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**On**

**Marine casualty / incident reporting and recording, including near miss situations as it relates to VTS**

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Marine casualty/incident reporting and recording, including near miss situations as it relates to VTS

# Introduction

TBD…. To Take from task registration.

## Objectives

The objectives of the Guideline are:

* to provide guidance and information to competent VTS and other authorities on the development and establishment of harmonized casualty/incident reporting processes and needed instruments;
* to collect material to improve the VTS management based on the return of experience from the analyze of casualty/incident and near-miss;
* to provide guidance on the way to identify, to analyze and report near-miss if the VTS authority decides to do so;
* to enhance safety culture within a VTS authority.

## Background

The process of identifying and reporting marine casualties has been clearly established by IMO (IMO Res.A.884 and MSC Res.255). This process could be enlarged to marine incident and near-misses. Casualties are often the accumulation of minor marine incidents or near-misses. The analysis of marine incidents and near-misses could help VTS and other authorities in reviewing its safety of navigation infrastructures or regulations. Analysing and reporting of marine incidents and near-misses is implemented by ICAO (ICAO Doc 4444: PANS-ATM). Reporting culture is the first step to implement a Safety culture. The ultimate goal is to learn from marine incidents and near miss situations.

# Definitions and clarifications

For the development and understanding of this Guideline, it is necessary to clarify the differences between a marine casualty, a marine incident and a near-miss.

**A marine casualty** means, as defined in MSC.255 (84) known as Casualty Investigation Code:

an event, or a sequence of events, that has resulted in any of the following which has occurred directly in connection with the operations of a ship:

* the death of, or serious injury to, a person;
* the loss of a person from a ship;
* the loss, presumed loss or abandonment of a ship;
* material damage to a ship;
* the stranding or disabling of a ship, or the involvement of a ship in a collision;
* material damage to marine infrastructure external to a ship, that could seriously endanger the safety of the ship, another ship or an individual; or severe damage to the environment, or the potential for severe damage to the environment, brought about by the damage of a ship or ships.
* **A marine incident** means, as defined in MSC.255 (84):

an event, or sequence of events, other than a marine casualty, which has occurred directly in connection with the operations of a ship that endangered, or, if not corrected, would endanger the safety of the ship, its occupants or any other person or the environment.

* **Near-miss means**, as defined in MSC-MEPC.7/Circ.7 Guidance on near-miss reporting:

a sequence of events and/or conditions that could have resulted in loss. This loss was prevented only by a fortuitous break in the chain of events and/or conditions. The potential loss could be human injury, environmental damage, or negative business impact (e.g., repair or replacement costs, scheduling delays, contract violations, loss of reputation).

Near-miss could include near grounding, near collisions, near-striking.

Extra definitions are proposed for the proper understanding of this guideline:

* **Close-quarters situation**, proposition based on near-miss definition above: a sequence of events and/or conditions between different vessels that could result in a collision between vessels.
* **Collision** is an interaction between two or more vessels at sea. It should be kept in mind that a collision between vessels does not lead necessarily to a direct contact between them. In some situation, the water displaced by a vessel can generate an accident on others vessels in the vicinity, hence this is considered as a collision. In others situations, the contact could be with a ship equipment or tow such as fishing gears, dredging gear, cable line, towing line or tow.
* **Grounding** is the impact of a ship on seabed or waterway side. It may be intentional, as in beaching to land crew or cargo, and careening, for maintenance or repair. When unintentional, grounding may result simply in stranding, with or without damage to the submerged part of the ship’s hull. Breach of the hull may lead to significant flooding, which in the absence of containment in watertight bulkheads may substantially compromise the ship's structural integrity, stability, and safety.
* **Striking** is the impact of a ship with anything else than another ship whether fixed (such as a bridge, a dock, etc.), adrift or floating (such as a container, a whale, a buoy…).
* **VTS Record** – document, stating result and providing information of situation observed and activity performed.
* **Vessel,** as defined by COLREGs 72, rule 3(a), includes every description of watercraft, including non-displacement craft, WIG craft and seaplanes, used or capable of being used as a means of transportation on water.

# Instruments required for Casualty/Incidents reporting and recording

## Management of abnormal situations (recognition)

The correct assessment of the situation by VTSO is fundamental for the actions to be taken for preventing casualties or reducing navigational risks. VTS authority should determine safe criteria of abnormal situation. This criteria is to be used for decision support tools within VTS. Refer to IALA Guideline No.1110 “Use of Decision Support Tools for VTS personnel”.

From a viewpoint of a VTSO, the recognition of abnormal situation depends on the capability of the VTS (sensors such as radar, AIS, DF, CCTV, etc) and the VTS area (weather conditions, traffic density, visibility, etc).

The VTS system should have technical capability to detect abnormal situations.

The procedures to identify anomalous behaviour of the vessels should be integrated as routine procedures in VTS Centre according the IALA Recommendation V-127.

The decision support tool or dynamic risk assessment tool could be useful to enhance the capability of VTSO to identify abnormal situation more efficiently.

If abnormal situation is identified, an intervention from VTSO should be given.

Typical algorithm of near-miss/incident recognition and reporting by VTS is shown on the flowchart, given in Annex 1 (“*VTS Marine Casualty/Incident/Near-Miss recognition and reporting flowchart”)*.

### **Required technical ability of VTS system for data recording and storage**

It is essential that VTS must have ability to record and store all relevant information regarding recognized Marine Casualty/Incident/Near-Miss situations.

It can include:

* Sensors data recording (radar video and targets, AIS, CCTV, hydro-meteo data, etc.);
* VHF and telephone communication recording;
* Internal VTSO conversations inside VTS Centre;
* VTSO actions recording (e.g. made by CCTV inside VTS Control Centre);
* Other relevant information

IMO (VTS Manual Chapter 1505, IMO source?) recommends a minimum of 30 days for other shore side activities (such as SAR) as the time-period to allow for the full retrieval of data post-incident. It can be assumed that this requirement is appropriate for VTS and applies to all data sets that may be used for incident replay. As this data will be recorded in a rolling loop of, for example the most recent 30 days data, there is a requirement to store recordings for a period of time to safeguard recorded data in case of an incident.

Technical means of VTS should be in line with relevant technical requirements to ensure proper data recording and storage. Refer to Recommendation V-128 and Guideline 1111.

VTS systems can also have the capability for data analysing and automated report generation.

# Reporting process

### **4.1. Constraints**

* Legal
* VTS Authority responsibility level
* Lack of situational awareness
* Technical
* Administrative,
* Organisational
* Mandatory or Voluntary
  1. Mandatory reporting

There are mandatory standards for notification of marine casualty in chapter 5 of Res.MSC.255 (84) known as Casualty Investigation Code.

VTS Authority has to implement the mandatory requirements for coastal State as defined in national regulation.

* 1. Voluntary reporting

There is no mandatory international standard for the VTS notification of marine incidents or near-miss situations, but there are some regional and national requirements to notify incident (e.g. EU Directive 2002/59/EG and 2009/18 Article 6) by flag State, masters of ships involved and coastal State.

Although for those states, who do not have requirements regarding incident and near-miss situation reporting, it is advised to take into consideration establishing national regulations.

Caution must be taken in establishing national regulations because the vision of a VTS is different from the vision of a bridge team.

Near-miss situations analysing and reporting can be used for assessment of safety of navigation in VTS area. This can also be used as component of a quality management system and measuring the current effectiveness of a VTS.

* 1. Safety Culture

Gathering statistics on marine incidents and near-miss situations followed by corrective actions (adapting procedures, organizing training based on these statistics, etc.) is a part of Safety culture within a VTS Centre. The overall performance of a VTS can be improved and can contribute to enhance the safety culture.

It is not the objective to determine liability, or apportion blame in VTS reports. However, VTS authority should not refrain from fully reporting on the causal factors.

The idea is to encourage a direct share of information to promote feature of a “just culture” in an atmosphere in which the behaviour of all the actors of the shipping traffic is that of co-operation.

* 1. Content of reports

The following basic information should be included in casualty/incident/near-miss VTS report:

* Who and what was involved? (e.g. vessel data)
* What happened (e.g. grounding, striking, collision)
* Where, when, and in what sequence?
* Hydro-meteo information
* VTS operator and/or VTS supervisor

Regardless of the nature of the near-miss, the additional materials and/or VTS records can be enclosed, such as photographs, traffic image recordings, logs, etc.

It is advised to keep VTS report format as simple as possible. See example of near-miss/incident/casualty VTS report format in annex.

The procedure of Casualty notification is clearly defined in Chapter 5 of Res.MSC.255 (84) known as Casualty Investigation Code, including format and content of such notification.

* 1. Internal and external reporting

Marine casualty/incident reporting by VTS can be made:

1. internally to the VTS manager or the VTS Authority in order to consolidate the analyses of marine casualties with marine incidents and near-misses,
2. externally to ship’s owners of any ship involved, Flag State Authority and Class Society delivering the ISM certification on behalf of the Flag State

Whenever a VTS is making an external near-miss report, it should be mentioned that this reporting is voluntary based on the VTS quality management system.

# Conclusions benefits of Casualty/Incidents Reports

Benefits of marine casualty/incident reporting including near-miss situation are as follows:

* Enhancement of navigation safety in general
* Prevention of accidents in future
* Proactive protection of marine environment
* Further investigation

Casualty report together with relevant recorded VTS information can be used by Marine Safety Investigation Authority for further investigation (according to MSC255(84) Casualty Investigation Code).

* Emergency notification

Operational/Law enforcement authorities may be interested in receiving information regarding marine incidents/accidents in their area of responsibility as soon as possible.

* Evidence (for insurance and/or other stakeholders in interest)
* Lessons learned

Incident reports can serve as a source of experience for all stakeholders (VTS operators, pilots, shipping companies, etc.) and contribute to safety culture.

* Collection of statistics to identify trends and risks
* Support of risk assessment
* Revision of VTS procedures
* Improvement of a VTS Decision Support Tool

# References

* TBD

# Annex 1. *Maritime Casualty/Incident/Near-Miss recognition and reporting flowchart*



*Figure 1. Maritime Casualty/Incident/Near-Miss recognition and reporting flowchart (by VTS)*

# Annex 2. example of near-miss/incident/casualty VTS report format



Draft text below to be discussed and considered for further work on the document

Text From MSC-MEPC.7/Circ.7:

Companies should investigate near-misses as a regulatory requirement under the ìHazardous Occurrencesî part of the ISM Code. Aside from the fact that near-miss reporting is a requirement, it also makes good business and economic sense because it can improve vessel and crew performance and, in many cases, reduce costs. Investigating near-misses is an integral component of continuous improvement in safety management systems. This benefit can only be achieved when seafarers are assured that such reporting will not result in punitive measures. Learning the lessons from near-misses should help to improve safety performance since near-misses can share the same underlying causes as losses.

1.2 For a company to realize the fullest potential benefits of near-miss reporting, seafarers and onshore employees need to understand the definition of a near-miss to ensure that all near-misses are reported. The company also needs to be clear about how the person who reports the near-miss and those persons involved will be treated. The guidance that follows suggests that the company should encourage near-miss reporting and investigation by adopting a “just culture” approach.

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* Near-miss reporting (voluntary)

There are many barriers related to the reporting of near-misses. In many cases, near-misses are only known by the VTS but not the vessels involved in the near-misses. The main reason is the VTS monitors in general a wider area than a single vessel can do. Moreover Vessels involved in near-misses are not necessarily flying the flag of the coastal State where the VTS is located, thus there is no direct interest for the VTS to inform the companies and navigators. Moreover, in compliance to the United Nations Convention on the Law Of the Sea and the international convention on Safety Of Life At Sea, there is no reason in the convention to take action by the Coastal State.

The letter of reporting should then be positive and not blaming. This is the most difficult part of the exercise, for the reporting may not be understood.

It is important also to keep pace to a minimum format of correspondence in order to report to all stakeholders. The idea is for the VTS to provide a near-miss as a non-compliance found in the operation of the quality system of the centre. Under ISO 9001, the certified body (i.e. a VTS) shall monitor, measure, analyse and improve its quality system.

A good reason to report and analyse near-misses is purely statistical. If we are expecting only the occurrence of marine casualties and marine incidents, there are definitely few materials to make general conclusion to enhance a system. On the contrary, if we collect the reporting of near-misses, there is much more material to help for conclusion in order to enhance any system. This is the case in the nuclear industry were obviously there are few accidents, for when they occur everyone knows it in the newspapers. And when we know that accident is the accumulation of minor marine incidents, it is then better to concentrate on the analyses of the different potential causes of accident.

The text below is taken from new draft of V128. The use of it = TBD

#### **Incident or Accident Management**

Where the VTS is tasked to support Incident Management, Decision Support Tools could help visualize and plan the allocation of resources within the incident area. These tools may help the VTS to organize different teams in order to efficiently cover a given area. This can be done with graphical overlays, identification of the resource locations and historical track display in order to identify the areas already covered during the operation. This can also be achieved by displaying zones unsuitable for navigation and factors influencing the decision processes such as the prevailing and forecast sea currents and wind conditions. It may include assistance for planning and monitoring the operation.

Where forecast data is included, Decision Support Tools may assist the VTSO or other decision makers to assess the probable impact of the incident. Drift modelling and area protection assessments may be performed on a regular basis throughout the incident to ensure that the impact of the incident is minimised.

Incident Management alerts and alarms may all be recorded and formatted into an Incident Management Report such that action can be assessed and confirmed alongside the Emergency Management Plans of the Competent Authority.

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# Background

From the perspective of safety management, there is a danger in concentrating on the difference between marine casualties and incidents using definitions that may be arbitrary and limiting. Many marine incidents and near-misses occur every day which may or may not be reported to the investigation authority but which come close to being marine casualties – often exposing significant risks. Since there is no injury, or little or no damage, such marine incidents or near-misses might not be investigated. This is unfortunate because the investigation of an incident or near-miss may yield better results for hazard identification than the investigation of a marine casualty. The difference between a marine casualty and a marine incident or a near-miss may simply be an element of chance. Indeed, a marine incident or a near-miss may be thought of as an undesired event that under slightly different circumstances could have resulted in harm to people or damage to property and thus would have been classified as a marine casualty.

Some general examples of a near-miss help to illustrate this definition:

.1 Any event that leads to the implementation of an emergency procedure, plan or response and thus prevents a loss. For example, a collision is narrowly avoided; or a crew member double checks a valve and discovers a wrong pressure reading on the supply side.

.2 Any event where an unexpected condition could lead to an adverse consequence, but which does not occur. For example, a person moves from a location immediately before a crane unexpectedly drops a load of cargo there; or a ship finds itself off-course in normally shallow waters but does not ground because of an unusual high-spring tide.

.3 Any dangerous, or hazardous situation or condition, that is not discovered until after the danger has passed. For example, a vessel safely departs a port of call and discovers several hours into the voyage that the ship’s radio was not tuned to the Harbour Master’s radio frequency; or it is discovered that ECDIS display’s scale does not match the scale, projection, or orientation of the chart and radar images.

The above definitions are resumed in the following figure :



In order to differentiate a marine casualty, a marine incident and a near-miss, a first approach is an increase of damages from a normal situation towards a marine casualty as indicated in the figure below:



A second approach consists to clarify the differences between a marine incident and a near-miss.

A marine **incident** is an unexpected event with low influence (unlike the marine casualty which has strong) or small event in itself but likely to have serious consequences. There may be no damage or at least few damages in an incident.

A **near-miss** is an unplanned event that did not result in injury, illness, or damage, but had the potential to do so. Only a fortunate break in the chain of events prevented an injury, fatality or damage. There is no damage in a near-miss.

In the point of view of the VTS, there is a limit (CPA and TCPA for instance) to be decided (depending from the VTS area and VTS sensors) where a near-miss can occurred.



It should be understood that the limit set by one VTS is different from another VTS. In term of Quality management of the VTS, this limit could be measured, analysed and improved after some time and a number of near-misses recorded.

- Q1: Which area to be considered ?

VTS area, declared by the VTS authority, is considered to report marine incidents.

-Q2: Which ships to be reported

All vessels according to the vessel definition given in definition section.

-Q3: Who is responsible to report and for what types of events TBD

Res.MSC.255 (84) known as Casualty Investigation Code defines in Part II mandatory standards. One of these mandatory standards is notification of marine casualty (chapter 5) by flag State, masters of ships involved and coastal State.

There is no mandatory international standard for the notification of incident, but there are some regional and national requirements to notify incident (EU requirements) by flag State, masters of ships involved and coastal State.

The notification of near misses is a requirement of Res.A.741(18) as amended and known as the ISM Code. The purpose of the ISM Code is to provide an international standard for the safe management and operation of ships and for pollution prevention. The scope of the ISM Code is limited only to companies. MSC-MEPC.7/Circ.7 Guidance on near-miss reporting included to the ISM Code mentions in introduction:

“*Companies should investigate near-misses as a regulatory requirement under the “Hazardous Occurrences” part of the ISM Code. Aside from the fact that near-miss reporting is a requirement, it also makes good business and economic sense because it can improve vessel and crew performance and, in many cases, reduce costs. Investigating near-misses is an integral component of continuous improvement in safety management systems. This benefit can only be achieved when seafarers are assured that such reporting will not result in punitive measures. Learning the lessons from near-misses should help to improve safety performance since near-misses can share the same underlying causes as losses*.”

Seafarers and onshore employees of a company are required to report near-miss. The company also needs to be clear about how the person who reports the near-miss and those persons involved will be treated. The company should encourage near-miss reporting and investigation by adopting a “just culture” approach.

In the International Safety Management Code (ISM Code) there are clear issues on the quality procedures of the Safety Management in a shipping company:

*“The safety management system should include procedures ensuring that non-conformities, accident and hazardous situations are reported to the company, investigated and analysed with the objective of improving safety and pollution prevention.”[[1]](#footnote-1)*

*“The company should carry out internal safety audits on board and ashore at intervals not exceeding twelve months to verify whether safety and pollution-prevention activities comply with the safety management system. In exceptional circumstances, this interval may be exceeded by not more than three months.”[[2]](#footnote-2)*

But ISM and near-miss reporting are purely internal procedures of shipping companies and do not involve any others stakeholders.

In compliance to the established rules, there is no requirement for VTS to report near-miss. In addition a VTS will notice a near-miss in taking due consideration of its own sensors and tasks as a VTS. The vision of a VTS is different from the vision and objective of a shipping company. It is therefore advisable to proceed with caution for a VTS if it decides to report a near accident in order not to generate misunderstandings in its reporting approach.

The treatment of near-miss by VTS will be detailed later as a voluntary procedure.

-Q4: What types of events should be reported TBD - See answer to Q3

-Q5: Which authorities TBD - See answer to Q3

**Q: To whom VTS reports may be addressed?**

VTS casualty/incident reports can be addressed to the following organizations in accordance with Casualty Investigation Code, regional or national rules and regulations:

* + Competent Authority
  + Port Authority
  + VTS Authority
  + Adjacent VTS
  + Port State Control Authority (PSC)
  + Marine Safety Investigation Authority
  + Law Enforcement Authority
  + Flag State Maritime Authority
  + Shipping Company
  + Class society delivering the ISM certification on behalf of the flag State
  + Maritime Rescue and Coordination Centre (MRCC)
  + International Maritime Organization/Agreement (e.g. EMSA, PMOU, etc.)
  + Pollution Monitoring and Response Centre
  + Coastal State (Ref. to chapter 5 of Casualty Investigation Code)
  + any substantially interested States (i.e. because of the nationality of the crew, passengers … Ref. to chapter 5 of Casualty Investigation Code)

1. Point 9 of the ISM Code: reports and analysis of non-conformities, accidents and hazardous occurences. [↑](#footnote-ref-1)
2. Point 12 of the ISM Code: company verification, review and evaluation. [↑](#footnote-ref-2)