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| IALA Guideline |

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Guideline on QUALITY MANAGEMENT FOR Vessel Traffic Service

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# Introduction

A Quality Management System (QMS) is an effective tool for Vessel Traffic Services (VTS) organizations to efficiently manage, operate and drive continuous improvement.

A QMS is defined as a formalized system that documents processes, procedures, and responsibilities for achieving quality policies and objectives. A QMS helps coordinate and direct an organization’s activities to meet customer and regulatory requirements and improve its effectiveness and efficiency on a continuous basis.

Quality management focuses not only on product and service quality, but also on the means to achieve it. Some of the key benefits of implementing quality management include:

* The ability to consistently provide services that meet customer and applicable regulatory requirements
* Facilitating opportunities to enhance customer satisfaction
* Addressing risk and opportunities to achieve its objectives
* The ability to demonstrate conformity to specified QMS requirements

Key IMO Res. references to:

* *1.3 IALA is recognized as an important contributor to IMO's role and responsibilities relating to VTS.*
* *1.4 In complying with these Guidelines, Contracting Governments should take account of applicable IMO instruments and refer to relevant international guidance prepared and published by appropriate international organizations.*
* *9.1 IALA publishes standards and associated recommendations, guidelines and model courses specifically related to the establishment and operation of VTS to contribute to achieving worldwide harmonization of VTS. That is the normative recommendation 0132 on Quality Management for Aids to Navigation Authorities.*

# PURPOSE OF THIS DOCUMENT

The purpose of this guideline is to provide a framework for VTS organizations to implement a quality management system consistent with international best practice that documents processes, procedures, and responsibilities for achieving quality policies and objectives.

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| IALA Guideline XXXX on *Quality Management for Vessel Traffic Services* is associated with Recommendation 0132 on *Quality Management for Aids to Navigation Authorities*, a normative provision of IALA Standard 1010 - AtoN Planning and Service Requirements. To demonstrate compliance with the Recommendation the provisions of this Guideline need to be implemented. |

# Developing A QUALITY Management System

## Context of the Organization

According to requirements in ISO 9001 (2015) an organization shall determine internal and external issues that are relevant to its purpose and its strategic direction and that might affect the organization’s ability to achieve the intended QMS objectives. In this regard, IMO Resolutions A.1158(32) *Guidelines For Vessel Traffic Services* acknowledge that VTS operate within a comprehensive environment in which ships, ports, allied services and other organizations fulfil their respective roles, as appropriate.

VTS organizations need to determine what factors influence their operations such as:

* Identifying the internal and external issues that can affect, positively or negatively, the processes of achieving their goals.
* Establish the interested parties and consider their requirements.
* Determine the scope of QMS

## Internal Issues

A VTS organization's internal issues may include but is not limited to:

* Working environment, including workstations, lighting, air conditioning and office equipment;
* VTS systems and related equipment;
* Operational procedures;
* Human resources, training, qualifications and skills; and
* Organizational structure, including VTS operators responsibilities and periods of duty.

## External Issues

A VTS organization’s external issues may include but are not limited to:

* Regulatory requirements;
* Volume and composition of vessel traffic;
* Needs and expectations of participating ships and other stakeholders, including crew, shipping enterprise, shipping agents, pilots, towage, port operations, SAR, etc;
* Meteorological and sea conditions and other natural environmental factors; and
* Navigational factors, such as fairways, anchorage, depth of water, Aids to navigation and obstructions.

## The Scope of the Quality Management System

VTS organizations should specify the scope of the QMS by identifying any boundaries and/or limits of its QMS. Areas that may be relevant include:

* Provision of VTS;
* VTS operational procedures；
* Equipment operation and maintenance; and
* Personnel management and training.

A QMS requires documented information. The documented information can include policies, objectives, processes, procedures, working instructions, and any other document that are necessary for the QMS. Documented information management includes：

* Creating and updating documented information; and
* Control of documented information.

The term ‘documented information’ is defined as information required to be controlled and maintained by an organization, as well as the medium on which it is contained.

Authorities need to have a clear document control process in place to create, update and approve documents. Further, documented information needs to be controlled (eg its use, storage, change control, retention etc) and that it is adequate protected (e.g. from loss of confidentiality, improper use, or loss of integrity).

## The needs and expectations of interested parties

According to ISO 9001 (2015), interested parties (stakeholders) and their needs and expectations should be identified to ensure VTS operations consistently meet the customer and regulatory requirements. Relevant parties for a VTS organization may include but are not limited to the following internal and external parties:

* VTS personnel;
* regulatory authorities;
* participating ships;
* ports;
* pilots;
* shipping companies,
* shipping agents, and
* SAR authorities.

It should be noted that interested parties influence the performance of a VTS provider. Sustained success is more likely to be achieved when a VTS provider manages relationships with its interested parties to optimize their impact on its performance.

VTS organizations can identify the needs and expectations of relevant parties through various methods such as questionnaires, visits, meetings, interviews etc.

# Implementing a Quality Management System

## Leadership

The top management should according to ISO 9001 (2015) demonstrate leadership and commitment with respect to the QMS by:

* taking accountability for the effectiveness of the QMS ensuring that the system achieves its intended results;
* ensuring that the quality policy and quality objectives are established and are compatible with the context and strategic direction;
* ensuring the integration of the QMS requirements into vessel traffic services and that the resources needed for the QMS are available;
* promoting continuous improvement and the use of the process approach and risk-based thinking;
* communicating the importance of effective quality management and of conforming to the QMS requirements and engaging, directing and supporting persons to contribute to the effectiveness of the QMS;
* Ensuring that applicable statutory and regulatory requirements of participating ships and other stakeholders are determined, understood and consistently met and the focus on enhancing that satisfaction is maintained; and
* The risks and opportunities that can affect conformity of services and the ability to enhance the satisfaction of participating ships and other stakeholders are determined and addressed.

## Quality Policy and Objective

According to ISO 9001 (2015) the quality policy and quality objectives in the QMS should be clarified in order to meet the needs and expectations of relevant parties. The quality objectives should refer to the quality policy, and take into account important environmental factors, the needs of relevant parties and the requirements of laws and regulations.

Top management is responsible for ensuring that the quality policy and objectives are properly understood and implemented by VTS personnel.

Top management is required to regularly review the quality policy and objectives for their continued suitability and effectiveness, and make necessary adjustments based on the review results.

For more information about setting VTS objectives, please refer to IALA G1131 Setting and Measurement VTS Objectives.

## Risk and Opportunities

According to ISO 9001 (2015), risk management is a term applied to a logical and systematic process to identify hazards, assess risk, specify risk control options, make decisions and take action. Risk management is an ongoing process to keep track on changed or new risks and adopt adequate measures. [Refer to ISO 31000 and IALA guideline G1018, not same definition as ISO 9001.]

Opportunities can arise as a result of a situation favourable to achieving an intended result. Actions to address opportunities can also include consideration of associated risks.

In the QMS, a VTS organization should clarify the identification methods and approaches of risks and opportunities, the methods to evaluate these risks and opportunities, the actions to address these risks and opportunities, and how to evaluate the effectiveness of these actions, in response to the contents of 3.3 above.

Top management should assign person(s) to monitor and review the internal and external issues of VTS, maintain interaction with relevant parties, regularly carry out risks and opportunities identification and assessment, determine risk control measures, make decisions and take actions.

Risks and opportunities for a VTS organization could include but are not limited to:

* Personnel factors, including the number of personnel for watchkeeping and equipment maintenance, personnel ability, periods of duty, etc;
* Vessel factors, including crew ability, crew watch, vessel manoeuvrability, vessel communication facilities, vessel defects, etc.;
* Natural factors, including navigational environmental factors such as wrecks, hotspot areas, shallow spots, mariculture areas, accident-prone areas, busiest sailing areas, as well as weather, sea conditions in the VTS area;
* Equipment factors, including VTS system or equipment failure, equipment performance, communication system failure, etc.; and
* Guarantee factors, including working environment, implementation of QMS, etc.

## Service Provision

According to ISO 9001 (2015), corresponding external services should conform with requirements of laws and regulations and the internal requirements of the organization.

VTS organizations should identify and control service-related processes to ensure that VTS personnel understand the service requirements, including:

* Legal and regulatory requirements related to the service; and
* VTS internal management regulations.

Before providing services to participating ships and other stakeholders, VTS organizations should review the following:

* requirements of participating ships and other stakeholders and their legality;
* requirements of laws and regulations related to the provision of VTS;
* the accuracy of the information obtained by the VTS organization; and
* the ability to meet the requirements of participating ships and other stakeholders.

VTS organizations can realize the unique identification and storage of the service process and results through watchkeeping records, VTS system videos, records manual, etc., to achieve traceability.

VTS organizations should track the service effect and feedback from participating vessels and other stakeholders after the service is delivered to ensure that the service meets the requirements of laws and regulations and the needs of the participating ships and other stakeholders. When there are nonconforming outputs, the VTS organization can take the following actions:

* Correction;
* Suspend improper actions;
* Informing participating vessels; and
* Retain relevant records as the internal training cases.

Conformity to the requirements should be verified when nonconforming outputs are corrected.

# Maintaining a Quality Management System

## Resource Management

According to ISO 9001 (2015), top management should identify and provide the resources required to establish, implement, maintain and continuously improve the QMS, and should take into account the capabilities and limitations of existing internal and external resources. Available resources should be effectively managed by the VTS organization to maximize the utilization.

## Monitoring and Measurement

To ensure the effectiveness and compliance of VTS services, the following resources can be monitored and measured:

* personnel assessed frequently to evaluate the training, performance, work quality, etc.;
* equipment, mainly to monitor the performance, status and reliability of the equipment;
* participating ships and other stakeholders, mainly to collect and evaluate the opinions, suggestions and complaints;
* management, mainly to evaluate VTS operation mode, management effectiveness, service quality, etc.；
* allied service involving in the safe and efficient passage of the vessel through the VTS area; and
* other services which may use VTS data to more effectively undertake their work (e.g., ensuring local security or preventing illegal imports).

VTS organizations should regularly check and verify the monitoring and measurement standards of the above resources to ensure the reliability of the measurement results and services:

* the method and content of personnel assessment should be adjusted according to the development of information technology, the progress of VTS work, and the relevant regulations of the organization;
* equipment maintenance should be maintained and calibrated according to the equipment maintenance manual/schedule and the occurrence of equipment failures;
* the method and content of the user survey evaluations should be adjusted according to the opinions, suggestions, complaints of the users of the VTS and the analysis results of the satisfaction survey;
* the content and method of management evaluation should be adjusted according to the relevant regulations and the key tasks of the VTS; and

VTS organizations should evaluate the effectiveness of allied services and other services in accordance with IALA G1102 VTS Interaction with Allied or Other Services.

## Knowledge Management

When addressing the changing needs and trends, a VTS organization should consider its current knowledge and determine how to acquire any necessary additional knowledge or updates.

VTS organizations can establish, review, update and maintain a knowledge base to ensure the completeness and effectiveness of the knowledge required. VTS organizations should ensure easy access to its knowledge base, so that VTS personnel and equipment maintenance personnel can consult, download and learn in a timely and convenient manner.

The knowledge base may include but is not limited to the following:

* conventions, laws and regulations, other normative documents;
* VTS equipment operation manual and maintenance manual;
* knowledge gained from experience;
* casualty/incident/near-miss in VTS area;
* academia; conferences, papers, books and other documents; and
* gathering knowledge from participating ships and other stakeholders or external providers.

## Performance Evaluation

According to ISO 9001 (2015), an organization should monitor and evaluate the performance and the effectiveness of the QMS system by:

* Measuring customer feedback through the satisfaction of participating ships and other stakeholders can be conducted through visits, interviews, VHF enquiries, etc.;
* Performing audits to ensure QMS effectiveness; and
* Conducting management reviews to ensure the QMS alignments with strategic direction of VTS and the broader organization.

## Customer Satisfaction

VTS providers should monitor stakeholder perceptions to ensure their needs and expectations have been met. For example, these views may be measured through customer satisfaction or opinion surveys, interviews compliments/complaints etc.

When obtaining customer satisfaction consideration may be given to:

* Determining how the stakeholder satisfaction should be implemented
* Ensuring that information is being accurately captured
* Whether the results meet previously stated stakeholder satisfaction targets
* How the stakeholder satisfaction results are reviewed and evaluated

## Internal Audit

Internal audits should be conducted at planned intervals to determine that VTS providers are conforming to their QMS requirements, the requirements of the international standard, and that it is being effectively implemented and maintained.

An audit plan should be developed before the audit which specifies the purpose, scope, frequency and method of the audit based on the status and importance of the audited activities and the results of previous audits. The following should be considered in the audit:

* results of previous audits,
* audit frequency and method;
* audit criteria and scope; and
* selection of auditors to ensure objectivity and impartiality of the audit process.

The audit may be conducted by asking questions, reviewing records and observing on-site activities to collect objective evidence to verify the implementation and maintenance of the QMS. Audit findings should be reported in an audit report. The audit report should be submitted to the top management.

## External Audit

An external audit is an audit conducted by an accredited third-party agency, a governmental administration or an international organization. The external audit is carried out according to the requirements of the agency, administration or organization conducting the audit.

## Management Review

Periodic management review should be organized to evaluate the suitability, adequacy and effectiveness of the system, to identify opportunities for system improvement and whether there is a need for change. Records of the meeting outcomes should be documented.

During the management review, the following should be considered:

* the status of actions from previous management reviews;
* changes in external and internal issues that are relevant to the QMS;
* information on the performance and effectiveness of the QMS, including trends in:
* customer satisfaction and feedback from relevant interested parties;
* the extent to which quality objectives have been met;
* process performance and conformity of services;
* non-conformity and corrective actions;
* monitoring and measurement results;
* audit findings; and
* the performance of external providers.
* the adequacy of resources;
* the effectiveness of actions taken to address risks and opportunities; and
* opportunities for improvement.

## Continuous Improvement

According to ISO 9001 (2015) a QMS should be continuously improved by addressing the service, management system and management activities.

VTS organizations may use activities such as quality policy, quality objectives, audit results, data analysis, corrective and preventive actions and management reviews to select improvement opportunities to continuously improve the effectiveness of the QMS.

For the output that does not meet the expected requirements in audit, daily management and service, VTS organizations should take necessary measures to meet service requirements and enhance the satisfaction of participating ships and other stakeholders. This includes:

* determine the reasons for non-conformity through review and analysis;
* take action to control and correct non-conformity;
* correct, prevent or reduce adverse effects;
* review the effectiveness of corrective actions taken;
* improve operation management and service to meet requirements and respond to future needs and expectations;
* update the risk and opportunity measures if necessary;
* improve the performance and effectiveness of the QMS; and
* change the QMS when necessary.

## Documented Information

Documentation and records are basic elements in any QMS. Without the documents and records, it is difficult to consider any kind of improvement action.

Documented information should be traceable and continuous.

A requirement to“maintain”documented information does not exclude the possibility that the organization might also need to“retain”that same documented information for a particular purpose, e.g. to retain previous versions of it.

It is worth noting that records of VTS may be stored in relevant systems in the form of electronic data.

# References

1. IMO Resolutions A.1158(32) Guidelines For Vessel Traffic Services
2. ISO 9001：2015 Quality Management Systems-Requirements
3. IALA S1040 VESSEL TRAFFIC SERVICES
4. IALA Recommendation O-132 on Quality Management for Aids to Navigation Authorities
5. R1013 Auditing and assessing VTS
6. IALA Guideline G1141 Operational Procedures for Delivering VTS
7. IALA Guideline G1052 Quality Management Systems for Aids to Navigation Service Delivery
8. IALA Guideline G1101 Auditing and Assessing VTS
9. IALA Guideline G1018 Risk Management
10. IALA G1111 Preparation Of Operational And Technical Performance Requirements For VTS Systems
11. IALA G1131 Setting and Measurement VTS Objectives
12. IALA G1102 VTS Interaction With Allied or Other Services
13. IALA G1089 Provision of A VTS