

# IALA GUIDELINE

## GNNNN QUALITY MANAGEMENT PRACTICES FOR VTS PROVIDERS

**Edition 1.0**

December 1.0

**urn:mrn:iala:pub:gnnnn**



# DOCUMENT REVISION

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Revisions to this document are to be noted in the table prior to the issue of a revised document.

Date	Details	Approval
Dec 2024	1 <sup>st</sup> issue	Transition Council 3

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## 1. INTRODUCTION

A Quality Management System (QMS) is a formalized system that documents processes, procedures, and responsibilities for achieving quality policies and objectives, regulatory requirements and improve its effectiveness and efficiency on a continuous basis.

Recognizing that a QMS represents one of the most important means of ensuring a high standard of availability and reliability for aids to navigation systems, including VTS, IALA *Recommendation R0132 - Quality Management for Marine Aids to Navigation Authorities* recommends that:

*“Authorities responsible for Marine aids to Navigation contribute to improving the effectiveness and efficiency of their operation on a continuous basis by implementing a quality management system.”*

## 2. PURPOSE OF THIS DOCUMENT

The purpose of this Guideline is to provide a framework for VTS providers<sup>1</sup> to implement quality management practices consistent with the International Organization of Standardization (ISO). It describes the key elements in the ISO 9001 standard for implementing a QMS to assist VTS providers demonstrate:

- that there is a system in place that documents processes, procedures, and responsibilities to improve effectiveness and efficiency on a continuous basis; and
- compliance with practices described in IALA standards specifically related to the establishment and operation of VTS and meet regulatory requirements and stakeholder needs.

This Guideline is associated with IALA *Recommendation R0132 - Quality Management for Marine Aids to Navigation Authorities*, a normative provision of IALA *Standard 1010 AtoN Planning and Service Requirements* and shall be observed if compliance with this Standard is claimed. To demonstrate compliance with the Recommendation the practices described in the Guideline should be taken into account.

*Readers of this guidance should note that:*

1. *This guidance provides an example to ISO 9001:2015, the VTS provider may adopt, for example, another QMS.*
2. *The following ISO related terms may also be used within this document and are defined as:*

**Customer** is defined as person or organization that could or does receive a product or a service that is intended for or required by this person or organization. In the context of VTS, a customer is equivalent to allied services or participating ships.

**Organization** means the VTS provider.

### 2.1. RELATIONSHIP TO OTHER IALA DOCUMENTS

This Guidance should be read in conjunction with all IALA recommendations and guidelines specifically related to VTS and in particular:

- IALA Recommendation R0132 *Quality Management for Marine Aids to Navigation Authorities*
- IALA Guideline G1101 *Auditing and Assessing a VTS*
- IALA Guideline G1115 *Preparing for an IMO Member State Audit Scheme (IMSAS) on VTS*
- IALA Guideline G1141 *Operational Procedures for Delivering VTS*

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<sup>1</sup> This guideline covers the provision of VTS and does not exclude VTS providers from complying to other guidelines, e.g. IALA G1014 for accredited training organization.

### 3. INTERNATIONAL FRAMEWORK

IMO Resolution A.1158(32) Guidelines for Vessel Traffic Services states (Section 1.4) that 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.

#### 3.1. IMO INSTRUMENTS

##### 3.1.1. IMO RESOLUTION A.1158(32) VESSEL TRAFFIC SERVICES

IALA's contribution to the development of internationally harmonized guidance for vessel traffic services is reflected in IMO Resolution 1158(32). Specifically, this includes:

*"1.3 IALA is recognized as an important contributor to IMO's role and responsibilities relating to VTS.*

*5.2 The competent authority for VTS should:*

*5.2.1 establish a regulatory framework for establishing and operating VTS in accordance with relevant international conventions and IMO instruments, IALA standards and national law;*

*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.*

*9.2 Contracting Governments are encouraged to take into account IALA standards and associated recommendations, guidelines and model courses."*

##### 3.1.2. IMO MEMBER STATE AUDIT SCHEME

The IMO Member State Audit Scheme (IMSAS) aims to provide an audited Member State with a comprehensive and objective assessment of how effectively it administers and implements those mandatory IMO instruments which are covered by the Scheme.

Audits under the Scheme became mandatory on 1 January 2016 and Member States have the primary responsibility to establish and maintain an adequate and effective system to discharge their obligations as flag, port and/or coastal States emanating from applicable international law.

With regards to VTS, the Auditor's Manual for the IMO Member State Audit Scheme (IMSAS) specifically asks:

*Does the State use a recognized quality management system, e.g. ISO 9001:2015, for AtoN or VTS?*

**Note:** IMSAS audits are organized and implemented through a QMS which complies with the requirements of ISO 9001:2015. Its certification aims to enhance the confidence of Member States in IMSAS by demonstrating compliance with an internationally recognizable management standard (ISO 9001:2015) as well as to provide a sound basis for further development of IMSAS.

The contribution of QMS to achieving quality policies and objectives, regulatory requirements and improve effectiveness and efficiency on a continuous basis is recognized by the IMO.

Applicable IMO instruments include:

- IMO Resolution A.1067(28) Framework and Procedures for the IMO Member State Audit Scheme
- IMO Member State audit and the IMO Instruments Implementation Code (III Code)

## 3.2. RELEVANT INTERNATIONAL GUIDANCE

### 3.2.1. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

The International Organization for Standardization (ISO) is an independent, non-governmental, international standard development organization composed of representatives from the national standards organizations of member countries.

ISO 9001 Quality management systems - Requirements is a globally recognized standard for quality management. In summary, the standard:

- Provides a formalized system that documents processes, procedures, and responsibilities for achieving quality policies, objectives, and practices. It is not a simple set of documents but a dynamic process that brings resources, activities, and behaviours together and focuses on the achievement of objectives.
- Its requirements define how to establish, implement, maintain, and continually improve a QMS.
- Can be used by any type of organization, including public, private or community organizations, and for any type of project, irrespective of complexity, size, or duration.

### 3.2.2. IALA

IALA standards contributing to the development of internationally harmonized guidance for vessel traffic services as reflected in IMO Resolution A.1158(32) include:

- 1040 - Vessel Traffic Services
- 1010 - AtoN Planning and Service Requirements
- 1050 - Training and Certification
- 1070 - Information Services

Specifically, IALA Standard 1010 AtoN Planning and Service Requirements specifies the practices associated with quality management in *Recommendation O-132 - Quality Management for Marine Aids to Navigation Authorities*.

Recommendation O-132 specifies the practices for implementing and maintaining a QMS as a means of ensuring a high standard of availability, reliability, and delivery of service.

This Guideline describes how to implement the practices specified in Recommendation O-132 to implement a QMS to ensure ongoing integrity through periodic:

- certification by an accredited third-party certification body; and/or
- assessing compliance against the standard by self-assessment, and/or use of a third party.

## 4. PRINCIPLES OF QUALITY MANAGEMENT

The International Organization for Standardization (ISO) has identified seven quality management principles which are described in Table 1. These include:

- Customer focus
- Leadership
- Engagement of people
- Process approach
- Improvement
- Evidence based decision making
- Relationship management

A copy of the ISO publication on Quality Management Principles can be found on the ISO website.

*Table 1 Quality management principles*

Quality Management Principles	Examples of actions that may be taken when the principle is applied
<p><u>Customer focus -</u></p> <p>The primary focus of quality management is to meet customer requirements and to strive to exceed customer expectations. Sustained success is achieved when an organization attracts and retains the confidence of customers and other interested parties.</p>	<ul style="list-style-type: none"> <li>– Recognize customers that receive value from the organization.</li> <li>– Understand customers' current and future needs and expectations to create more value for the customer.</li> <li>– Link the organization's objectives to customer needs and expectations.</li> <li>– Measure and monitor customer satisfaction and take appropriate actions.</li> <li>– Actively manage relationships with customers to achieve sustained success.</li> </ul>
<p><u>Leadership -</u></p> <p>Leaders at all levels establish unity of purpose and direction and create conditions in which people are engaged in achieving the organization's quality objectives.</p>	<ul style="list-style-type: none"> <li>– Communicate throughout the organization their mission, vision, strategy, policies, and processes.</li> <li>– Encourage an organization-wide commitment to quality.</li> <li>– Inspire, encourage, and recognize people's contribution.</li> </ul>
<p><u>Engagement of people -</u></p> <p>Competent, empowered and engaged people at all levels are essential for an organization to create and deliver value.</p>	<ul style="list-style-type: none"> <li>– Communicate with people to promote understanding of the importance of their individual contribution.</li> <li>– Promote collaboration throughout the organization.</li> <li>– Recognize and acknowledge people's contribution, learning and improvement.</li> </ul>
<p><u>Process approach -</u></p> <p>Consistent and predictable results are achieved more effectively and efficiently when activities are understood, and interrelated system processes are managed.</p>	<ul style="list-style-type: none"> <li>– Define objectives of the system and processes necessary to achieve them.</li> <li>– Manage processes and their interrelations as a system to achieve the organization's quality objectives effectively and efficiently.</li> <li>– Manage risks that can affect outputs of the processes and overall outcomes of the QMS.</li> </ul>
<p><u>Improvement -</u></p> <p>Successful organizations have an ongoing focus on improvement.</p>	<ul style="list-style-type: none"> <li>– Recognize and acknowledge improvement.</li> <li>– Develop and deploy processes to react to internal and external changes and to create new opportunities.</li> <li>– Promote the establishment of improvement objectives throughout the organization.</li> </ul>
<p><u>Evidence based decision making -</u></p> <p>Decisions based on the analysis and evaluation of data and information are more likely to produce desired results.</p>	<ul style="list-style-type: none"> <li>– Determine, measure, and monitor key indicators to demonstrate the organization's performance.</li> <li>– Analyse and evaluate data and information using suitable methods.</li> <li>– Make decisions and take actions based on evidence, balanced with experience and intuition.</li> </ul>
<p><u>Relationship management -</u></p> <p>Interested parties influence the performance of an organization. Sustained success is more likely to be achieved when the organization manages the relationships of its interested parties to optimize their performance.</p>	<ul style="list-style-type: none"> <li>– Determine relevant interested parties (such as customers, employees, and society as a whole) and their relationship with the organization.</li> <li>– Determine and prioritize interested party relationships that need to be managed.</li> <li>– Measure performance and provide performance feedback to interested parties, as appropriate, to enhance improvement initiatives.</li> <li>– Establish collaborative development and improvement activities with suppliers, partners, and other interested parties.</li> </ul>

## 5. QUALITY MANAGEMENT

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 applicable regulatory requirements and stakeholder needs.
- Facilitating opportunities to enhance stakeholder satisfaction.
- Addressing risk and opportunities to achieve its objectives.
- The ability to demonstrate conformity to specified QMS requirements.

There are 10 clauses in ISO 9001 which relate to the Plan-Do-Check-Act (PDCA) cycle. Clauses 4-10 contain requirements that are auditable and to successfully implement ISO 9001 a VTS provider needs to satisfy these, along with meeting stakeholder needs and associated regulatory requirements.

The PDCA cycle is a four-step model designed to operate at all levels and can be applied to all processes and their interactions. The PDCA cycle is repetitive and should be repeated for continuous improvement. See Figure 1 below.

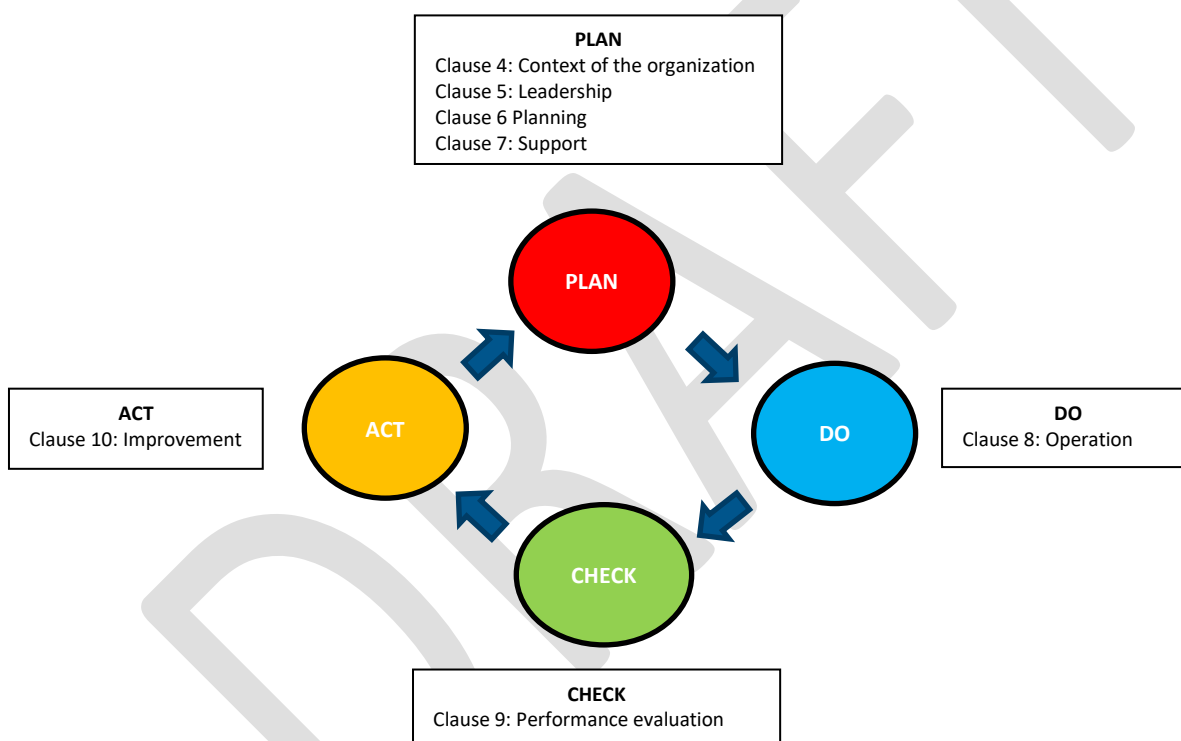


Figure 1 Plan – Do – Check – Act (PDCA) cycle

The 'PLAN' part of the process is about planning the action to be taken. This starts by establishing the objectives of the QMS, looking at risks and opportunities, and planning any changes necessary to deliver results required to satisfy stakeholder requirements and the VTS provider's policies. It also considers the needs and expectations of their interested parties, the regulatory requirements, and any changes required to their QMS.

Next comes the 'DO' part of implementing and managing what is planned.

An important part of the process, is the 'CHECK' part which involves the monitoring of the processes and results from stakeholder satisfaction and the services offered. The 'CHECK' part ensures that the controls and procedures are functioning as intended.



The final part of the cycle is for a VTS provider to 'ACT' to take appropriate action to continually improve processes and performance based on what was learnt. This may mean going through the cycle again with a different plan or incorporating what was learnt into wider changes.

## 5.1. PLAN

In the 'PLAN' part of the process, the following four clauses in ISO 9001 apply:

- Clause 4: Context of the organization
- Clause 5: Leadership
- Clause 6: Planning
- Clause 7: Support

### 5.1.1. CONTEXT OF THE ORGANIZATION

A VTS provider should establish the scope of its QMS by identifying any boundaries and/or limits of its QMS. In doing this, consideration should be given to:

#### 1 *Understanding the organization and its context*

The 'context' considers the business or organizational environment which is a combination of internal and external issues, and the conditions that may affect how a VTS provider delivers its services.

This process should identify relevant external and internal issues that may affect how a VTS provider achieves the outcomes of its management system. These issues should be monitored and reviewed to establish whether any changes may affect the QMS.

Examples of internal and external issues that may affect a VTS Provider include:

Internal Issues	External Issues
<ul style="list-style-type: none"> <li>– Working environment, including workstations lighting, air conditioning and office equipment</li> <li>– VTS systems and related equipment</li> <li>– Operational procedures</li> <li>– Human resources, training, qualifications, and skills</li> <li>– Organizational structure, including VTS operator responsibilities and periods of duty</li> </ul>	<ul style="list-style-type: none"> <li>– Regulatory requirements</li> <li>– Volume and composition of vessel traffic</li> <li>– Needs and expectations of participating ships and other stakeholders, including crew, shipping enterprise, shipping agents, pilots, towage, port operations, SAR, etc.</li> <li>– Meteorological and sea conditions and other natural environmental factors</li> <li>– Navigational factors, such as fairways, anchorage, depth of water, Aids to navigation and obstructions</li> </ul>

#### 2 *Understanding the needs and expectations of interested parties*

Interested parties (stakeholders) and their needs and expectations should be identified to ensure VTS operational and regulatory requirements are met. Ongoing review of their requirements should be monitored.

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

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

Examples of interested parties (stakeholders) relevant to the provision of VTS include:

Internal Parties	External Parties
<ul style="list-style-type: none"> <li>– VTS personnel</li> <li>– Government or regulating authority</li> </ul>	<ul style="list-style-type: none"> <li>– Participating ships</li> <li>– Port authorities</li> <li>– Pilots</li> <li>– Shipping agents</li> <li>– Shipping companies</li> <li>– Other agencies such as search and rescue authorities, hydrographic organizations.</li> </ul>

### 3 *Determining the scope of the QMS*

A VTS provider needs to establish the scope of its QMS by identifying any boundaries and/or limits of its QMS. In doing this, consideration should be given to:

- the external and internal context issues;
- the requirements of relevant interested parties; and
- the products and services of the VTS provider. Areas that may be relevant include:
  - Provision of VTS
  - VTS operational procedures
  - Equipment operation and maintenance
  - Personnel management and training

The scope of the QMS should be available and maintained as documented information.

#### 5.1.2. LEADERSHIP

Top management have leadership responsibilities for the QMS, these include:

##### 1 *Leadership and commitment*

Top management should demonstrate leadership and commitment 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 of the organization.
- ensuring the QMS is integrated into the organizations business processes such as the provision of VTS, and that resources are available to support the QMS.
- communicating the importance of effective quality management and ensuring the system is achieving its intended results.
- promoting the use of the process approach (e.g. PDCA) and risk-based thinking.
- lead people to contribute to the effective operation of the system.
- drive continual improvement and innovation.

In addition, top management should demonstrate they are maintaining and promoting a customer focus by ensuring the provision of VTS meets interested parties and regulatory requirements.

##### 2 *Establishing and communicating quality policy*

VTS providers should establish, implement, and maintain a quality policy that is appropriate and supports its strategic direction.

Further, VTS providers should communicate the quality policy by making sure it is maintained as documented information and that people know and understand it.

### 3 *Organizational roles, responsibilities and authorities*

Specific responsibilities should be assigned and communicated in relation to:

- ensuring that the QMS conforms to the requirements of the standard;
- ensuring that processes are delivering their intended outputs (e.g. making sure what is supposed to happen is happening); and
- reporting the QMS performance, improvement opportunities, the need for change and/or innovation.

#### 5.1.3. **PLANNING**

VTS providers should consider the following planning activities:

#### 4 *Planning actions to address risks and opportunities*

A VTS provider should identify the internal and external risks that have the potential to impact on the operation and performance of their VTS. Risk management is an ongoing process to keep track on changed or new risks and adopt measures to manage risk.

Whilst there are many different risk management methodologies, IALA provides guidance in *IALA Guideline G1018 Risk Management* and offers a suite of risk management tools for assessing the risks in waterways.

Consideration may be given to various internal and external risk areas such as:

- VTS personnel, including the number of personnel, training and competency, fatigue management, shift duration, etc;
- VTS equipment, including performance, maintenance, and failure of equipment, etc;
- service delivery, including working environment, implementation of QMS, etc;
- vessel factors, including crew competency and quality of vessels etc;
- navigational factors, including the environmental conditions that vessels deal with in a waterway relating to wind, water movement (i.e., currents, sea conditions), weather (i.e. visibility), obstructions (i.e. wrecks, mariculture areas), etc; and
- waterway characteristics, including the physical properties of the waterway that may affect how vessels manoeuvre (i.e. visibility impediments, dimensions, bottom type, configuration), etc.

Although risks and opportunities should be identified and addressed, there is no requirement under ISO 9001 for a formal, documented risk management process. VTS providers may choose the most appropriate mechanism to address their risks and opportunities and evaluate the effectiveness of actions taken.

#### 5 *Establishing the quality objectives, and planning to achieve them*

VTS providers should establish measurable quality objectives at relevant functions, levels and processes that are consistent with their quality policy. It is important to consider how these quality objectives add value to the provision of VTS and enhance the satisfaction of interested parties.

A VTS provider needs to monitor and retain documented information on how the quality objectives are being met.

#### 6 *Planning and managing change*

VTS providers should consider the impact of change and carry it out in a planned manner. For example:

- why the change is being made and the potential consequences;
- ensure the integrity of the QMS is maintained; and
- whether the resources necessary to carry out the change are available (e.g. people/technology, etc.).

#### 5.1.4. **SUPPORT**

VTS providers should consider the resources required to value add to the QMS, this may include:

7 *Determining the necessary resources for the operation of the QMS (e.g. human resources, infrastructure, environment, monitoring and measuring of resources)*

The internal and external resource requirements, and capabilities needed for the provision of VTS need to be considered in terms of:

- the capabilities and constraints on existing internal resources; and
- what additional external resources/support may be required.

8 *Awareness and communication*

VTS providers should ensure that everyone (internal or external personnel) working for the organization are aware of:

- the organization's quality policy and quality objectives;
- how they contribute to the effectiveness of the QMS, and the flow on effects to improve overall performance; and
- the implications of not conforming with QMS requirements.

For example, training on QMS may be incorporated into staff induction material, online access to QMS documents etc.

VTS providers also need to identify the internal and external communications that need to take place, such as:

- Briefing to staff on new or amended processes, procedures, or policies.
- Anything that may have an impact on staff, customers or other interested parties.
- Implementing meetings or consultative forums.

9 *Creating, updating, and controlling the documented information*

A QMS requires documented information. Documented information can include any document that is necessary for the QMS such as policies, quality objectives, processes, procedures, working instructions etc.

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

## 5.2. DO

VTS providers should effectively plan, control, and manage their operational processes to consistently deliver VTS that meet the requirements of interested parties, and enhance customer satisfaction.

Clause 8 in ISO 9001 focuses on the 'Operation' and highlights the importance of clear planning, effective controls, consistent monitoring of operations to achieve desired outcomes including continuous improvement. These are some of the key elements to be considered:

- *Operational planning and control*

VTS providers should plan and control their processes to ensure the effective operation of their QMS. This involves identifying process inputs, outputs, sequences, interactions, and criteria for operation and control. By establishing processes and procedures, organizations can streamline their operations and enhance efficiency while maintaining focus on meeting quality objectives and customer expectations.

- *Requirements of products and services provided*

VTS providers should ensure they understand the regulatory requirements related to products and services provided. These requirements need to be reviewed, verified and validated to ensure they are

being effectively met. This step is essential to align operations with the expectations of interested parties and enhance overall satisfaction through consistent delivery of VTS.

- *Control of externally provided processes and services*

VTS providers should determine and apply criteria for evaluating, selecting, monitoring, and re-evaluating external providers ability to provide processes, products and services. This will ensure that external providers meet established quality standards and contribute to the overall effectiveness of the QMS.

- *Provision of services*

VTS providers should implement controlled conditions to ensure that VTS conform to requirements and meet expectations of customers and other interested parties.

- *Control of nonconforming outputs*

VTS providers should effectively manage instances where VTS's are nonconforming in order to maintain quality, prevent dissatisfaction, and continually improve their processes. By implementing controlled procedures to identify, evaluate, and address nonconformities, VTS providers can mitigate risks and uphold their commitment to the purpose of VTS.

### 5.3. CHECK

VTS providers should monitor, measure, and evaluate their performance Clause 9 in ISO 9001 and be effective by:

- identifying what needs to be monitored and measured;
- developing methods to evaluate that business activities are working as they should be and remain effective;
- using feedback from customers and other interested parties as a valuable resource to improve or refine operations;
- performing internal audits to ensure the effectiveness of their QMS; and
- conducting a management review to reassure the QMS alignment with strategic direction of the organization.

#### 5.3.1. MEASURING SATISFACTION OF CUSTOMERS AND OTHER INTERESTED PARTIES

VTS providers should monitor the perceptions of interested parties 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 measuring and assessing satisfaction consideration may be given to:

- determining how the satisfaction should be measured;
- ensuring that information is being accurately captured;
- whether the results meet previously stated satisfaction targets; and
- how the satisfaction results are reviewed and evaluated.

#### 5.3.2. ANALYSIS AND EVALUATION OF OPERATIONS

VTS providers should analyse and evaluate data obtained from monitoring and measurement processes. These results may be used to evaluate:

- conformity with the provision of VTS;
- the degree of satisfaction customers and other interested parties have with VTS;
- the performance and effectiveness of the VTS and/or QMS;
- if planning has been implemented effectively;

- the effectiveness of actions taken to address risks and opportunities;
- the performance of external providers; and
- the need for improvements within the VTS and/or QMS.

### 5.3.3. INTERNAL AUDITS

Internal audits should be conducted at planned intervals to determine that VTS providers are meeting the requirements of a QMS and that it is being effectively implemented and maintained.

When conducting internal audits the VTS provider should:

- plan, implement and maintain an audit programme;
- define the audit criteria and scope of each audit considering any previous audit findings;
- select auditors and conduct audits in a manner to ensure objectivity and impartiality;
- ensure audit findings are reported to management and take corrective action as appropriate; and
- retain documented information as evidence to demonstrate the audit programme and audit findings.

### 5.3.4. MANAGEMENT REVIEW

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

During the management review, the following areas 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
  - the extent to which quality objectives have been met
  - process performance and conformity of services
  - nonconformity and corrective actions
  - monitoring and measurement results
  - audit findings
  - the performance of external providers
- the adequacy of resources;
- the effectiveness of actions taken to address risks and opportunities; and
- opportunities for improvement.

## 5.4. ACT

VTS providers should integrate improvement (Clause 10 in ISO 9001) into their processes through:

- finding opportunities for improvements;
- attempting to correct nonconformities; and
- continual improvement by seeking new opportunities.

VTS providers should consider nonconformities and recognize that it may be impossible to eliminate the cause of a nonconformity, in which case the corrective action taken to control it by reducing the likelihood of recurrence to an acceptable level.

When the expected requirements associated with the provision of VTS are not met, or nonconformities occur then VTS providers should:

- react to the nonconformity and take action to control and correct it, including dealing with the consequences and considering the associated risk;
- evaluate the need for action to eliminate the causes of the nonconformity so that it does not recur or occur elsewhere. This may include:
  - reviewing and analysing the nonconformity
  - determining the causes of the nonconformity
  - determining if similar nonconformities exist or could potentially occur
- implement any actions required to improve the provision of VTS and respond to future needs and expectations;
- review the effectiveness of the corrective actions taken;
- consider updating the risk and opportunity measures as necessary; and
- consider making changes to the QMS when necessary.

## 6. OTHER CONSIDERATIONS

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### 6.1. DEMONSTRATING CONFORMANCE WITH QMS

VTS providers should demonstrate conformance with quality management standards through:

- certification by an accredited third-party certification body; and/or
- assessing compliance against the standard by self-assessment, and/or use of a third party.

*Certification should not be the main objective of implementing a QMS* - depending on the organization, a VTS provider may decide whether to pursue formal certification.

The key differences between compliance and certification of a QMS are:

- *Compliance* is where the operational processes consistently meet the defined quality management standards, however the organization does not undertake a formal certification process. This means organizations can still project a positive image and satisfy customers and other interested parties by aligning with the requirements of the standard and providing a high-quality service.

In most cases, compliance will be an internal self-assessment process. Alternately, a reputable third party may be engaged to provide an assessment and verify the compliance claim.

- *Certification* is where an accredited third-party certification body has officially confirmed the organization adheres to the quality management standards. To earn this certification, organizations are subjected to an external audit verifying that their processes, products, and services meet the standard.

When an organization earns its certification, this will, according to ISO 9001, remain valid for three years, after which the organization must be re-certified to confirm they are continuing to maintain and improve their QMS against the requirements of the standard.



In summary, the key differences between compliance and certification are:

ASPECT	COMPLIANCE	CERTIFICATION
<b>Definition</b>	Adherence to the requirements of ISO 9001:2015.	Formal recognition by an accredited certification body that an organization's management system meets ISO 9001:2015 requirements.
<b>Focus</b>	Internal adherence to standards and guidelines.	External recognition of conformity to ISO 9001:2015.
<b>Process</b>	Implemented and maintained internally by the organization.	Verified and assessed by an external certification body.
<b>Purpose</b>	Ensures organization meets ISO 9001:2015 standards for quality management.	Provides assurance that the organization's QMS complies with ISO 9001:2015 and is effective.
<b>Scope</b>	Applies to the organization's own operations and processes.	Applies to the entire management system as audited by the certification body.
<b>Outcome</b>	Demonstrates conformity to ISO 9001:2015 requirements.	Issue of a formal certificate indicating compliance with ISO 9001:2015 standards for a specific period.
<b>Verification</b>	Internal audits and reviews by the organization.	External audits conducted by certification bodies.
<b>Continuous Improvement</b>	Internal focus on improving processes and performance.	External recognition encourages continual improvement efforts.
<b>Ongoing maintenance cost</b>	Lower – Avoids the cost of an external certification audit	Higher – Associated certification audit costs
<b>Overall effectiveness</b>	Can be the same - depending on continued support from top management	

## 6.2. DIFFERENCES BETWEEN A QMS AND SAFETY MANAGEMENT SYSTEM (SMS)

There are distinct differences in the objectives of a QMS and safety management system (SMS), these include:

- **QMS** is a structured framework of policies, processes, procedures, and resources that an organization establishes to ensure that its services consistently meet customer requirements and regulatory standards. The primary objective of a QMS is to manage and improve the quality of outputs by focusing on quality planning, quality control, quality assurance, and continual improvement initiatives.

A QMS helps organizations enhance the satisfaction of customers and other interested parties, reduce waste and rework, improve efficiency, meet regulatory requirements, and achieve sustainable success by consistently delivering products or services that meet or exceed expectations.

- **SMS** is a systematic approach implemented by an organization to manage safety risks and ensure the safety of its operations, employees, and other interested parties. It is a comprehensive framework that integrates policies, procedures, and processes to proactively identify, assess, mitigate, and manage safety hazards and risks.

A SMS helps organizations maintain a safe working environment, prevent accidents and incidents, comply with regulatory requirements, protect resources and the environment, and enhance overall operational efficiency and reputation.



QMS and SMS are not mutually exclusive and together they may complement each other to assist a VTS provider attain their safety and quality goals. A comparison of the two systems are as follows:

Aspect	QMS	SMS
<b>Purpose</b>	Ensure products/services meet customer and other interested parties' requirements and standards	Manage safety risks to prevent accidents, injuries, and hazards
<b>Focus</b>	Quality of products/services	Safety of operations, employees, customers (stakeholders) and other interested parties
<b>Objective</b>	Improve quality, satisfaction of customers and other interested parties, and efficiency	Ensure safety, prevent incidents, and comply with regulations
<b>Key Elements</b>	Quality policy, objectives, planning, control, assurance	Safety policy, risk management, assurance, promotion, emergency response
<b>Documentation</b>	Procedures, work instructions, records	Procedures, incident reports, safety audits, training records
<b>Monitoring &amp; Improvement</b>	Quality control, continual improvement	Safety audits, incident investigation, safety performance metrics
<b>Benefits</b>	Enhanced customer satisfaction, reduced defects, efficiency	Reduced accidents, improved safety culture, compliance with laws
<b>Standards</b>	Quality - using the ISO 9000 framework on Quality Management Standards	Safety – using the ISO 31000 framework on Risk Management

Both systems have several similar processes, where they depend on measuring and monitoring, they strive for continual improvement, and use the same tools, such as management review, analysis of data, corrective action, internal audits etc.

Where a VTS provider has implemented a safety management system or another integrated management system, then a gap analysis should be undertaken to identify areas that still may need to be addressed from a quality perspective.

## 7. DEFINITIONS

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The definitions of terms used in this Guideline can be found in the *International Dictionary of Marine Aids to Navigation* (IALA dictionary) and were checked as correct at the time of going to print. Where conflict arises, the IALA Dictionary should be considered as the authoritative source of definitions used in IALA documents.

Audit	Audit is a systematic and independent verification process to assess whether the required standards are being met.
Certification	Where an accredited third-party certification body has officially confirmed the organization adheres to quality management standards.
Compliance	Where the operational processes consistently meet the defined quality management standards, however the organization does not undertake a formal certification process.
Customer	A person or organization that could or does receive a product or a service that is intended for or required by this person or organization.
Documented information	Information required to be controlled and maintained by an organization, as well as the medium on which it is contained.
Interested party (e.g. 'stakeholder')	Any person or organization that can affect, be affected by, or perceive themselves to be affected by the decisions or activities of the authority. These interested parties could include employees, customers, end users, suppliers, regulators, allied services etc.
Top management	A person or group of people who directs and controls an organization at the highest level. They have the power to delegate authority and provide resources within the organization.

## 8. ABBREVIATIONS

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AtoN	Aid(s) to Navigation
IMSAS	IMO Member State Audit Scheme
IMO	International Maritime Organization
ISO	International Organization for Standardization
PDCA	Plan – Do – Check – Act (PDCA) cycle
QMS	Quality Management System
SMS	Safety Management System
VTS	Vessel Traffic Services

## 9. REFERENCES

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- [1] IMO Resolutions A.1158(32) Guidelines for Vessel Traffic Services
- [2] ISO 9001:2015 Quality Management Systems-Requirements
- [3] IALA Standard 1010 AtoN Planning and Service Requirements
- [4] IALA Recommendation R0132 on Quality Management for Aids to Navigation Authorities
- [5] ISO publication on Quality Management Principles (<https://www.iso.org/publication/PUB100080.html>.)