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Ref. T3/1.01

MSC-MEPC.2/Circ.3
5 June 2006

**GUIDELINES ON THE BASIC ELEMENTS OF A SHIPBOARD
OCCUPATIONAL HEALTH AND SAFETY PROGRAMME**

1 The Maritime Safety Committee, at its eighty-first session (10 to 19 May 2006), and the Marine Environment Protection Committee at its fifty-third session (18 to 22 July 2005), recognizing the need to provide guidance to personnel or consultants who are implementing, improving or auditing the effectiveness of shipboard health and safety programmes, approved Guidelines on the basic elements of a shipboard occupational health and safety programme, as set out in the annex.

2 Member Governments are invited to bring the annexed Guidelines to the attention of all parties concerned so that they may use them when implementing, improving or auditing the effectiveness of a shipboard occupational health and safety programme.

3 The Committees, recognizing the need to provide guidance for shipowners and ship managers for implementing the ISM Code, agreed that these guidelines would provide relevant information related to occupational health and safety on board ships.

ANNEX

GUIDELINES ON THE BASIC ELEMENTS OF A SHIPBOARD OCCUPATIONAL HEALTH AND SAFETY PROGRAMME

1 Purpose

These guidelines describe the basic elements of a shipboard occupational health and safety programme (SOHSP). The elements set out in the appendices are applicable to all vessel types and are fundamental pieces of a systematic occupational health and safety programme, which may be used by company line managers, health and safety personnel or consultants who are implementing, improving or auditing the effectiveness of a shipboard occupational health and safety programme.

2 Application

These guidelines do not set specific performance or technical criteria, but recommend that companies set policies and objectives and develop procedures for managing their occupational health and safety programme. Companies should consider their unique organization, culture and hazards on their vessels and the possible effects of their operations. The elements are intentionally flexible and may be adapted to address any size of operation or any vessel type. However, it should be noted that, although the standard is aimed at the shipboard occupational health and safety programmes, some of the elements address activities and commitments that must be completed or made by shore side personnel (e.g. executive management commitment and provision of adequate resources). Key to the effectiveness of the programme is the implementation of each element within an interconnected system.

3 Basic elements

3.1 Executive Management commitment and leadership. Executive management commitment and leadership is a precondition for an effective SOHSP. Executive management commitment and leadership includes, but is not limited to: (a) integrating occupational health and safety into the management structure and fabric of the company; (b) developing an occupational health and safety policy; (c) developing occupational health and safety objectives; (d) providing resources to achieve the objectives; (e) defining stewardship responsibilities, and providing authority to carry out those responsibilities, and (f) establishing accountability for occupational health and safety as a part of job performance reviews. Further guidance is provided in appendix 1.

3.2 Employee participation. Employees from all levels including crew members, officers, masters, persons in charge, and shore-side personnel should be directly involved with the SOHSP. Shipboard and shore-side employees should be involved in developing, implementing, evaluating, and modifying the SOHSP. Employees should also participate in setting occupational health and safety objectives and performance criteria. This involvement might be through employee membership on safety committees that provide input to management for the development of occupational health and safety policy, debate and set occupational health and safety goals, measure and evaluate performance, and recommend modifications to the programme based on their evaluation. Shore-side and shipboard employees should work together to achieve occupational health and safety goals. For example, shore side personnel should participate on vessel safety committees since their decisions affect vessel operations and ultimately the occupational health and

safety of vessel personnel. In large companies, individual vessel safety committees might submit recommendations to an overarching safety committee that evaluates the recommendations and sets policy to apply appropriate recommendations to the entire fleet. Further guidance is provided in appendix 2.

3.3 Hazard anticipation, identification, evaluation and control. The core function of any occupational health and safety programme is prevention. Occupational health and safety hazards including fire, reactivity, chemical and physical hazards need to be anticipated and prevented from occurring. Hazards and unsafe operating procedures need to be identified and addressed so they will not endanger employees or the public, and will not damage the vessel, cargo or third party property. Potential hazards should be systematically anticipated, identified, evaluated and controlled. Tools such as job hazard analysis, industrial hygiene exposure assessments, and risk assessment/management methodologies enable the evaluation and control of hazards. Further guidance is provided in appendix 3.

3.4 Training. Employees should receive training appropriate for their duties and responsibilities so that they may work safely and not endanger their shipmates or the public. In addition, employees who have specific occupational health and safety responsibilities (generally supervisors with responsibility for the safety of others, but also non-supervisors who are assigned to safety committees or as crew member representatives) should receive training to enable them to carry out their occupational health and safety programme responsibilities. Further guidance is provided in appendix 4.

3.5 Record keeping. Company records sufficient to demonstrate the effectiveness of the occupational health and safety programme should be maintained. Data that enables trend or pattern analysis for root causes is particularly desirable. For example, results of audits that evaluate effectiveness of the occupational health and safety management programme should be maintained. Records that indicate industrial hygiene exposure assessments have been conducted and appropriate controls have been implemented should be maintained. Current job safety analyses and corresponding standard operating procedures with safe work practices should be documented. Injury and illness data should be maintained to enable the identification of trends and patterns that associate the injury or illness with a common cause, which can be addressed. Training topics, lesson outlines and attendees should be documented. Where appropriate, such records should permit evaluation of the programme on individual vessels as well as across an entire fleet. Further guidance is provided in appendix 5.

3.6 Contract or third party personnel. When contract or third party personnel are on board to perform work, vessel personnel should provide information regarding potential hazards on the vessel that may affect the contract or third party personnel. Potential hazards related to the work conducted by contract or third party personnel should be provided to the vessel owner/operator and/or the master/person-in-charge. Each employer should provide appropriate information regarding vessel and work hazards to their own employees. For example, exchange of information on chemical hazards might be accomplished by exchanging appropriate safety data sheets (SDS), then each employer can inform their own employees of the hazards identified in the SDS. Further guidance is provided in appendix 6.

3.7 Fatality, injury, illness and incident investigation. Personnel injuries, occupational illnesses, and “near miss” incidents should be promptly investigated. The current incident and other similar occurrences should be analysed to identify the primary (root) cause and any contributing factors.

The investigation report, setting forth primary cause, contributing factors, and corrective measures should be presented to management. Follow up action which specifically addresses the report's recommendations for corrective action should be undertaken and documented. Further guidance is provided in appendix 7.

3.8 Systematic programme evaluation and continuous improvement. Maintaining an effective occupational health and safety programme is an ongoing process. The SOHSP should have systems for detecting, reporting, and correcting non-conformities to the programme. Some type of "formalized" evaluation should also be conducted on a periodic basis consistent with other aspects of the vessel's management plan. The evaluation should determine whether the SOHSP is appropriate for the vessel and its operations, that actual practices are consistent with the programmes and procedures in the SOHSP, and that the SOHSP is effective. Comparison of data and records (refer to appendix 5, Record keeping) to performance objectives and criteria (refer to appendix 1, paragraph 3, health and safety objectives) can provide important indicators of the effectiveness of the SOHSP. Further guidance is provided in appendix 8.

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APPENDIX 1

MANAGEMENT COMMITMENT AND LEADERSHIP

1 Occupational health and safety programmes are most effective when they are integrated into the management structure of a company, rather than treated as an “add on” programme. Examples of integrated occupational health and safety efforts include:

- .1 developing standard operating procedures (SOPs), written to the education level of the person who must follow the SOP, that integrate safe work practices and basic operational functions;
- .2 making design review by qualified occupational health and safety personnel an element of the acquisition procedures; and
- .3 making consultation with qualified occupational health and safety personnel a part of the process when making changes to operations.

2 Executive management sets the tone for the entire SOHSP through their policy regarding occupational health and safety. Examples of values that can be stated and commitments that can be made in company policy include:

- .1 a statement that the company will make every effort to provide a safe and healthy workplace and that working safely is a condition of employment;
- .2 statements that convey how important each crew member is to the vessel as a fellow worker and as a company resource:

“The basic safety policy of this company is that no task is so important that an employee must violate a safety rule or put himself or herself at risk of injury or illness in order to get it done.”;
- .3 a written commitment to provide resources necessary to implement the occupational health and safety programme could also be included in the policy statement; and
- .4 management can demonstrate commitment to the occupational health and safety policies through word and action. For example, managers visiting vessels should follow safety rules and standard operating procedures, including use of hearing protection, safety glasses, safety shoes, protective clothing, etc.

3 Setting and attaining occupational health and safety objectives demonstrates a company’s commitment to improvement of occupational health and safety performance. Objectives provide a target against which those who are responsible for occupational health and safety may measure their progress. Quantifiable objectives are desirable since often “What gets measured gets done.” (Refer to appendix 8, Systematic Programme Evaluation, for examples of performance measures and an overall programme audit). Occupational health and safety objectives may include:

- .1 eliminate Lost Time Incidents;
 - .2 report “near miss” incidents or problems, evaluate, and if appropriate, implement changes to prevent a more serious incident or accident in the future;
 - .3 develop and implement a programme of evaluations through drills and other means (for example, simulators) to ensure that personnel are competent to carry out their duties;
 - .4 improve the occupational health and safety programme by reviewing, considering and implementing appropriate published industry practices and other recognized standards;
 - .5 complete periodic comprehensive (or area-specific) hazard review;
 - .6 reduce exposure levels to airborne vapours to acceptable levels through appropriate controls;
 - .7 complete annual respiratory fit-testing on schedule;
 - .8 develop and implement acute toxic exposure procedures addressing first aid procedures, obtaining additional emergency medical assistance, and appropriate medical surveillance tests (for example, S-Phenylmercapturic acid in urine following a potential benzene over-exposure); and
 - .9 develop and implement an occupational health medical surveillance plan*.
- 4 Company management holds the authority to dedicate necessary resources to achieve occupational health and safety objectives. Necessary resources may include:
- .1 access to occupational health and safety information;
 - .2 training, including classroom and on-the-job training, that cover topics identified by the company’s risk assessment process as well as those required by international or national standards. These topics would include but not be limited to existing chemical and mechanical hazards;
 - .3 qualified occupational health and safety professionals, either on the company staff or hired as consultants;
 - .4 capital investments in engineering controls; and
 - .5 personal protective equipment.

* **Note:** The intent of this medical surveillance plan is to ensure employees are not over exposed to hazards on the job including chemicals, radiation, noise, etc. This section is not intended to address physical standards related to watchkeeping published elsewhere.

5 Defining stewardship responsibilities and providing authority to carry out those responsibilities is an essential component of management commitment. For example:

- .1 Company management should:
 - .1.1 designate a shore side person who has access to the executive management of the company and is responsible to ensure essential occupational health and safety issues are clearly communicated to executive management of the company, and decisions regarding those issues are clearly communicated back to the vessel;
 - .1.2 ensure adequate resources of time, funds for occupational health and safety equipment, training and expertise are available to effectively implement the programme throughout the company;
 - .1.3 ensure that a safety committee or other mechanism to adequately involve crewmembers in occupational health and safety issues is created on each vessel;
 - .1.4 ensure that the elements of the shipboard occupational health and safety programme are integrated and systematically implemented throughout the company and on each vessel;
 - .1.5 ensure that objectives are developed and performance measures are reported from each vessel;
 - .1.6 ensure that all appropriate programmes are developed and implemented including, but not limited to respiratory protection, hearing protection, confined space entry, and lock out-tag out;
 - .1.7 set a good example for employees by following established safety rules on vessels and by staying current on training commensurate with duties; and
 - .1.8 report unsafe practices or conditions observed while on a vessel to the supervisor of the area;
- .2 Master/person-in-charge/operator should:
 - .2.1 ensure each crewmember receives an initial vessel orientation, covering company safety policy, emergency procedures, access and egress, fire fighting, job hazards, and information on hazardous materials before beginning work. Document the completion of this orientation;
 - .2.2 ensure each crewmember is competent to perform a task or job by requiring a pre-job explanation and/or walk through of all procedures including safe work practices before starting work on that project or equipment. Require pre-job refresher training if the employee cannot demonstrate this competence;

- .2.3 ensure each crewmember has been issued and received training on the use of required personal protective equipment (PPE) before starting work on a project requiring PPE;
 - .2.4 complete periodic walk-around occupational health and safety checks of the vessel accompanied by appropriate personnel including those who have responsibilities or work in certain areas (e.g., Chief engineer and an oiler in engine spaces or First mate and able-bodied seaman on deck);
 - .2.5 periodically observe work performance of employees for compliance with safety rules contained or documented in the SOHSP;
 - .2.6 set a good example for subordinates by following established safety rules and attending training as appropriate;
 - .2.7 complete a preliminary investigation of all accidents and report findings to company management; and
 - .2.8 provide information to company management suggesting changes to company-wide standard operating procedures or equipment that will improve employee safety;
- .3 Officers/other management personnel should act as the master's or person-in-charge's representative, and implement examples listed for the master in areas over which they exercise supervision (e.g. First Mate responsible for "deck" personnel and Chief Engineer responsible for "engineers").

6 Management should establish accountability for occupational health and safety as part of job performance reviews. Performance reporting regarding health is as important and should be as routine within the company as reports regarding timeliness of delivery, cargo loss or contamination, or citations regarding violations of regulations.

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APPENDIX 2

EMPLOYEE PARTICIPATION

1 Full participation in developing, implementing, evaluating and continually improving the SOHSP helps those on board the vessel to see the SOHSP as something that is the result of a value they share with vessel owners/operators. Personnel directly involved with the work are often the best source of information on health or safety hazards and often can suggest effective methods for abating those hazards. Shore side personnel need to be directly and heavily involved with the SOHSP because they are integral in setting the rules and schedules for vessel operation. Shore side personnel also represent the vessel to management and are the link to the resources and authority necessary for the success of the SOHSP. Specific ways that crewmembers, officers, and shore side personnel can contribute to the SOHSP include:

- .1 participating in periodic vessel inspections;
- .2 evaluating occupational health and safety programme materials;
- .3 developing standard operating procedures that incorporate safe working practices;
- .4 conducting job safety/hazard analyses (JSAs/JHAs);
- .5 reviewing and analysing injury and illness data;
- .6 participating in risk assessment and risk management activities;
- .7 participating in accident/incident/problem investigations;
- .8 developing solutions to occupational health and safety complaints and disputes;
- .9 evaluating occupational health and safety training activities; and
- .10 evaluating the occupational health and safety management programme.

2 Line or operations personnel including crewmembers, officers and shore side personnel outside the occupational health and safety staff may need training in occupational health and safety techniques such as job safety/hazard analysis, reviewing injury and illness data for trends, risk assessment and investigations. This initial training investment enables those who do the work to meaningfully participate in identifying and solving occupational health and safety problems. Those crewmembers, officers and shore-side personnel who receive additional training in occupational health and safety and actively participate in the development of the vessel and/or company SOHSP also become occupational health and safety “champions” among their peers. Additional information on training is provided in appendix 4.

3 Since occupational health and safety objectives and performance may directly affect crew members’ and officers’ current and/or future occupational health and safety, they should be involved in setting those objectives and performance criteria. This participation may be accomplished through occupational health and safety committee involvement, labour negotiations, or other mechanism suitable to the specific company. Refer to appendix 1, paragraph 3, for examples of occupational health and safety objectives and performance criteria.

4 Employees should:

- .1 fully understand (including underlying principles) and follow established standard operating procedures and safety rules;
- .2 report unsafe conditions or actions to supervisor as soon as they become aware of them;
- .3 report all injuries to supervisor promptly;
- .4 report all accidents, near misses or problems to supervisor promptly;
- .5 use personal protective equipment (PPE) in good working condition where it is required;
- .6 do not remove or defeat any safety device or safeguard;
- .7 encourage shipmates by words and behaviour to follow standard operating procedures and use safe work practices on the job; and
- .8 make suggestions to supervisor or safety committee representative about changes to operating procedures, work practices or equipment that will improve safety.

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APPENDIX 3

HAZARD ANTICIPATION, IDENTIFICATION, EVALUATION AND CONTROL

1 Potential hazards on the vessel and created by the vessel should be systematically anticipated, identified, evaluated and controlled. Hazards that should be discovered, evaluated and controlled by the SOHSP include hazards addressed by the organization and by the Administration, and other hazards that are causing or likely to cause illness, death or serious physical harm to workers or the public. Types of hazards to consider may include:

- .1 hazardous atmospheres due to oxygen deficiency, flammable or toxic gases or vapours, and biological agents;
- .2 chemical hazards and the proper handling of vessel generated hazardous wastes;
- .3 physical hazards including noise, vibration, radiation, electricity, uncontrolled mechanical energy, shifting cargoes that may engulf a crewmember;
- .4 ergonomic factors including fatigue, workstation design, and poor team practices;
- .5 collisions, groundings, or rammings and their resultant impacts; and
- .6 drowning.

2 Methods of anticipation include:

- .1 systematic requirements for vessel and equipment design and modification review by qualified occupational health and safety personnel;
- .2 periodic management review of the vessel and its operation, its equipment, and its fitness-for-purpose;
- .3 a procurement system that automatically requires consideration of occupational health and safety aspects of items ordered;
- .4 consideration of fitness for current conditions; and
- .5 systematic review of vessel and shore side team practices.

3 Methods of identifying hazards include:

- .1 vessel inspections;
- .2 industrial hygiene exposure assessments of chemical and biological hazards including inhalation and dermal exposure routes, and physical hazards such as vibration and ergonomic hazards;

- .3 job safety analyses including risk assessment, both statistical and expert opinion based;
 - .4 employee hazardous condition notification system including easy to understand labelling system for all possible mechanical and chemical hazards; and
 - .5 review of available occupational health and safety data to identify trends.
- 4 Methods of hazard evaluation include:
- .1 comparison of industrial hygiene exposure levels to standards identified in the SOHSP (e.g., standards required by regulation or prudent levels adopted by the company in the absence of regulatory requirements); and
 - .2 risk analysis tools:
 - 2.1 hazard effects and control analysis;
 - 2.2 hazard control analysis;
 - 2.3 fault tree analysis of possibilities based on expert opinion;
 - 2.4 management oversight and risk analysis; and
 - 2.5 task hazard analysis.
- 5 Methods of hazard control are hierarchical. In order of preference, they include:
- .1 inherent safe design and verification of design output to design requirements;
 - .2 material substitution such as:
 - .2.1 non-hazardous insulation for asbestos lagging;
 - .2.2 citrus based cleaning agents for solvent-based cleaning agents; and
 - .2.3 non-toxic paint for toxic paint.
 - .3 Engineering controls such as:
 - .3.1 closed gauging;
 - .3.2 vapour recovery systems; and
 - .3.3 climate-controlled spaces such as control booths in engine-rooms.
 - .4 Administrative controls such as:
 - .4.1 systematic review for fitness of vessel for operations;

- .4.2 standard operating procedures that incorporate safe work practices. Some activities that might require standard operating procedures with integrated safe work practices include:
 - .4.2.1 machinery start-up and shut-down operations;
 - .4.2.2 emergency response to machinery failures;
 - .4.2.3 getting underway and entering port operations;
 - .4.2.4 cargo loading and unloading operations;
 - .4.2.5 response to unplanned or emergency situations during cargo operations;
 - .4.2.6 man overboard procedures;
 - .4.2.7 lifeboat launching procedures;
 - .4.2.8 watchkeeping procedures;
 - .4.2.9 team working procedures such as:
 - .1 bridge resource management taught in simulators with practice by actual team members; and
 - .2 pre-job planning and briefings;
 - .4.2.10 job hazard/safety analyses (JHAs/JSAs);
 - .4.2.11 emergency procedures; and
 - .4.2.12 systematic inspection of incoming equipment and equipment in use to ensure conformation to specifications identified in the SOHSP (for example, personal protective equipment).
- .4.3 an easy to understand labelling system for all possible mechanical and chemical hazards;
- .4.4 occupational medical surveillance programmes tailored to vessel and cargo hazards; and
- .4.5 specific programmes that need special attention within the overall SOHSP:
 - .4.5.1 respiratory protection programme;
 - .4.5.2 hearing loss prevention programme;
 - .4.5.3 safe lifting procedures; and

- .4.5.4 permit-to-work programmes for operations such as:
 - .1 lock out and tag out;
 - .2 tank or hold cleaning operations;
 - .3 confined space entry;
 - .4 hot work operations, including a gas-freeing programme; and
 - .5 working aloft.
- .5 occupational health and safety equipment control, calibration, and maintenance procedures;
- .6 security procedures to control entry and exit of personnel to and from the vessel;
- .7 basic safety rules such as:
 - .7.1 You shall not do things, which are unsafe in order to get the job done. If a necessary activity is unsafe, report it to your supervisor so it can be evaluated and alternate methods developed.
 - .7.2 Mechanical guards must be kept in place at all times when machinery is being operated. Do not remove or disable any safety device!
 - .7.3 No person may operate a piece of equipment unless they have been trained and are authorized. Notify your supervisor that you need training if you are asked to perform a function you did not learn in meeting the requirements for your level.
 - .7.4 Use your personal protective equipment whenever it is required.
 - .7.5 Obey all safety warning signs.
 - .7.6 Smoking is only permitted in designated locations and may be entirely prohibited at certain times, such as during cargo transfer operations.
 - .7.7 Good housekeeping is an important part of accident prevention. Replace all tools and supplies after use. Do not allow rubbish or debris to accumulate where they will become a hazard;
- .8 employee assistance and wellness programmes;
- .9 pre-employment chemical tests for dangerous drugs;

- .10 incentive programmes such as:
 - .10.1 safety awards;
 - .10.2 bonuses; and
 - .10.3 vessel competitions;
- .11 disciplinary policy that provides for progressive consequences depending on the severity and/or repetition of the violation of a safety rule;
- .12 personal protective equipment such as:
 - .12.1 safety glasses, goggles, hearing protection, safety shoes, protective clothing, chemical protective booties, respiratory protection; and
 - .12.2 impervious gloves for food handlers as appropriate; and
- .13 preventive maintenance of the vessel and equipment and basic housekeeping programmes.

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APPENDIX 4

TRAINING

- 1 Training to enable all employees to recognize hazards and to take appropriate precautions should include:
 - .1 general orientation to the company;
 - .2 overview of the company's occupational health and safety programme;
 - .3 vessel orientation including access and egress;
 - .4 emergency procedures in case of fire, confined space entry incident, release of hazardous chemicals or cargo, and over-exposure;
 - .5 the nature of potential hazards to which employees may be exposed during routine tasks and how to recognize symptoms of exposure;
 - .6 use of protective measures, such as standard operating procedures that incorporate safe work practices, and protective equipment and clothing (refer to appendix 3, paragraph 5, hazard control);
 - .7 specific programmes including respiratory protection, confined space entry, hearing loss prevention, lock-out-tag-out, fall protection, safe lifting, occupational health and safety equipment control, calibration and maintenance; and
 - .8 recognition and control of fatigue.
- 2 Additional training for those with specific health or safety responsibilities may include:
 - .1 risk assessment and risk management including:
 - .1.1 occupational health and safety data trend analysis;
 - .1.2 job safety analysis; and
 - .1.3 shipboard watch implications,
 - .2 fatality, injury, illness, "near miss" incident, and problem investigation and root cause analysis.
- 3 Effective worker protection programmes do not stop at initial training. Effective programmes evaluate the success of the training provided and offer refresher training on both a routine and as-needed basis.

4 Elaborate training programmes solely related to occupational health and safety are not always needed. Integrating consideration of occupational health and safety protection into all organizational activities is the key to effectiveness. Occupational health and safety information should be integrated into other training about performance requirements and job practices.

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APPENDIX 5

RECORD KEEPING

1 Records are needed to document hazard control efforts such as job hazard analyses, industrial hygiene sampling, and training. Data collection systems that enable trend analysis help in identifying injuries and illnesses with common causes. A review of shipboard personnel injury and illness experience over a period of time may reveal patterns of injury and illness with common causes, which can be addressed. Similarly, a review of accidents, “near miss” incidents or problems over time can reveal patterns of dangerous practice, which need correction to assure safety. The correlation of changes in injury, illness and “near miss” incident or problem experience with changes in the occupational health and safety programme. Operations, work processes, and personnel may help to identify potential causes and likelihood of personnel accidents, injuries, and illnesses, and danger or risk to the public. Audits that evaluate the effectiveness of the occupational health and safety programme can be used to identify weak points in the system.

2 Examples of records that should be maintained include:

- .1 death, injury, illness, accident, “near miss” incident, and problem data including:
 - .1.1 investigation reports and root cause analysis (see also appendix 7, fatality, injury, illness and incident investigation); and
 - .1.2 injury, illness, near miss and problem rates;
- .2 hazardous condition notifications and abatement actions;
- .3 crewmember safety suggestions;
- .4 industrial hygiene monitoring results for both personal and area samples;
- .5 job safety analyses;
- .6 safety committee reports;
- .7 safety inspection reports or log entries;
- .8 medical surveillance data (aimed at identifying exposures so that proper interventions, including improvement of hazard controls, may be initiated);
- .9 training (refer to appendix 4 for a discussion of recommended training):
 - .9.1 record training outline, date and attendance; and
 - .9.2 record completion of courses such as fire fighting and confined space entry schools; and
- .10 occupational health and safety management programme audits (refer to appendix 8 for an example).

3 The extent of record keeping necessary to document the effectiveness of the programme will vary depending on the size of the company, level and nature of exposure to hazards on the vessel, and other factors. The records should be maintained as long as necessary in light of their intended use.

4 Records of individual ships should also be shared with other ships and analysed as a larger base of data to gain information on frequency of problems to better identify trends.

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APPENDIX 6

CONTRACT OR THIRD PARTY PERSONNEL

- 1 The vessel owner/operator and/or the master/person-in-charge should provide information on applicable elements of the company's occupational health and safety programme. Vessel hazards, safety rules, standard operating procedures, and emergency procedures with contract or third party personnel who may be exposed to vessel or cargo hazards.
- 2 The contractor or third party should inform his/her employees of the applicable elements of the vessel's occupational health and safety programme and of any known vessel or cargo hazards to which his/her employees may be exposed. The contract or third party person-in-charge should also direct his/her employees to follow the occupational health and safety rules of the vessel to the extent that they meet or exceed the contractor's or third party's own requirements.
- 3 The contract or third party person-in-charge should inform the vessel's master or person-in-charge of any occupational health and safety hazards presented by their work and how they will address those hazards. The contract or third party person-in-charge should also inform the vessel personnel of any other occupational health and safety hazards in the course of their work on the vessel.
- 4 During the initial exchange of information regarding vessel hazards and hazards presented by the work intended, the actions of the contractor or third party toward the occupational health and safety of the vessel crew and their own employees should be clearly identified. Likewise, the actions of the vessel personnel toward the occupational health and safety of the contractor or third party should be clearly identified. Emergency procedures should be clearly agreed upon in advance.

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APPENDIX 7

FATALITY, INJURY, ILLNESS AND INCIDENT INVESTIGATION

1 The objective of an investigation is to prevent related incidents from recurring. An investigation should identify the circumstances of the injury, illness or incident and reveal the proximate causes, contributing factors, and root causes by gathering and analysing information and drawing conclusions. Identification and correction of causes may prevent similar incidents from recurring. Furthermore, identifying and correcting a true root cause may prevent other, apparently unrelated incidents, giving even more return on the effort expended to identify root causes. For example, if a problem with the company's training system was identified as the root cause for a confined space incident, then correcting the entire training system may prevent an injury that would have been caused by an untrained person improperly operating a piece of machinery.

2 Start the investigation as soon as possible after the incident occurs. Interview workers involved in the incident and all witnesses. Discover situations leading up to the incident including several days before. These situations may include contributing factors. (Human factors including fatigue often are found as root or contributing factors and may accumulate over a period of time.) Examine the location of the incident and identify factors associated with the incident. Interview other company personnel as needed to determine root causes. Document the investigation and recommendations.

3 The final report should include:

- .1 a summary outlining the basic facts of the incident;
- .2 a narrative detailing the circumstances of the casualty or near incident;
- .3 analysis and comment that lead to logical conclusions or findings, establishing all the factors, including root cause(s) that contributed to the incident; and
- .4 immediate and long-term recommendations aimed at preventing similar accidents and correcting root causes.

4 It may be helpful to categorize investigation data. An example of a one-page form divided into information categories is provided. Additional pages might be used to record the summary, narrative, analysis and recommendations.

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APPENDIX 8

SYSTEMATIC SHIPBOARD OCCUPATIONAL HEALTH AND SAFETY EVALUATION

- 1 Tools that may help with programme evaluation include:
 - .1 trend analysis of fatality, injury, illness and “near miss” incident statistics;
 - .2 trend analysis of records of “unsafe acts or behaviours”;
 - .3 review of vessel safety committee reports and recommendations; and
 - .4 review of hazardous condition notifications and abatement actions.
- 2 Performance measures that may assist in programme evaluation include:
 - .1 lost time incident rate;
 - .2 fatality rate;
 - .3 acute toxic exposure incidents per 1,000 employee work hours;
 - .4 number of non-conformities with standard operating procedures per 100 employee work hours;
 - .5 percentage of training required by SOHSP completed on schedule;
 - .6 percentage of annual respiratory fit testing completed on schedule; and
 - .7 percentage of annual medical monitoring exams completed on schedule.
- 3 The following audit tool may be used to evaluate a SOHSP. The elements scored in the audit tool are the first seven elements of a SOHSP. Some elements are further divided into factors that are individually scored. The auditor should objectively score the vessel’s SOHSP on each of the individual factors and elements after obtaining the necessary information to do so.
 - .1 calculate the overall score, after scoring each element, as follows:
 - .1 the score for the Management Commitment and Leadership Element is the lower of the two scores of the General and Implementation Factors;
 - .2 the score for the Employee Participation Element is the lower of the two scores for the General and Hazard Reporting Factors;
 - .3 the score for the Hazard Anticipation, Identification, Evaluation and Control Element is the average of all six Factors; and
 - .4 the scores for single-Factor Elements are the scores for the Factor;

- .2 the overall score is the average score of the seven Element scores and may be assigned a “verbal” description based upon the score.

SCORE	Level of Shipboard Occupational Health and Safety Programme
5	Outstanding Programme
4	Superior Programme
3	Basic Programme
2	Developmental Programme
1	No programme or ineffective programme

<i>Programme Element</i>	<i>Absent or ineffective(1)</i>	<i>Developmental (2)</i>	<i>Basic(3)</i>	<i>Superior(4)</i>	<i>Outstanding(5)</i>
<i>Management Commitment And Leadership</i>					
General					
Implementation					
Overall Score for element		Lowest of 2 Sections			
<i>Employee Participation</i>					
General					
Hazard Reporting					
Overall Score for element		Lowest of 2 Sections			
<i>Hazard Anticipation, Identification, Evaluation, & Control</i>					
Anticipation, Identification, & Evaluation					
Control – General					
Control – Maintenance					
Control – Medical Programme					
Control – Emergency Prep-Planning & Drills					
Control – Emergency Prep-First Aid					
Overall Score for element		Average of 6 sections			
<i>Health and Safety Training</i>					
General					
Overall Score for element		Score of 1 section			
<i>Record Keeping</i>					
Data Collection and Analysis					
Overall Score for element		Score of 1 section			
<i>Contract and Third Party Personnel</i>					
General					
Overall Score for element		Score of 1 section			
<i>Fatality, Injury, Illness & Accident Investigation</i>					
General					
Overall Score for element		Score of 1 section			
Overall Programme Score		Average of 7 Elements Rounded			

Attached tables provide the verbal descriptions for the numeric indicators above.

MANAGEMENT COMMITMENT AND LEADERSHIP	
General	
Management commitment and leadership is a precondition for an effective SOHSP.	
1	Management demonstrates no policy, goals, objectives, or interest in occupational health and safety issues on this vessel.
2	Management sets and communicates occupational health and safety policy and goals, but remains detached from all other occupational health and safety efforts.
3	Management follows all occupational health and safety rules, and gives visible support to the occupational health and safety efforts of others.
4	Management participates in significant aspects of the ship's occupational health and safety programme. Such as ship inspections, incident reviews, and programme reviews. Incentive programmes that discourage reporting of accidents, symptoms, injuries, or hazards are absent. Other incentive programmes may be present.
5	Ship occupational health and safety issues are regularly included on agendas of management operations meetings. Management clearly demonstrates — by involvement, support, and example — the primary importance of occupational health and safety. Performance is consistent and sustained or has improved over time.

MANAGEMENT COMMITMENT AND LEADERSHIP	
Implementation	
Implementation means tools, provided by management that include: <ul style="list-style-type: none"> resources: <ul style="list-style-type: none"> budget information expertise/training personnel defined and assigned responsibilities commensurate authority to carry out responsibilities accountability 	
1	Tools to implement an occupational health and safety programme are inadequate or missing.
2	Some tools to implement an occupational health and safety programme are adequate and effectively used; others are ineffective or inadequate. Management assigns responsibility for implementing a ship occupational health and safety programme to identified person(s). Management's designated representative has authority to direct abatement of hazards that can be corrected without major capital expenditure.
3	Tools to implement an occupational health and safety programme are adequate, but are not all effectively used. Management representative has some expertise in hazard recognition and applicable standards. Management keeps or has access to applicable standards on the unit, and seeks appropriate guidance for interpretation of the standards. Management representative has authority to order/purchase occupational health and safety equipment.
4	All tools to implement an occupational health and safety programme are more than adequate and effectively used. Written safety procedures, policies, and interpretations are updated based on reviews of the occupational health and safety programme. Occupational health and safety expenditures, including training costs and personnel, are identified in the vessel budget. Hazard abatement is an element in management (officers/persons in charge/supervisors) performance evaluation.

5	All tools necessary to implement a good health and safety programme are more than adequate and effectively used. Management occupational health and safety representative has expertise appropriate to vessel size and operation, and has access to professional advice when needed. Occupational health and safety budgets and funding procedures are reviewed periodically for adequacy.
EMPLOYEE PARTICIPATION	
General	
Employee participation provides the means through which those who actually do the work identify hazards, recommend and monitor abatement, and otherwise participate in their own protection.	
1	Worker participation in workplace occupational health and safety concerns is not encouraged. Incentive programmes are present which have the effect of discouraging reporting of incidents, injuries, potential hazards or symptoms. Employees/employee representatives are not involved in the shipboard occupational health and safety programme.
2	Workers and their representatives can participate freely in occupational health and safety activities on the unit without fear of reprisal. Procedures are in place for communication between employer and workers on occupational health and safety matters. Workers are able to refuse or stop work that they reasonably believe involves imminent danger. Workers are paid while performing safety activities.
3	Workers and their representatives are involved in the occupational health and safety programme. Involved in inspection of work areas, and are permitted to observe monitoring and receive results. Workers and representatives have access to information regarding the shipboard occupational health and safety programme including occupational health and safety data trend analysis, job task analysis, and industrial hygiene sampling data. A documented procedure is in place for raising complaints of hazards or discrimination and receiving timely employer response.
4	Workers and their representatives participate in workplace analysis, inspections and investigations, and development of control strategies throughout the vessel, and have necessary training and education to participate in such activities. Workers and their representatives have access to all pertinent occupational health and safety information, including safety reports and audits. Workers are informed of their right to refuse job assignments that pose serious hazards to them pending management response.
5	Workers and their representatives participate fully in development of the occupational health and safety programme and conduct of training and education. Workers participate in audits, programme reviews conducted by management or third parties, and collection of samples for monitoring purposes, and have necessary training and education to participate in such activities. Employer encourages and authorizes employees to stop activities that present potentially serious occupational health and safety hazards.

EMPLOYEE PARTICIPATION	
Hazard Reporting	
A reliable hazard reporting system enables employees, without fear of reprisal, to notify management of conditions that appear hazardous and to receive timely and appropriate responses.	
1	No formal hazard reporting system exists, or employees are reluctant to report hazards.
2	Employees are instructed to report hazards to management. Supervisors are instructed and are aware of a procedure for evaluating and responding to such reports. Employees use the system with no risk of reprisals.
3	A formal system for hazard reporting exists. Employee reports of hazards are documented, corrective action is scheduled, and records maintained.

4	Employees are periodically instructed in hazard identification and reporting procedures. Management conducts surveys of employee observations of hazards to ensure that the system is working. Results are documented.
5	Management responds to reports of hazards in writing within specified time frames. The workforce readily identifies and self-corrects hazards; they are supported by management to do so.

HAZARD ANTICIPATION, IDENTIFICATION, EVALUATION AND CONTROL	
Anticipation, Identification and Evaluation	
Anticipation and identification and evaluation of hazards involves systematic review of vessel and equipment design, review of the vessel and equipment fitness for current conditions and operations, a procurement system that requires consideration of occupational health and safety aspects of items ordered, vessel inspections, exposure assessments, job safety analyses, mechanisms for employees to report hazardous conditions and review of occupational health and safety data and records to identify trends.	
1	No system or requirement exists for hazard review of planned/changed/new equipment or operations. There are no requirements to consider occupational health and safety aspect of items purchased for the vessel. There is no evidence of comprehensive inspections for safety or health hazards, exposure assessments, routine job safety analysis or occupational health and safety data trend analysis.
2	The person-in-charge of operation and/or equipment changes considers occupational health and safety implications of the changes, but has not had appropriate training to be able to identify all occupational health and safety consequences of the changes. The person responsible for procurement considers occupational health and safety issues, but has not been trained on hazards that may be encountered. Inspections for occupational health and safety hazards are conducted by vessel and corporate personnel, but only in response to accidents or complaints. The employer has identified principle occupational health and safety standards appropriate for the vessel. Supervisors dedicate time to observing work practices and other occupational health and safety conditions in work areas where they have responsibility.
3	Competent person(s) determine occupational health and safety consequences of proposed changes in high-hazard operations or equipment before the changes occur, and appropriate precautions are implemented. Competent person(s) determine occupational health and safety hazards of all items procured, and appropriate precautions are taken when the item is used. Vessel and corporate personnel with specific training in occupational health and safety hazards conduct vessel inspections. Items in need of correction are documented. Inspections include compliance with relevant regulations, industry standards and practices. Time periods for corrections are set. Current hazard analyses are written (where appropriate) for all high-hazard jobs and processes; analyses are communicated to and understood by affected employees. Hazard analyses are conducted for jobs/tasks/workstations where injury or illnesses have been recorded.

4	<p>Competent person(s) in consultation with a qualified professional determines occupational health and safety consequences of all proposed changes in operations or equipment before the changes occur, and appropriate precautions are implemented. Competent person(s) determine occupational health and safety hazards of all items requested for procurement, identify appropriate substitutions for hazardous items, or ensure appropriate precautions are taken if a substitute cannot be identified.</p> <p>A qualified professional conducted a vessel inspection within the last five years, and competent person(s), trained in items identified by the qualified professional, conduct periodic inspections and appropriate corrective actions are taken promptly. The inspections are planned, with key observations or check points defined and results documented. Corrections are documented through follow-up inspections. Results are available to workers. Current hazard analyses are documented for all work areas and are communicated and available to all employees.</p>
5	<p>Qualified professionals in consultation with certified occupational health and safety professional(s) analyse occupational health and safety consequences of all proposed changes in operations or equipment, identify substitutions if possible or ensure appropriate precautions are implemented as the change occurs. Competent person(s) in consultation with qualified professional(s) or certified occupational health and safety professional(s), as needed, identify occupational health and safety hazards of all items requested for procurement and obtain substitutes for hazardous items. Regular inspections are planned and overseen by certified safety or health professionals. Statistically valid random audits of compliance with all elements of the shipboard occupational health and safety programme are conducted. Observations are analysed to evaluate progress. Documented workplace hazard evaluations are conducted by certified occupational health and safety professional(s). Corrective action is documented and hazard inventories are updated.</p>

HAZARD ANTICIPATION, IDENTIFICATION, EVALUATION AND CONTROL	
Control – General	
Workforce exposure to all current and potential hazards should be prevented or controlled by using engineering controls whenever feasible and appropriate, work practices and administrative controls, and personal protective equipment.	
1	Hazard control is seriously lacking or absent from the vessel.
2	Hazard controls are generally in place, but effectiveness and completeness vary. Serious hazards may still exist. Employer has achieved general compliance with applicable standards regarding hazards with a significant probability of causing serious physical harm. Hazards that have caused past injuries on the vessel have been corrected.
3	Appropriate controls (engineering, work practice, and administrative controls, and PPE) are in place for significant hazards. Some serious hazards may exist. Employer is generally in compliance with voluntary standards, industry practices, and manufacturers' and suppliers' safety recommendations. Documented reviews determining the need for machine guarding, energy lockout, ergonomics programme. Materials handling procedures, blood borne pathogen programme. Confined space entry programme. Hazard communication, and other generally applicable programmes have been conducted. The overall programme tolerates occasional deviations.
4	Hazard controls are fully in place, and are known and supported by the workforce. Few serious hazards exist. The employer requires strict and complete compliance with all applicable regulations, consensus standards and industry practices and recommendations. All deviations are identified and causes determined.
5	Hazard controls are fully in place and continually improved upon based on workplace experience and general knowledge. Documented reviews of needs are conducted by certified occupational health and safety professionals.

HAZARD ANTICIPATION, IDENTIFICATION, EVALUATION AND CONTROL	
Control – Maintenance	
An effective shipboard occupational health and safety programme will provide for vessel and equipment maintenance, so that hazardous breakdowns are prevented.	
1	No preventive maintenance programme is in place; breakdown maintenance is the rule.
2	There is a preventive maintenance schedule, but it does not cover everything and may be allowed to slide or performance is not documented. Safety devices on machinery and equipment are generally checked before each shift.
3	A preventive maintenance schedule is implemented for areas where it is most needed; it is followed under normal circumstances. Manufacturers' and industry recommendations and consensus standards for maintenance frequency are followed. Breakdown repairs for safety related items are expedited. Safety device checks are documented. Ventilation system function is observed periodically.
4	The employer has effectively implemented a preventive maintenance schedule that applies to all equipment. Vessel experience is used to improve safety-related preventative maintenance scheduling.
5	There is a comprehensive safety and preventive maintenance programme that maximizes equipment reliability.

HAZARD ANTICIPATION, IDENTIFICATION, EVALUATION AND CONTROL	
Control – Medical Programme	
An effective shipboard occupational health and safety programme will include a suitable medical programme where it is appropriate for the nature of the hazards.	
1	Management is unaware of, or unresponsive to occupational medical surveillance needs. Required medical surveillance, monitoring and reporting are absent or inadequate.
2	Required medical surveillance, monitoring, removal, and reporting responsibilities for applicable standards are assigned and carried out, but results may be incomplete or inadequate.
3	Medical surveillance, removal, monitoring, and reporting comply with applicable standards. Employees report early signs/symptoms of job-related injury or illness and receive appropriate treatment.
4	Health care providers provide follow-up on employee treatment protocols and are involved in hazard identification and control on the vessel. Medical surveillance addresses conditions not covered by specific standards. Employee concerns about medical treatment are documented and responded to.
5	Health care providers periodically observe the work areas and activities and are fully involved in hazard identification and training.

HAZARD ANTICIPATION, IDENTIFICATION, EVALUATION AND CONTROL	
Control – Emergency Preparedness – Planning and Drills	
There should be appropriate planning, training/drills, and equipment for response to emergencies.	
1	Little or no effort to prepare for emergencies.
2	Emergency response plans for fire, chemical, and weather emergencies as required by regulation are present. Training is conducted as required by the applicable regulation. Some deficiencies may exist.

3	Persons with specific training have prepared emergency response plans. Appropriate alarm systems are present. Employees are trained in emergency procedures. The emergency response extends to spills and incidents in routine operation. Adequate supply of spill control and PPE appropriate to hazards on ship is available.
4	Abandoned ship drills are conducted in accordance no less than annually. The plan is reviewed by a qualified occupational health and safety professional.
5	Vessel personnel with emergency response assignments have adequate training. All potential emergencies have been identified. Emergency response plans and performance are re-evaluated at least annually and after each significant incident. Procedures for terminating an emergency response condition are clearly defined.

HAZARD ANTICIPATION, IDENTIFICATION, EVALUATION AND CONTROL	
Control – Emergency Preparedness – First Aid	
First aid/emergency care should be readily available to minimize harm if an injury or illness occurs.	
1	First aid/emergency care cannot be ensured.
2	First aid/emergency care is available on every shift.
3	Personnel with appropriate first aid skills commensurate with likely hazards on the vessel and as required by applicable regulations are available. Management documents and evaluates response time on a continuing basis.
4	Personnel with <u>certified</u> first aid skills are always available on-ship; their level of training is appropriate to the hazards of the work being done. Adequacy of first aid is formally reviewed after significant incidents.
5	Personnel trained in advanced first aid and/or emergency medical care are always available on-ship.

OCCUPATIONAL HEALTH AND SAFETY TRAINING	
General	
Occupational health and safety training should cover the occupational health and safety responsibilities of all personnel who work on the vessel or affect its operations. It is most effective when incorporated into other training about performance requirements and job practices. It should include all subjects and areas necessary to address the hazards on the vessel.	
1	Vessel personnel depend on experience and peer training to meet needs. Master/person-in-charge/others in supervisory positions demonstrate little or no involvement in occupational health and safety training responsibilities.
2	Some orientation training is given to new hires. Some safety training materials (e.g., pamphlets, posters, videotapes) are available or are used periodically at safety meetings, but there is little or no documentation of training or assessment of worker knowledge for a given topic. Masters/persons in charge/and others in supervisory positions generally demonstrate awareness of occupational health and safety responsibilities, but have limited training themselves or involvement in the ship's training programme.
3	Training includes regulatory rights and access to information. Training required by regulations is provided to all vessel employees. Supervisors attend training in all subjects provided to employees under their direction. Vessel personnel can generally demonstrate the skills/knowledge necessary to perform their jobs safely. Records of training are kept and training is evaluated to ensure it is effective.

4	Knowledgeable persons conduct occupational health and safety training that is scheduled, assessed, and documented, and addresses all necessary technical topics. Employees are trained to recognize hazards, violations of regulations, and vessel practices. Employees are trained to report violations to management. Training is followed up with performance observation and feedback. All crew — including supervisors and masters/persons in charge—can demonstrate preparedness for participation in the overall occupational health and safety programme. There are easily retrievable scheduling and record keeping systems.
5	Knowledgeable persons conduct occupational health and safety training that is scheduled, assessed, and documented. Training covers all necessary topics and situations, whether addressed in regulations or not, and includes all persons on the vessel (unlicensed personnel to the master or person-in-charge, contractors, and temporary employees). Employees participate in creating ship-specific training methods and materials. Employees are trained to recognize inadequate responses to reported programme violations. Retrievable record keeping system provides for appropriate retraining, makeup training, and modifications to training as the result of evaluations.

RECORD KEEPING	
Data Collection and Analysis	
An effective shipboard occupational health and safety programme will collect and analyse injury, illness, and “near miss” incident data for indications of sources and locations of hazards, and jobs that experience higher numbers of incidents. By analysing injury, illness and “near miss” incident trends over time, patterns with common causes can be identified and prevented.	
1	Little or no collection and/or analysis of injury, illness or “near miss” incident data. Exposure monitoring is not conducted or documented.
2	Injury, illness and “near miss” incident data is collected and analysed, but not widely used for prevention. CG-2692 is completed for all reportable marine casualties. Exposure records and analysis are organized and are available to safety personnel.
3	Injury, illness, and “near miss” incident logs and exposure records are kept, are audited by shore-side management personnel, and are essentially accurate and complete. Rates are calculated so as to identify high-risk areas and jobs. Liability claims are analysed and the results are used in the programme. Significant analytical findings are used for prevention.
4	Shore-side management and vessel master/person-in-charge and supervisors can identify the frequent and most severe problem areas, the high-risk areas and job classifications, and any exposures that exceed relevant or company standards. Data are fully analysed and effectively communicated to employees. Injury, illness and “near miss” incident data are audited and certified by a responsible person.
5	All levels of management and the workforce are aware of results of data analyses and resulting preventive activity. External audits of accuracy of injury, illness and “near miss” incident data, including review of all available data sources are conducted. Scientific analysis of health information, including non-occupational databases is included where appropriate in the programme.

CONTRACT AND THIRD PARTY PERSONNEL	
General	
An effective occupational health and safety programme protects all personnel on the vessel, including the employees of contractors, subcontractors and third party personnel. It is the responsibility of shore-side management and the vessel master or person-in-charge to address contractor safety and third party safety.	
1	Shore-side management and the vessel master or person-in-charge make no provision to include contractors and third party personnel within the scope of the vessel's occupational health and safety programme.
2	Vessel safety policy requires contractor and third party personnel to conform to applicable regulations and other legal requirements.
3	The master/person-in-charge designates a representative to monitor contractor and third party occupational health and safety practices, and that individual has authority to stop contractor practices that expose host or contractor employees to hazards. Management informs contractor and employees of hazards present at the facility.
4	Shore-side management investigates a contractor's occupational health and safety record as one of the bidding criteria. Shore-side management contacts third party personnel management if necessary to correct unsafe third party behaviour.
5	The vessel's occupational health and safety programme ensures protection of everyone aboard including full-time employees, temporary employees, contractors, and third party personnel.

FATALITY, INJURY, ILLNESS AND INCIDENT INVESTIGATION	
General	
An effective shipboard occupational health and safety programme will provide for investigation of accidents and "near miss" incidents, so that their causes, and the means for their prevention, are identified.	
1	No investigation of accidents, injuries, near misses, or other incidents is conducted.
2	Some investigation of incidents takes place, but root cause may not be identified, and correction may be inconsistent. Supervisors prepare injury reports for lost time incidents greater than 72 hours.
3	All "recordable incidents" are documented in a log. Reports are generally prepared with cause identification and corrective measures prescribed.
4	"Recordable incidents" are always investigated, and effective prevention is implemented. Reports and recommendations are available to employees. Trained safety personnel systematically review quality and completeness of investigations.
5	All loss-producing accidents and "near-misses" are investigated for root causes by teams or individuals that include trained safety personnel and employees.