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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

This guideline is intended to provide guidance and information to VTS authorities and Competent authorities on the development and establishment of harmonized casualty/incident/near-miss reporting, recording and analysis processes.

## Objectives

The objectives of the Guideline are:

* to collect material to improve the VTS management based on the return of experience from the analysis 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 (84). This process could be enlarged to marine incident and near-misses.

Casualties are often preceded by many 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.

The analysis and reporting of incidents and near-misses is recognised by other high-risk industries as a fundamental aspect of safety management (see for example the ICAO (ICAO Safety Management Manual – Doc 9859 AN/474).

Through such analysis and reporting, it is possible to establish a ‘reporting culture’ and this is often the first step to implement a Safety culture. The ultimate goal from this activity is to learn lessons from incidents and near miss situations and therefore avoid any future damage

# 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** is defined in MSC.255 (84) known as Casualty Investigation Code as: 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** is defined in MSC.255 (84) known as Casualty Investigation Code as 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** is defined in MSC-MEPC.7/Circ.7 Guidance on near-miss reporting as 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).



*Fig. 1.Classification of Near-Miss, Incident and Casualty situations*

Based on the definitions above the main difference between Near-Miss and Incident can be described as follows:

Near-Miss: **only a fortuitous break** in the chain of events prevented occurrence of a casualty;

Incident: situation has involved a loss, however, damages were minor and casualties were prevented.

# Understanding incidents and associated data

## Decisions, Criteria and Investigation Tools

The correct assessment of the situation by VTSO is fundamental for the actions to be taken for preventing casualties or reducing navigational and environmental risks. VTS authority should establish criteria that determine operational effectiveness – such as safety margins (REF: op effectiveness guideline), monitor the VTS area with respect to these criteria, and use those criteria when investigating incidents.

These criteria might also 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, managing and where possible reducing risk depends on the capability of the VTS (sensors such as radar, AIS, RDF, CCTV, etc.) and the VTS area (weather conditions, traffic density, visibility, etc).

The procedures to identify situations where risk is increasing, or where measures of operational effectiveness (e.g., safety margins) have possibly been exceeded, should be integrated as routine procedures in VTS Centre according the IALA Recommendation V-127.

The identification of abnormal situations should be based on the evaluation of various risks including:

• Determining factors, for example :

* + - CPA/TCPA factor;
    - Emergency maneuver of a vessel;
    - Complaint addressed to VTS centre;
    - Lack of the lookout in sight and hearing of a vessel;
    - Etc…

• Additional factors, for example :

* + - Weather and visibility conditions;
    - Density of traffic;
    - Dangerousness of the cargo on board;
    - Proximity of shallow waters;
    - Manoeuverability of the vessel;
    - Etc…

When incidents or near misses do occur it is appropriate to use a coding scheme or a framework to both guide the investigation and to categorise the contributing factors. The results of these investigations should be placed in a form that allows a VTS Authority to detect patterns over time.

Frameworks that might be appropriate for this include the Human Factors Accident Classification System (HFACS), Root Cause Analysis, Five Whys or any approach that is comprehensive, assesses contributing factors at multiple levels of organization (i.e., individual, team, organization, system) attempts to understand how the responses to the situation were considered logical and reasonable under the circumstances, and considers the event in the context of the complex maritime system.

### **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 should include:

* Sensors data recordings (radar video and targets, AIS, CCTV, weather and hydrographic data, etc.);
* VHF and telephone communication recordings;
* Other relevant information

It may also include:

* Internal VTSO conversation recordings inside VTS Centre;
* VTSO actions recording (e.g. made by CCTV inside VTS Control Centre);

IALA recommends a minimum of 30-day storage period of VTS data (IALA Guideline 1111, Section 1.4.2.) as the time-period to allow for the full retrieval of data post-incident. It can be assumed that this requirement is appropriate for 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 should be a procedure to store recordings 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 IALA Guideline 1111).

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

# Reporting process

### **4.1. Limitations and constraints**

The reporting process could be influenced by following:

* Legal issues
* Confidentiality and data protection
* VTS Authority responsibility level
* Technical issues
* Administrative issues
* Organisational issues.

### **Nature of reporting**

* + 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 Authorities have to implement the mandatory requirements as defined in national regulations.

* + 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/EC and 2009/18/EC Article 6) by flag State, masters of ships involved and coastal State.

For those states, which do not have requirements regarding incident situation reporting, it is advised to take into consideration establishing national regulations.

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

* + 1. Addressing of the casualty/incident reports

VTS casualty/incident reports may 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)

Near-miss reports should be reported internally within VTS Authority.

The reporting and analysis of near-miss situations may result in corrective actions on the VTS operational procedures and additional training of VTS personnel. Under ISO 9001, the certified body (i.e. VTS Centre) shall monitor, measure, analyse and improve quality management system of the VTS centre.

The VTS Authority should decide whether to report near-miss externally in compliance to established QMS and/or VTS operational procedures. Whenever a VTS Authority is making an external near-miss report, it should be mentioned that this reporting is voluntary.

* 1. Safety Culture

Conducting investigations and gathering statistics on marine incidents and near-miss situations is a part of maturing the Safety culture within a VTS Centre. The overall performance of a VTS can be facilitated by implementing corrective actions (adapting procedures, organizing training based on these statistics, etc.).

With respect to this, two aspects of safety culture are particularly important – a reporting culture and a just culture.

A reporting culture: a reporting culture actively encourages personnel to take the time to report issues, near-misses or anything that might influence the safety of the VTS. Encouragement can be in the form of incentives, but in order to make reporting sustainable, organisations need to demonstrate that the report has been appropriately considered and responded to.

A just culture: An effective reporting system depends, crucially, upon how an organization handles blame and punishment. This lies at the heart of any safety culture. A prerequisite for a just culture is that all members of an organization should understand where the line must be drawn between unacceptable behaviour, deserving of disciplinary action, and the remainder, where punishment is neither appropriate nor helpful in furthering the cause of safety.

It is not the objective to determine liability in VTS reports.

The VTS authority should not refrain from fully reporting on the causal factors.

* 1. Content of reports

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

* Who and what were involved (e.g. vessel data)
* What happened (e.g. grounding, striking, collision)
* Where, when, and in what sequence
* Weather and hydrographic information
* VTS operator and/or VTS supervisor on duty

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

It is advisable to keep VTS report format as simple as possible. See example of near-miss/incident/casualty VTS report format in Annex 2. An example of covering letter is given in Annex 3.

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.

# benefits of Casualty/Incidents/near-miss Reports

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

* Enhancement of navigation safety in general
* Prevention of casualties in future
* Proactive protection of marine environment
* Further investigation
* Emergency notification
* Evidence (for insurance and/or other stakeholders in interest)
* Lessons learned and training
* Collection of statistics to identify trends and risks
* Support of risk assessment
* Revision of VTS procedures
* Improvement of a VTS Decision Support Tool

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).

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

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

VTS Authorities can take into consideration the positive learnings from casualty, incident and near miss reports. These reports provide opportunities to how the VTS may further improve the safety and efficiency of navigation, safety of life at sea and the protection of the marine environment and/or the adjacent shore area, worksites and offshore installations from possible adverse effects.

# References

* ISM Code
* MSC Res.255 (84) “Casualty Investigation Code”
* MSC-MEPC.7/Circ.7 “Guidance on near-miss reporting”
* IALA Guideline No.1110 “Use of Decision Support Tools for VTS personnel”
* IALA Guideline No.1110 “Use of Decision Support Tools for VTS personnel”
* IALA Recommendation V-127 “Operational Procedures for Vessel Traffic Services”
* IALA Guideline 1111 “Preparation of Operational and Technical Performance for VTS Equipment”
* IALA Recommendation V-128 “Operational and Technical Performance of VTS systems”
* EU Directive 2002/59/EC
* EU Directive 2009/18/EC
* ISO 9001 Quality Management System

# Annex 1. models and flow-charts for monitoring, recording and understanding incidents



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



# Annex 3. example of a covering letter for a near miss/incident/casualty VTS report

Ushant Traffic

Vessel Traffic Service

To

Grey Pipes Shipping Co

**Subject:** marine casualty/incident/near-miss\* reporting

**Enclosed:** marine casualty/incident/near-miss\* report format

Dear Madam, Sir,

In accordance with the quality system of the VTS, let me draw your attention to the circumstances that were conducted, based on information from VTS sensors, to qualify marine casualty/incident/near-miss\* involving XXXX ship (IMO number XXXXXX / Flag XXXXXX) and the ship XXXX (XXXXXX XXXXXX Flag and IMO number), the DD month YYYY at HH: mm UTC in the VTS area.

The circumstances of this situation are described in the enclosed document.

In application of IMO guidance (MSC-MPEC.7/Circ7) related to near-miss reporting, and ISM-code section 9, this case is being brought to your attention so that you could investigate, consider and take appropriate internal corrective actions.

To feed our own quality management system, we will appreciate very much a response from you on the vision of this situation from your ship. Your information is of great value for us to be able to understand this marine casualty/incident/near-miss\* situation.

Thank you for your kind understanding.

Yours sincerely

**\*** keep the appropriate word pending of the situation