The pilot will likely approach from the stern with the nose of the helicopter positioned to port. This gives the pilot, who usually is seated to starboard, the most advantageous view of the ship's deck. It also allows the rescue crew to view the ship from the open helicopter door.

The pilot and rescue crew will assess how best to proceed, deciding whether to hoist the victims directly from the ship or from the water, especially if the dedicate winch area is not available for evacuation.

Never fire a flare or shine a spotlight directly at the helicopter. New night-vision goggles are capable of reducing glare from lights and aerial flares, but these can still make it difficult for the pilot to see when close to the ship. Use a smoke signal in daylight and an incendiary flare at night.

Listen for the pilot’s instructions on your VHF radio. In most cases, instructions will first come from a fixed-wing aircraft. It will be noisy to talk by radio once the helicopter is hovering close the ship, especially if evacuation will be carried out from a bridge wing, because the jet engines are noisy.

Everything is easier in daylight. Night-vision goggles are a great tool, but nothing beats the human eye on its own. A hoist evacuation at first light will be much safer and have a greater chance of success than one conducted in the middle of the night.

The pilot will tell you to maintain a certain course heading and speed. Assign someone to the helm until is reasonable to steer. If the helicopter crew determines that a direct hoist from the ship cannot be performed safely because of the conditions (in case of fire or heavy smoke close to evacuation point), could be asked to get into your raft and cast off from the ship or enter in the water. The rescue swimmer will be deployed to the water to help hoist you to the helicopter, either in the rescue basket or in a sling attached to the swimmer. If you are in the raft, you will be asked to get into the water one at a time so that the swimmer can assist you. Wait for a signal from the helicopter crew.

If you are on deck, instructions will be given on when to enter the basket. Never attach a line to the basket, the hoist wire or the rescue hook on the end of the hoist to any part of the basket. This could result in damage to the hoist cable, making it unusable or, worse, cause a snag that snaps the hoist cable, possibly injuring people on deck or doing damage to the helicopter.

Once the basket is winched to the helicopter door, wait until the basket is swung into the aircraft before attempting to get out.

Considering the rescue from the rescue swimmer's point of view also can provide tips. Let the swimmer board from the stern without interference. Swimmers typically wait for a wave to lift them close enough to grab hold of the floating seafarer.

If you want to help, toss a mooring line overboard with a life ring or life jacket attached to the end. Thin poly line can cut through the swimmer's gloves and is difficult to grip. If the evacuation area (if different from dedicated winch area) is spacious, the swimmer may be dropped directly aboard,

presuming there is room to maneuver a stokes rescue litter, in which an eventual victim can be strapped and hoisted easily.

Medical assistance/evacuation

As explained above, when a vessel at sea requires a medical evacuation, lives depend on knowing the right procedure and on advance planning. An oversight or poor planning can endanger the helicopter, its crew, the patient, and the crew of the vessel. **Knowing the right way makes everyone safer**.

Contacting the Helicopter assistance

When you contact a helicopter assistance (usually Coast Guard SAR Department) about a medical problem onboard, be prepared to describe the patient's condition.

The Coast Guard will need to know:

- A description of the illness or injury.
- Is the patient's life in danger? Is the patient bleeding?
- Is the patient conscious?
- Is the patient vomiting?
- Does the patient have a history of similar illness?
- What medications are on board? What medication has the patient been given?
- What are patient's vital signs?
- Temperature, pulse, blood pressure, and blood type.

Tell them the patient cannot walk, to ensure bringing the right rescue device. The more information you have, the sooner the decision can be made on necessary treatment. Know your position, course, speed, and on-scene weather. Distance will be a factor that determines whether a Medical Evacuation (called also **MEDEVAC)** is possible.

For example, the maximum ranges of helicopters HH-60J and HH-65A, are approx. 300 and 100 nautical miles, respectively. This is in ideal weather, ideal weight aboard, and includes going out, hovering for 20 minutes and returning. Bad weather or extra weight may shorten these distances.

A vessel 500 miles at sea needing a medevac will need to divert. The Search and Rescue (SAR) mission coordinator will tell the ship if diversion is necessary and a rendezvous point will be established. Good ship-to-helicopter communications are crucial. Is possible that a fixed-wing aircraft often escorts a helicopter, both to guide the helicopter to the scene and to help with communications.

It is not unusual for it to circle the vessel and arrives. Voice communications between ship and aircraft are normally conducted on international distress and/or calling frequencies such as 2182 kHz or 4125 kHz, 156.8 MHz (CH 16 VHF-FM). Other frequencies common to both helicopter and vessel may be used. Frequency changes should be avoided. Helicopters can transmit and receive voice — Single Side Band on high frequencies between 2,000 kHz and 30,000 kHz, if necessary.

The helicopters have homing capabilities on many Marine Band frequencies. For homing purposes, the vessel should maintain a continuous watch on the assigned frequency. If radio contact cannot be established, the helicopter will attempt to set up other communications.

These may include lowering a portable radio, dropping message blocks or using hand signals. As a last resort, the pilot may move right into position and begin the hoist.

Before the helicopter arrives

The deck team can prepare for the hoist prior to the helicopter's arrival. The more space available, the

easier and less hazardous the hoist. Although many helicopters can hoist from a substantial height, the operation becomes more difficult and dangerous with increased altitude. Before the helicopter arrives, remove and secure any items that may be blown about by the rotor downwash. When applicable, flag staffs should be removed and if possible, antenna wires or cables.
Do not lower the primary communications antenna unless asked to do so.
Remove all obstructions on the vessel. Normally the hoist will be made from the stern of the vessel.
If weather and the patient's condition permit, the patient should be brought on deck and placed under cover near, but not in, the hoist area shortly before the helicopter arrives. Wrap any blankets securely around them so that the rotor downwash doesn't blow them away. The patient must wear a PFD (Personal Floating Device or Immersion Suit) unless their condition absolutely prevents it. The patient may bring a small soft-sided bag of personal papers and a few belongings. Include ID such as driver's license, Social Security card, passport, immunization record, and a record of medications administered and prescribed medications.
All personnel on deck must wear PPDs. For a night hoist, special lighting precautions will be necessary. Because of visibility and depth-perception problems, the pilot will probably make an instrument approach. Lighting the ship and the hoist area is necessary. Do not shine any lights into the cockpit of the aircraft and or have any deck lights pointing up toward the helicopter. Such lights can disorient or blind the pilot. If a searchlight is used to help the aircraft locate the vessel, shine it vertically and turn it off once the helicopter has reached the scene. Boom lights used to light the deck should be directed downward.

During the hoist
On helicopter approach, change course until the wind is 30 degrees off your port bow, or as directed by the helicopter. Do not stop. Maintain normal speed since the helicopter can make the hoist with better control at 10 to 15 knots if the vessel is underway. Ensure the requested course will not endanger your vessel. The pilot will give final instructions for the hoist and location after seeing the ship and its obstructions.
Always allow the rescue device to touch the deck before handling it. During its flight, the aircraft builds up a static electric charge; anyone who reaches up to take hold of the rescue device will get a shock. For a high hoist or a hoist in a confined space, a trail line may be lowered first. Deck personnel can guide the rescue device to the deck with this line as long as they do not touch the rescue device itself. **Do not tie the trail line or hoist cable to any part of the vessel.**
Until the hoist is complete, a crewmember must tend this line at all times to keep the line from fouling. Instinctively the patient will want to grasp the side of the rescue device. Instruct patient to keep hands inside the rescue devise to avoid injury during manoeuvring. When the patient is ready for the hoist, deck personnel should signal the hoist operator with the "thumbs up" and the hoist begins. Steady the rescue device to minimize swinging, using the trail line if so equipped. Do not stand directly under the rescue device. If the patient cannot be brought to the hoist site, the rescue device must be brought to them. Unhook the devise from the hoist cable, letting the cable go free. **Do not hook the hoist cable to any point on the vessel.**
Usually the pilot will retrieve the cable and reposition away from the ship until he sees the patient is in the rescue device and ready to be hoisted. Once the rescue device is inside the helicopter, the crew may cast off the trail line. You may recover it or toss it overboard, but be careful not to foul your propeller. Every helicopter evacuation at sea is different, and each presents its own problems. Communications between pilot and ship are critical. Operations at night, or under poor weather conditions require the utmost caution. In each case, knowing what to expect and how to prepare can save time, effort and possibly a life.
For a rapid applying of the above procedures, below brief recap can be used as a guidance:

When requesting Medical Assistance:

- Give accurate position, time, speed, course, weather conditions (ceiling, visibility, wind direction and speed, and sea state).
- If not already provided, give complete medical information, including whether or not the patient can walk.
- Be prepared to change your course toward the helicopter if you are told to do so by the SAR mission coordinator.

Preparations before the helicopter arrives:

- Provide continuous radio guard on 2182 or 4125 kHz, 156.8 MHz (CH 16 VHF-FM) or a voice frequency specified by the SAR mission coordinator.
- Select and clear the hoist area, preferably aft in the stern. This includes securing loose gear, awnings, rigging and booms.
- If the hoist is at night, illuminate the hoist area as well as possible. Do not shine any lights toward the helicopter that may blind the pilot. If there are obstructions in the vicinity, put a light on them so the pilot will be aware of their locations.
- Point searchlights vertically to help the helicopter locate the ship, and extinguish them when the helicopter is on scene.
- Advise SAR mission coordinator of location of hoist area before the helicopter arrives so the pilot can make his approach aft amidship or forward as necessary.
- There will be a high noise level under the helicopter, making voice communications almost impossible. Arrange a set of hand signals among the vessel crew who will assist.

Hoist operations:

- Be sure patient is tagged to indicate what medications, if any, were administered and when.
- Have patient's medical record and necessary papers in an envelope or package ready to transfer with them.
- Move the patient to a position as close to the hoist area as their condition permits. Time is important.
- It will be necessary to hoist the patient in the Coast Guard rescue device, which will be lowered by the helicopter. Be prepared to do this as quickly as possible. Be sure the patient is strapped in, face up, with a life jacket if their condition permits.
- Change course so the ship rides as easily as possible with the wind on the bow, preferably the port bow. Reduce speed if necessary to ease ship's movement, but maintain steerageway. Once the hoist begins, maintain course and speed.
- If you do not have radio contact with the helicopter when you are in all respects ready for the hoist signal the helicopter in with a “thumbs up" by hand, or at night by flashlight.
- Allow the rescue device to touch the deck before handling it to avoid static discharge.
- If the helicopter drops a trail line, guide the rescue device to the deck with the trail line. ***Do not tie the trail line or hoist cable to the vessel.***
- If necessary to take rescue device away from hoist point, unhook the hoist cable and keep free for helicopter to haul in. Do not attempt to move rescue device without unhooking it. Do not secure the cable to the vessel.
- Place patient in rescue device, sitting with hands clear of sides or strapped in face up. Signal hoist operator when ready for hoist. Patient signals by nodding head if he is able. Deck

personnel give "thumbs up" to hoist operator. Steady the rescue device to prevent turning or swinging.

- If a trail line is attached to the rescue device use it to steady the rescue device during the hoist. Keep feet clear of the line.
- The helicopter may elect to lower their rescue swimmer to your vessel to evaluate the patient and assist in the hoist evolution. Please assist the rescue swimmer and follow his instructions.

The information contained in the above procedure can be also used for crew training and/or specific drills where the helicopter assistance could be required (such as abandon ship and medical evacuation), eventually supported by a specific Video or CBT.

44.21 Ship recovery from an incident

In addition to some instructions already included in the above sub-paragraphs, there are several situations from which the ship, after facing and emergency situation, can safely resume the voyage or waiting for rescue / further assistance. The situations to be addressed could be:

- Extinguishing of major fire in engine room that has compromise the ship propulsion/power but not the floating;
- Lighting bolt or Piracy attack with RPGs exploded on bridge/main mast structures;
- Restoring floating after minor grounding;
- Collision with minor structural damages;
- Restoration after oil spill.

To ensure that ship is able to safely float and possibly sail, and crew is able to proceed the voyage, a proper assessment of direct and/or indirect risks is to be carried out with support of Company departments. In addition, the support of external parties (e.g. Local Port Authorities / Coast Guard, MRCC facilities, Flag Administration, QI, Class, P&I, etc.) may be required.

Also, a preservation of evidences related to this stage (such as tests, checklists, records, registrations, VDR/ECIDS information, etc.) is to be carried out and treated as follow-up of the incident. They must be kept available for further investigations.

44.22 Records and References

- LOF 2011
- SOPEP or SMPEP
- VRP
- ICS Ship-Helicopter Operations Guidelines
- IAMSAR Vol 3
- Risk Assessment Library
- MSEQ Proc. Chapt. 25 – Bridge and Navigation
- MSEQ Proc. Chapt. 46 - Incident Investigation Guidelines
- EMCY 00 (ex SAF 00) - Emergency Response Booklet
- MSEQ 09 (ex SAF 05) - Shipboard Familiariz. Checklist
- MSEQ 10 (ex SAF 06) - Emergency Drill Planning
- MSEQ 20 (ex SAF 12) - IIC Duty Roster
- MSEQ 28 (ex SAF 18) - Drill Report

- EMCY 01 (ex DE /24/01) - Main Propulsion Machinery Failure – Emergency Check List n°1
- EMCY 02 (ex DE /24/02) - Steering Gear Failure - Emergency Check List n°2
- EMCY 03 (ex DE /24/03) - Gyrocompass Failure - Emergency Check List n°3
- EMCY 04 (ex DE /24/04) - Bridge Control System/Telegraph Failure - Em.cy Check List n°4
- EMCY 05 (ex DE /24/05) - Collision - Emergency Check List n°5
- EMCY 06 (ex DE /24/06) - Grounding / Stranding - Emergency Check List n°6
- EMCY 07 (ex DE /24/07) - Fire* (State fire area) - Emergency Check List n°7
- EMCY 07a (ex DE /24/07a) - Fire in Engine Room - Emergency Check List n°7a
- EMCY 07b (ex DE /24/07b) - Fire in Pumproom / Hydraulic Failure - Em.cy Check List n°7b
- EMCY 07c (ex DE /24/07c) - Cargo Fire on Deck - Emergency Check List n°7c
- EMCY 07d (ex DE /24/07d) - Fire in Accommodation - Emergency Check List n°7d
- EMCY 08 (ex DE /24/08) - Flooding of Compartments – Emergency Check List N°8
- EMCY 09 (ex DE /24/09) - Man Overboard - Emergency Check List N°9
- EMCY 10 (ex DE /24/10) - Search and Rescue - Emergency Check List N°10
- EMCY 11 (ex DE /24/11) - Unexpected List of the Ship - Emergency Check List N°11
- EMCY 12 (ex DE /24/12) - Explosion – Emergency Check List N°12
- EMCY 13 (ex DE /24/13) - Heavy Weather Damage - Emergency Check List N°13
- EMCY 14 (ex DE /24/14) - Helicopter Operations - Emergency Check List N°14
- EMCY 15 (ex DE /24/15) - Medical Matters Injury - Emergency Check List N°15
- EMCY 16 (ex DE /24/16) - Stowaways - Emergency Check List N°16
- EMCY 17 (ex DE /24/17) - Piracy and Robbery - Emergency Check List N°17
- EMCY 18 (ex DE /24/18) - Jettisoning of the Cargo - Emergency Check List N°18
- EMCY 19 (ex DE /24/19) - Oil Spills - Emergency Check List N°19
- EMCY 20 (ex DE /24/20) - IGS Failure During Discharge-Emergency Check List N°20
- EMCY 20a (ex DE /24/20a) – IGS Failure During Sea Passage -Emergency Check List N°20a
- EMCY 21 (ex DE /24/21) - Breaking Away from Jetty – Emergency Check List N°21
- EMCY 22 (ex DE /24/22) - Salvage - Emergency Check List N°22
- EMCY 23 (ex DE /24/23) - Electrical Power Failure - Emergency Check List N°23
- EMCY 24 (ex DE /24/24) - Uncontrolled Venting - Emergency Check List N°24
- EMCY 25 (ex DE /24/25) - Hull Leakage - Emergency Check List N°25
- EMCY 26 (ex DE /24/26) - Abandoning Ship – Emergency Check List n° 26
- EMCY 27 (ex DE / 24/27) - Hazardous Vapour Release at Sea or at Anchor
- EMCY 28 (ex DE /24/28) - Hazardous Vapour Release at Terminal