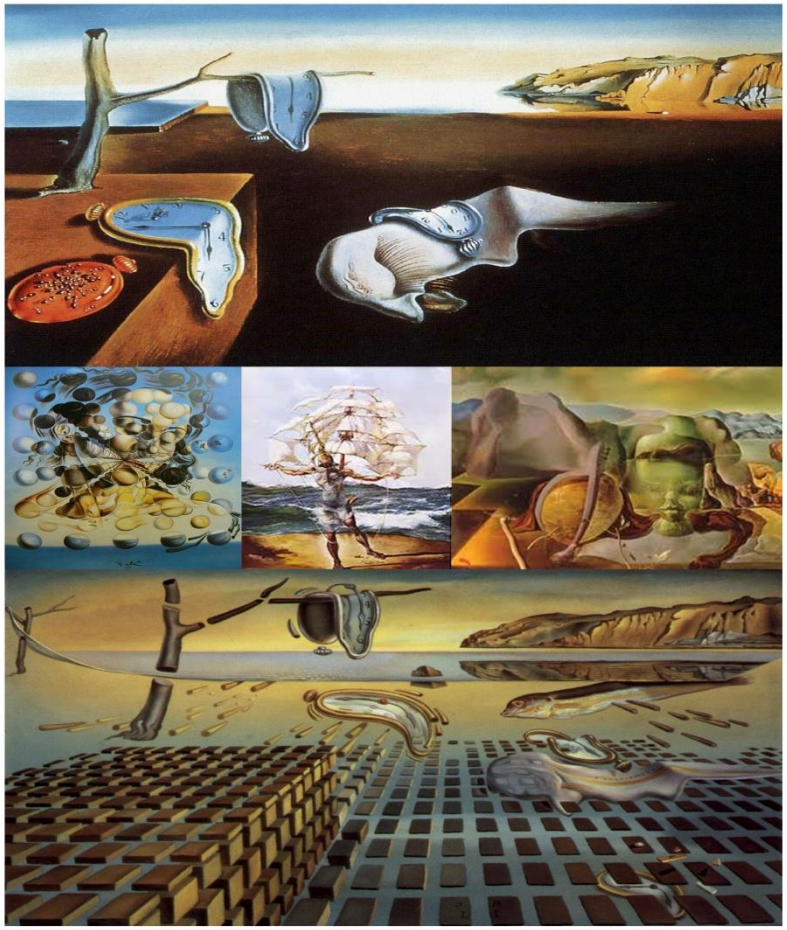
Marine Injury Report and Internal Investigation Guidelines, 2nd draft



Acknowledgements

This Guide was compiled for the use of Martecma members. During Martecma members' meeting 2011-03, a working group was appointed to draft the Marine Injury Report and Internal Investigation Guidelines.

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Marine Injury Report and Internal Investigation Guidelines, 2nd draft

Compiled by

MARTECMA

Marine Technical Managers Association

www. martecma .com

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Prologue to the 1st edition of the guidelines

1. History

1.1. Martecma members have been recently, during TMSA office audits, faced with questions related to the methodology and records kept for investigations of accidents as well as evidence of benchmarking.

1.2. Following were identified in the Martecma members meeting of 2011-03:

- Despite the adequacy of "IMO Code for the Investigation of Marine Casualties and Incidents", referenced herein, there is not any universally applied Marine Industry standard on internal investigations, something like template and guidelines, despite the relevant training courses provided by the training service providers.
- The official (actually it was within ISM code from its initial conception) introduction of risk management for all ships with ISM amendments Jun10, has enhanced the scope of ISM chapter9, but apart from that Marine Industry is now mature enough to elaborate on the incident report - investigation /analysis - corrective preventive actions process in a more consistent manner.

2. Objective

Based on the above it was decided that a project is launched, with the objective to:

2.1. draft a template and guidelines for incidents investigation reporting for our members to use, and with the ambition to propose it as Industry standard and focusing to start with the personal injury investigation report.

2.2. introduce a methodical and standardized approach to the root cause analysis process

2.3. launch a database in Martecma website for members to share their experiences and the lessons learnt the hard (accidents) or soft (near accidents) way.

3. Scope

These Guidelines have been developed with the intention to:

3.1. cover all aspects, activities and processes required by the Master or Company Internal Investigator for proper reporting and investigating a personal injury.

3.2. Align the process with Internal Audit and Corrective / Preventive actions process.

3.3. Ensure Compliance with statutory requirements, which apply in the majority of the coastal states in which vessels operate

4. Eleven Principles

4.1. Thorough understanding of the definitions, included in para1.6 of the main body of the guidelines, is a prerequisite to properly understand the principles below and properly apply the reporting and internal investigation process of these Guidelines.

4.2. An **internal** investigation:

4.2.1. is carried out by Company managed own resources, properly certified, assessing Company own system.

4.2.2. Is NOT the objective but the means to ensure improvement and no repetition, therefore each Company will decide to which depth investigation will go so that improvement is achieved in the most time and cost effective and efficient manner, see also 4.3.

4.2.3. should be action oriented, therefore negative terms like “inadequate, poor, lack of…, unclear, un.., conflicting etc” should be avoided and instead positive, action oriented, terms should be used like “ improvement of…, better clarifying etc”.

4.3. There may be more than one root causes, with differing weight factor.

4.4. Root causes categories is NOT a map. Causes (contributing or intermediate) map, as available in market, are tools to assist in identification of combination of root causes.

4.5. Although as a principle anorthodox approach, it will still help the process if it is understood that **for any casualty the corrective action to be taken, IF CORRECT AND EFFECTIVE, dictates the combination of ROOT CAUSES,** and this assumption will resolve many ambiguities, when trying to identify and classify the root causes, in other words and in an ORHODOX approach the corrective actions SHOULD address the combination of root ONLY causes. A simple example to justify this principle:

4.5.1. As we have already pointed out before, and because procedures are made by the Company’s staff, approved by the DPA, approved by the Managing Director, approved by the BoD, any failure of the system points to the top.

4.5.2. Therefore, for a private company, one could come to the funny conclusion that for all failures, root cause is the Owner (and God who created him).

4.5.3. But before firing the Head, the Company will take another set of actions AND THESE ACTIONS DICTATE the ROOT CAUSES and the depth for which internal investigation was deemed enough.

4.6. For the sake the simplicity and consistent implementation of the method the 3+1 root causes categories are adopted: **Company Human, Company System/Procedures, Equipment/Design, Other**

4.6.1. Considering that all systems and equipment are invented, designed, operated and maintained by human beings, then obvious conclusion is that ALL incidents can be allocated to ONE root cause ie HUMAN ERROR.

4.6.2. But then we come to the **necessary deliberate subtractions (or assumptions)** that:

- the corrective actions taken will dictate (and reveal) the depth of the root Company decided to dig into, so that the desired result (not repetition of the incident) is achieved the most cost efficient and effective way for the company (and in most of the cases this is not cut the Head).
- focus is given on Human errors of Company staff ONLY (Company Human category).
- focus is given to Company system and procedures ONLY (Company System/Procedures category)
- any root cause due to human or system failure OUTSIDE Company is separate category (Design/Equipment category)
- Any failure beyond control as root cause is considered other (Other category)

4.7. Human Factors:

4.7.1. Human factors, as root causes, is the contribution to the incident of Company crew or office personnel, who although screened and selected as per proper procedure:

- **Do not comply or implement well documented, adequate and effective company procedures and standards.**
- **in the case under investigation were proved with not adequate skills or experience** (very difficult to be a root cause, since there should be a procedure in place to ensure adequacy, but still quite popular in our investigations)

4.7.2. Human factors as root cause of an incident relate to human factors of Company related personnel, crew and office staff. **Human errors OUTSIDE Company's staff do not count.**

4.8. Company's Management System factors:

4.8.1. This category is supposed to classify all the root causes, which as corrective forms call for the improvement of the Company's standards, system, procedures, instructions and checklists.

4.9. Design/Equipment factors:

4.9.1. Design/Equipment factors, as root causes, is the contribution to the incident of factors which DO NOT relate to Company's staff and management system, but relate to the ADEQUACY or FIT FOR PURPOSE of hardware, systems and equipment, which Company staff did not invent but operate and maintain in the proper manner, as instructed.

4.9.2. Design/Equipment as root causes DO NOT relate to whether Company manage (operate, inspect, maintain) them properly, because then this cause is Company Human Factor and/or management system.

4.10. Other factors:

4.10.1. Other factors, as root causes, is the contribution to the incident of factors which are beyond Company control and do not belong to the category Design/Equipment.

4.11. Root causes classification:

4.11.1. It has been analysed elsewhere as well, but we repeat that one and the same issue/topic as root cause can be classified in various categories, depending not only on the incident, but on Company's staff and management system.

➢ **1st Example:** "inadequate initial training of an injured person"

If the injured person is subject of inadequate training then it means that with a sound training procedure, for which his colleagues have proven sufficient knowledge, HE HIMSELF was proved in this case inadequate then it is Human root cause.

If the injured person is object of "inadequate training" (he was not trained properly), then this cause, AS ROOT CAUSE, is related to Company's Management System AND NOT to Human.

➢ **2nd Example:** "motivation of an injured person"

The injured person (or team) in most cases SHOULD BE motivated by the Company, so dictated this cause as root relates mostly to Company's management system (because the relevant action is BY THE COMPANY'S MANAGEMENT SYSTEM).

One could say that if SELF-motivation is expected by the injured person or team, then this can be considered as human factor. But even so, there is a procedure to select the crew and

- if self-motivation is not pre-requisite, then again management system failed and selection criteria should be revised,
- if self-motivation is a pre-requisite, then management system failed (or if we want to go deeper office staff failed) because approved recruitment of a crew member who is not self-motivated.

5. References

- The Merchant Shipping Accident Reporting and Investigation Regulations 2005, 2005 No881
- MAIB Incident Report Form (IRF)
- MAIB MGN 289 (M+F)
- Republic of the Marshall Islands Marine Notice No. 6-037-1
- IMO Code for the Investigation of Marine Casualties and Incidents, 27Nov97
- Marine Injury Reporting Guidelines, OCIMF Feb97
- OGP 444 (HS Incident Reporting User Guide) May11
- USDA Accident investigation guide, 2005
- Directive 95/46/EC, 24Oct95 protection of individuals, processing and movement of personal data
- Regulation (EC) No 1406/2002, 27Jun02, European Maritime Safety Agency
- Regulation (EC) No 2099/2002, 05Nov02, Committee on Safe Seas and the Prevention of Pollution from Ships (COSS)
- Directive 2009/18/EC, 23Apr09, investigation of accidents in the maritime transport sector

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Contents

1. Introduction

1.1. Vsl-date-place-short title of injury

Injury type as per OCIMF Classification, see definitions 1.6

1.2. Investigator details

Investigator certified for Incident investigation would be recommended

1.3. Report Approvals flow

Prepared by (*Sup/nt, Master, lead investigator*)
Name: dept: Position:

Validated by (*DPA, Safety manager*)
Name: dept:

Reviewed by (*CEO, General manager*)
Name:

1.4. Distribution List

Vessel, depts

1.5. Disclaimer

Information collected and processed in this investigation is for accident prevention purposes.
Except for factual data, this information is not intended to be used for purposes such as:

- Evidence to charge someone on criminal misconduct or disciplinary responsibility or other claims and liabilities etc

in judicial proceedings for purposes of litigation or blame, unless a Court orders otherwise.
Unless a Court determines otherwise, the names, addresses and any other details of anyone who has given evidence to an inspector shall not be disclosed.
Some documents or records shall not be made available for purposes other than the investigation unless a Court determines otherwise. These include any declarations taken by an inspector or supplied to him during the course of his investigation; any notes or voice recordings of any interviews; medical or confidential information regarding persons involved in an accident or hazardous incident

1.6. Definitions

1.6.1. **Marine casualty**

means an event that has resulted in any of the following:
.1 the death of, or serious injury to, a person that is caused by, or in connection with, the operations of a ship; or
.2 the loss of a person from a ship that is caused by, or in connection with, the operations of a ship; or
.3 the loss, presumed loss or abandonment of a ship; or
.4 material damage to a ship; or
.5 the stranding or disabling of a ship, or the involvement of a ship in a collision; or
.6 material damage being caused by, or in connection with, the operation of a ship; or
.7 damage to the environment brought about by the damage of a ship or ships being caused by, or in connection with, the operations of a ship or ships.
"Very serious casualty" means a casualty to a ship which involves the total loss of the ship, loss of life or severe pollution.

1.6.2. **Serious marine casualty**

a casualty which does not qualify as a very serious casualty andwhich involves:
.1 a fire, explosion, grounding, contact, heavy weather damage, ice damage, hull cracking or suspected hull defect, etc., resulting in;
.2 structural damage rendering the ship unseaworthy, such as penetration of the hull underwater, immobilization of main engines, extensive accommodation damage etc.; or
.3 pollution (regardless of quantity); and/or
.4 a breakdown necessitating towage or shore assistance.

1.6.3. **Serious injury**

an injury which is sustained by a person in a casualty resulting in incapacitation for more than 72 hours commencing within seven days from the date of injury.

1.6.4. **Marine incident**

an occurrence or event being caused by, or in connection with, the operations of a ship by which the ship or any person is imperilled, or as a result of which serious damage to the ship or structure or the environment might be caused.

1.6.5. **Causes**

actions, omissions, events, existing or pre-existing conditions or a combination thereof, which led to the casualty or incident.

1.6.6. **Marine casualty or incident safety investigation**

means a process held either in public or in camera conducted for the purpose of casualty prevention which includes the gathering and analysis of information, the drawing of conclusions, including the identification of the circumstances and the determination of causes and contributing factors and, when appropriate, the making of safety recommendations

1.6.7. **Employee**

A person employed by the Company, but also for the purposes of this document, any person acting under the Company's instruction (including contractors such as non exclusive surveyors).

1.6.8. **Contractor**

For the purposes of this document this is an external contractor / self employed person undertaking jobs such as maintenance, repairs, installation, construction, and demolition etc for the Company.

1.6.9. **Visitor**

A person, not employed by the Company, who is visiting the Company's office or vessel.

1.6.10. **High potential incident (HiPo)**

Any injury incident / near miss / safety observation with a potential severity rating of high or intolerable as per the employee's company risk evaluation

1.6.11. **High potential incident frequency (HPIF)**

(#HiPo) x 1,000,000 / total exposure hours

1.6.12. **Occupational illness (ILL)**
An identifiable adverse physical or mental condition arising from and /or made worse by a work activity and / or work related situation.
The work environment must have caused or contributed to the condition or significantly aggravated a pre-existing condition (examples include skin diseases, respiratory conditions, poisoning etc).

1.6.13. **Non work related**
An event or chain of events resulting in an incident which takes place at a time when the employee is not working. Examples of non work related incidents include:
- Those which occur in the home (although if you were working from home and were injured, that would be work related)
- Those which occur while commuting (although there are some countries where legislation require these to be reported, they should still be recorded as non work related)

1.6.14. **Correction - Corrective action – Preventive action**
- Correction: Action taken to eliminate a detected nonconformity.
- Corrective Action: Action to eliminate the cause of a detected nonconformity or other undesirable situation.
- Preventive Action: Action to eliminate the cause of a potential nonconformity or other undesirable potential situation
- NOTE 1 There can be more than one cause for a nonconformity or for a potential nonconformity
- NOTE 2 Corrective action is taken to prevent recurrence whereas preventive action is taken to prevent occurrence

1.6.15. **Incident** This is an uncontrolled or unplanned event, or sequence of events, that results in a fatality or injury to a seafarer onboard ship or whilst ashore on company business.

Note: This excludes;
- *suicide or attempted suicide;*
- *criminal or terrorist activity;*
- *a deliberate act on the part of another individual; and,*
- *incidents which occur off the ship but where the consequences appear onboard at some later time.*

1.6.16. **Work Injury** This is any sign or symptom of physical damage or impairment to any part of the body directly resulting from an incident, regardless of the length of time between the incident and the appearance of the injury.

1.6.17. **Fatality** A death directly resulting from a work injury regardless of the length of time between the injury and death.
Note: fatalities are included in the Lost Time Injury count.

1.6.18. **Lost Workday Case (LWC)** This is an injury which results in an individual being unable to carry out any of his duties or to return to work on a scheduled work shift on the day following the injury unless caused by delays in getting medical treatment ashore**.**
Note: An injury is classified as an LWC if the individual is discharged from the ship for medical treatment.

1.6.19. **Restricted Work Case (RWC)** This is an injury which results in an individual being unable to perform all normally assigned work functions during a scheduled work shift or being assigned to another job on a temporary or permanent basis on the day following the injury.
Note: The following come into the category of "less than normal assigned work functions"
- *performing all duties or normal assigned work functions but at less than full time schedule;*
- *performing limited duties at normally assigned job at fulltime schedule; and,*
- *transfer to other duties*.

1.6.20. **Medical Treatment Case (MTC)** This is any work-related loss of consciousness (unless due to ill health), injury or illness requiring more than first aid treatment by a physician, dentist, surgeon or registered medical personnel, e.g. nurse or paramedic under the standing orders of a physician, or under the specific order of a physician or if at sea with no physician onboard could be considered as being in the province of a physician.

MTCs include:

- *injuries which result in loss of consciousness, even if the individual resumes work after regaining consciousness (N.B. this does not cover loss of consciousness due to ill health);*
- *sutures for non-cosmetic purposes;*
- *use of casts, splints or other means of immobilisation;*
- *any general surgical treatment;*
- *removal of embedded objects from eye by surgical means;*
- *use of other than non-prescriptive drugs or medications;*
  use of a series of compresses for treatments of bruises, sprains or strains;
- *MTCs exclude the following:*
- *first aid, LWCs and RWCs;*
- *hospitalisation for observation without treatment;*
- *a one-off tetanus injection;*
- *consultative visit to, or examination by, a physician or registered professional for the purpose of a confirmatory check*.

1.6.21. **Lost Time Injuries (LTIs)**
Lost Time Injuries are the sum of Fatalities, Permanent Total Disabilities** , Permanent Partial Disabilities and Lost Workday Cases. (LTIs = Fatalities + PTD + PPD + LWC)
** For disabilities see below

1.6.22. **Lost Time Injuries Frequency (LTIF)** for a period
(LTIs) x 1,000,000 / total exposure hours for this period

1.6.23. **First Aid Case (FAC)**
This is any one-time treatment and subsequent observation or minor injuries such as bruises, scratches, cuts, burns, splinters, etc. The first aid may or may not be administered by a physician or registered professional.

FACs include:

- *follow-up visits to a physician or nurse for observation ONLY, or for routine dressing change;*
- *negative X-ray results;*
- *cleaning abrasions/wounds with antiseptic and applying dressing;*
- *irrigation of eye and removal of non-embedded foreign objects using a cotton swab;*
- *one time administration of oxygen after exposure to toxic atmosphere and resumption of normal (but not*
- *restricted) work the following day;*
- *soaking, application of hot-cold compress and use of elastic bandage on sprains and strains immediately after injury;*
- *applying one-off cold compress or limited soaking of a bruise;*
- *use of non-prescriptive medicines;*
- *use of elastic bandages,*
- *treatment of First Degree burns.*

1.6.24. **Total Recordable Cases (TRC)** for a period
The sum of all work-related fatalities, lost time injuries, restricted work injuries and medical treatment Injuries. TRCs = LTIs + RWCs + MTCs.

1.6.25. **Total Recordable Cases Frequency (TRCF)** for a period
(TRCs) x 1,000,000 / total exposure hours for this period

1.6.26. **Near Miss** An event or sequence of events which did not result in an injury but which, under slightly different conditions, could have done so.

1.6.27. **Exposure Hours**
24 hours per day while serving on board.

1.6.28. **Total Exposure Hours per year**
(Fleetyears)x24x30x12x(crew No)

1.6.29. **Permanent Total Disability (PTD)** Permanent Total Disability is any work injury which incapacitates an employee permanently and results in termination of employment on medical grounds(e.g. loss of limb(s) permanent brain damage, loss of sight) and precludes the individual from working either at sea or ashore.

1.6.30. **Permanent Partial Disability (PPD)** Permanent Partial Disability is any work injury which results in the complete loss, or permanent loss of use, of any member or part of the body, or any impairment of functions of parts of the body, regardless of any pre-existing disability of the injured member or impaired body function, that partially restricts or limits an employees basis to work on a permanent basis at sea. Such an individual could be employed ashore but not at sea in line with industry guidelines.

2. Injury Report – Factual section

2.1. Person particulars

Name, Passport No/ID, Nationality, Rank, Age

2.2. Description of incident

2.2.1. Vessels time/place at sea/port/anchor/repair berth/operation mode

2.2.2. On or Off Duty / Time / day night/ Place of injury

Onboard/(deck, ER, Accommodation) / not on board

2.2.3. Part of body

Hand, foot, head, eye, nose, ear, hand finger, fother, combination, foot finger, back,

2.2.4. Type of injury

MTC, RWC, LWC, FAR

2.2.5. Environmental conditions

Weather(clear, partly cloudy, overcast, fog, rain, snow, ice etc),
sea state (Sheltered waters, Calm , Moderate, Rough, other), swell in m
tide state and height
wind(Force 0–3, Force 4–6 ,Force 7–9, Force 10–12,> Force 12),
temperature, humidity, lighting(Light, Semi dark, Dark),
visibility (Good (>5Nm), Moderate (2–5nm), Poor (1000m–2nm), Fog – if <1000m please specify),
angle of rolling/pitching, trim, list etc., speed/course

2.2.6. Topology of incident

Description of related equipment/machinery/tools, access, space/floor condition, space limitations, other equipment in the area, ergonomy, affect of list, trim, swell, speed, wind

2.2.7. Detailed report

Name those persons working, those persons supervising,
Name other present (e.g. colleagues, ship's crew, the public, customers, eye witnesses).
The nature of work that was being undertaken at the time of the incident.
The location of the incident, the facility concerned and the features peculiar to it.
The method of work being used and the documentation and arrangements governing it (e.g. method statements, Permit to Work, procedures etc).
Any equipment involved, including type, model, condition, maintenance status, ownership
Sequence of events leading to the accident (What happened for the incident to occur immediately before and during the incident
Details of Injury, and all consequences identified (injury, loss, damage or environmental damage)
Details of any event/incident during the voyage that may have a material bearing on the incident, or unusual occurrence, whether or not it appears to be relevant to the incident
Reference to statements taken by the related crew members
Reference to any other 3rd party inspection and report
Other work activities carried out onboard at the time of the incident
Ranking of the injury might be needed as per Administration ot coastal requirements, example from MAIB:
***Major injury** means -*
(a) any fracture, other than to a finger, thumb or toe;
(b) any loss of a limb or part of a limb;
(c) dislocation of the shoulder, hip, knee or spine;
(d) loss of sight, whether temporary or permanent;
(e) penetrating injury to the eye; or
(f) any other injury –
(i) leading to hypothermia or to unconsciousness, or
(ii) requiring resuscitation, or
(iii) requiring admittance to a hospital or other medical facility as an inpatient for more than 24 hours.
***Serious injury** means*
any injury, other than a major injury, to a person employed or carried in a ship which occurs on board or during access which results in incapacity for more than three consecutive days excluding the day of the accident commencing within seven days from the date of injury or as a result of which the person concerned is put ashore and the ship sails without that person, unless the incapacity is known or advised to be of three consecutive days or less, excluding the day of the accident. **I**
ssues that were not addressed or evidence not collected and reason

2.2.8. Immediate actions for correction

First aid - Response to the occurrence
Medical treatment
Care of condition of injured parties, if disabling injuries or loss of life;
Actions taken to mitigate the effects of the occurrence
Follow-up actions – making site safe, recovery arrangements and remedial action
Other

2.3. Evidence related to the incident

At this stage the evidence is classified

2.3.1. Human interface

Crew List and Person particulars (ID, nationality, rank, age, physical characteristics)
Supervision/work team composition and particulars
Crew member and team Competence appraisals
STCW Certificates and certificates beyond STCW incl. Company policy for this rank
Experience/ service history (on current rank, similar vessel type / size, company fleet etc)
Familiarization ashore/on board
Training ashore/on board including Safety Meeting issues in relation to the subject
Pre-embarkation medical examinations
Post incident alcohol test, any evidence of alcohol consumption within last 24 hrs prior incident
Drug test (urine kit), as applicable
Any prescribed medication or ingested prescribed or non-prescribed drugs
Injury report, Medical report, Red Cross or other external records
Photos of injured person/body part/incident scene
Work/rest hours records for a 7 days prior to the incident, overtime report
Printouts of communications made between vessel and radio stations, SAR centres and control centres, etc., with transcript of tape recordings where available
Statements by the Master, supervisor, witness Statements including sketch of the incident scene

2.3.2. Design Equipment

Maker's manual instructions
Photos of related equipment/machinery/tools
Evidence for and environmental conditions, weather report
Photos of the work/incident location
Condition/maintenance/inspection records of the related equipment

2.3.3. Company Management System records

Work Risk Assessment, Work permit, planning instructions, as applicable
Work instructions/procedures , work team duties, work sequence
Work supervision/communication arrangements
Log books: bridge and engine-room scrap and official log books, data log printout, ER computer printouts, course and engine speed recorder, radar log, VDR records, bell book, as applicable
Engine/Bridge Standing Orders or Night Orders
PPE compliance, PPE Policy acknowledgement
Medical chest inventory
Related DMS records (incl. relevant Maintenance or Operations in the past, Safety Meeting, Training, Drills etc.)
Any related non-conformities/defect reports/near misses/Hazard Reports/ Risk Assessments

2.3.4. Other

P&I, PSC, Police and other applicable 3rd party inspections reports, fotos, statements

3. Investigation Review

3.1. Investigation report

Restructuring of the initial report, in a way to imply the root cause analysis to follow)
Describe the post-incident consequences and actions to date:

- *Exact nature of injuries and/or damage occurring*
- *Days lost/lost to date due to injury*
- *Approximate costs of losses sustained to vessel and equipment*
- *Improvement, prohibition notices or other actions taken by enforcing authorities*
- *Criminal or civil actions pending: e.g. arrest, detention; seize, confiscation or retention of evidence of assets or evidence*

Interview techniques used, IMO code
The powers of inspector to exclude any person from an interview, if they have substantial reason to believe that the presence of that person would hamper the investigation, is highlighted.

3.1.1. Human Factors

- Person's particulars (and team and supervisor, as applicable):
  - *Nationality, Rank, Age*
  - *Certification, Experience, service history, repeater/newcomer*
  - *Seaman card remarks, medical history*
  - *Competence, appraisals*
  - *familiarization ashore/on board, training ashore/on board*
  - *PPE compliance, PPE Policy acknowledgement*
  - *fatigue data, work / rest hours 77 hours back and in general, overtime*
  - *Post Incident alchohol test, Drug test (urine kit), as applicable*
  - *physical characteristics (body/mass index), fitness*
  - *Personal Habits: Smoking, alcohol habit & possible alcohol consumption within last 24 hrs prior incident, exercise and recent activity, under prescribed medication, using any ingested prescribed or non-prescribed drugs.*
  - *First Aid*
- Job Factors
  - *Team composition vs competence and leadership required for the job*
  - *Changes of staff, procedures, equipment or processes that could have contributed to the occurrence;*
  - *Familiarisation with safe practices (PPE, permits, communication, fatigue, risk assessments checklists)*
  - *Familiarization with work planning, instructions, procedures, work team duties, work sequence, etc*
  - *Familiarisation with relevant tools and equipment operation*

3.1.2. Design / Equipment Factors

- Operating Manuals (availability, adequacy of procedures in manuals)
- Limitations of design or equipment (access, fatigue, ergomomy etc)
- Environmental Factors
  - *Weather(clear, partly cloudy, overcast, fog, rain, snow, ice etc),*
  - *sea state (Sheltered waters, Calm , Moderate, Rough, other),*
  - *swell in m*
  - *wind(Force 0–3, Force 4–6 ,Force 7–9, Force 10–12,> Force 12),*
  - *temperature, humidity,*
  - *visibility (Good (>5Nm), Moderate (2–5nm), Poor (1000m–2nm), Fog – if <1000m please specify),*
- Ergonomy – Topology
  - *Scrutiny of workplace*
  - *lighting(Light, Semi dark, Dark),*
  - *angle of rolling/pitching, trim, list etc.,*
  - *speed/course*
  - *trim, list, angle of pitching/rolling,*
  - *speed/course*

3.1.3. Documented Management System – procedures – standards Factors

- First aid
  - *Adequacy of procedure. Medical chest condition inventory.*
- working practices vs safe working practices
  - *(PPE, fatigue, communication, permits, checklists, safeguards in place etc)*
- planning for the job and leadership for the job
- required competence for the specific job
- relevant equipment and tools, familiarization with, condition, inspection and maintenance records
- review and report of relevant to the incident KPIs (LTIF/TRCF)
- Communications between vessel and outside world
  - *Company, radio stations, SAR centres and control centres, etc, with review of transcript of tape recordings, where available*

3.1.4. Other Factors

- Areas and issues not investigated
  - *due to lack of time or evidence or expertise or need*
- Issues beyond the control of the Vessel and crew member or team as applicable
- Review of collected evidence – Statements
  - *re-classifying of the evidence collected as per 2.3 and others*
- Human interface
- Design Equipment
- Company Management System records
- Other

4. Root cause Analysis- evaluation section

4.1. Factors for consideration, as per sections 2 and 3 above

4.2. Contributing factors/cause analysis - Conclusion

- *categories of causes Human Crew&Office/ Company System&Procedures/ design & equipment / /other*
- *An internal investigation:*
  - *is carried out by Company managed own resources, properly certified, assessing Company own system.*
  - *Is NOT the objective but the means to ensure improvement and no repetition, therefore each Company will decide to which depth investigation will go so that improvement is achieved in the most time and cost effective and efficient manner, see also 4.3.*
  - *should be action oriented, therefore negative terms like "inadequate, poor, lack of…, unclear, un.., conflicting etc" should be avoided and instead positive, action oriented, terms should be used like " improvement of…, better clarifying etc".*
- *There may be more than one root causes, with differing weight factor.*
- *for any casualty the corrective action to be taken, IF CORRECT AND EFFECTIVE, dictates the combination of ROOT CAUSES, and this assumption will resolve many ambiguities, when trying to identify and classify the root causes, in other words and in an ORHODOX approach the corrective actions SHOULD address the combination of root ONLY causes. A simple example to justify this principle:*

5. Corrective / Preventive Actions

5.1. Corrective Actions (particular Vessel)
5.2. Preventive Actions (Fleet)

6. Lessons Learned

7. Appendices

7.1. Details of injuries
7.2. Technical details
7.2.1. Vessel, plant or equipment associated with the incident
7.2.2. Description and Layout of incident site
7.3. Photo Report

- *Vessel, plant or equipment associated with the incident*
- *incident site*

7.4. Other Supporting documents

- *As per 3.6*