

I A C S

International Association of Classification Societies

**Quality Management
System
Requirements**

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0. Introduction

The International Association of Classification Societies (IACS) is an Association representing the world's classification societies as defined in Sect. 3.1 below.

IACS works for a uniform application of quality in ship classification and also in statutory work undertaken on behalf of flag Administrations.

To achieve this objective, IACS has, since 1990, developed these Quality Management System Requirements which constitute the IACS interpretation of the ISO 9001 standard and additional requirements supplementing those of the ISO 9001 standard itself, as applied to classification societies. .

This 7th issue constitutes a revision of the previous issues of the IACS QSCS QMS Requirements with the particular objective to make these Quality Management System Requirements equally useable by IACS Members and non-IACS classification societies alike.

Structure of this document

Commencing from Chapter 4:

- a) The texts of all ISO 9001 clauses from chapter 4 to 8 are applicable requirements, but not repeated in this document. The numbering used aligns with the ISO 9001 standard, chapters and sections should therefore be read in conjunction with the ISO 9001 text. If only the paragraph number appears, the wording in ISO 9001 is considered sufficient.
- b) Additional requirements specific to the operations of Classification Societies are appended to the ISO 9001 clauses where relevant.
- c) Where necessary, non-mandatory guidance for the interpretation and application of these requirements is included as text in italics.

Sect. 4.3 is additional to ISO 9001 and is based on applicable requirements from the included requirements listed in Ch. 1.2.

1. Scope

1.1 General

This Quality Management System Requirements document specifies applicable requirements for a quality management system which covers the following services rendered by a Classification Society:

- Classification of ships and mobile offshore installations in respect of both new building and in service,
- Statutory work carried out on behalf of nominating flag Administrations.

1.2 Application

All requirements of this Quality Management System Requirements document are generic and are intended to be applicable to all classification societies, regardless of type, size and services provided.

Where any requirement(s) of this Quality Management System Requirements document cannot be applied due to the scope of services delivered by a Classification Society, this may be considered for exclusion in connection with a certification or assessment of the Quality Management System.

Where exclusions are made, claims of conformity to this Quality Management System Requirements document are not acceptable unless these exclusions are limited to the requirements listed below and provided that such exclusions do not affect the organizations ability, responsibility, or authority to provide services within its scope of classification that meet customer and applicable statutory and regulatory requirements:

Any exclusions to above permitted references shall be listed on the statement of compliance to this Quality Management System Requirements document, and be publicly available. The basis on which the exclusion is granted shall be clear, concise and documented.

2. References

2.1 Normative reference

The following normative documents contain provisions which, through reference in this text, constitute essential provisions for the application of these requirements.

- ISO 9000:2005 Quality Management Systems - Fundamentals and vocabulary,
- ISO 9001:2008 Quality management systems — Requirements
- IACS Technical Resolutions, defined as:
 - IACS Unified Requirements (UR).
 - IACS Unified Interpretations (UI)
 - IACS Procedural Requirements (PR).
 - IACS Common Structural Rules (for tankers and bulk carriers) (CSR)

NOTE 1:

Unified Requirements are minimum requirements. Any Classification Society is free to set more stringent requirements. More stringent requirements will not to be construed as exclusions.

The existence of a UR does not oblige a Classification Society to issue the respective rules if it chooses not to have rules for the type of ship or marine structure concerned.

In case where a Classification Society chooses not to offer classification for the type of ship or marine structure addressed by a UR, or group of URs, it shall be reported as exclusion to the UR(s) concerned (Ref. Ch. 1.2).

NOTE 2:

Latest and valid IACS Technical Resolutions are found publicly available on IACS web-site: <http://www.iacs.org.uk/publications/default.aspx>

2.2 Included requirements

This Quality Management System Requirements includes applicable requirements from the following reference documents:

- EN ISO/IEC 17020:2004, General criteria for the operation of various types of bodies performing inspection,
- International Maritime Organization Resolution A.739(18), Guidelines for the authorisation of organizations acting on behalf of the Administration,
- International Maritime Organization Resolution A.789(19) Specifications on the survey and certification functions of recognised organizations acting on behalf of the Administration,

NOTE 1: Some of the requirements stated in the reference documents above are given in the Normative references listed in Ch. 2.1.

NOTE 2: Members of IEC, ISO, IACS, IMO or national Administrations maintain registers of currently valid international standards.

3. Terms and definitions

For the purposes of this Quality Management System Requirements document the following terminology applies in addition or in substitution of the Terms and Definitions of ISO 9000:2005 para 3 where these are not adequate for the work of Classification Societies.

3.1 Classification Society

A legally identifiable organisation which:

(i) publishes its own classification rules (including technical requirements):

1 in relation to the design, construction and survey of ships, and

2, has the capacity to

(a) apply,

(b) maintain and

(c) update those rules and regulations with its own resources on a regular basis;

(ii) verifies compliance with these rules during construction and periodically during a classed ship's service life;

(iii) publishes a register of classed ships;

(iv) is not controlled by, and does not have interests in, ship-owners, shipbuilders or others engaged commercially in the manufacture, equipping, repair or operation of ships; and

(v) is authorised by a Flag Administration as defined in SOLAS Chapter XI-1, Regulation 1 and listed accordingly in the IMO database, Global Integrated Shipping Information System (GISIS).

NOTE:

"Own classification rules" as stated in item (i) above include rules given as normative references in this Quality Management System Requirements and rules which the classification society is legally entitled to use.

3.2 Recognised organisation

A legally identifiable organisation which is authorised by a Flag Administration as defined in SOLAS Chapter XI-1, Regulation 1 and listed accordingly in the IMO database, Global Integrated Shipping Information System (GISIS)."

3.3 Product

The products of a Classification Society are of the following generic categories:

- Rules in relation to the design, construction and survey of ships and other marine-related facilities
- Information (e.g. access to Society's Class database)
- Software (e.g. calculation programs related to classification/statutory compliance process developed by the Society either for internal use or made available to the public)
- Hardware (e.g. Documentation, Publications).

3.4 Services

The services of a Classification Society addressed by these requirements are those associated with Classification service or Statutory service as noted below:

3.4.1 Classification service

The results generated by classification activities at the interface between the Classification Society and the customer and the Classification Society's internal activities to meet customer needs.

NOTES:

- a) For ships and mobile offshore installations in service, each Society maintains the provisions of class by way of periodical visits by its Surveyors to the ship or mobile offshore installation as defined in its Rules and Regulations in order to ascertain that the ship or mobile offshore installation currently complies with those Rules and Regulations. The forgoing is without prejudice to the obligation of the owner or operator to report to the Society significant defects, damages or modifications in accordance with the Rules of the Society.
- b) A ship or mobile offshore installation is said to be in Class when the Rules and Regulations which pertain to it have, in the opinion of the Society concerned, been complied with.
- c) Concerning the auxiliary systems, it is noted that the scope of such systems reflect the scope of the ship or mobile offshore installations classification notation. For example, a ship or mobile offshore structure which has a class notation reflective of a production system onboard would include the same within its scope of auxiliary systems.

3.4.2 Statutory service

The results generated by statutory activities as defined by the Administration at the interface between the Classification Society and the customer and the Classification Society internal activities to meet customer needs.

Statutory services address the same concepts noted under classification (3.4.1) except that the Regulations are defined by the Administration.

For statutory requirements it is recognized that classification societies traditionally have a contractual arrangement with flag Administrations to act on their behalf. This means the societies do not design the requirements but are authorised to apply the flag state requirements provided to them either directly or by adoption of an international, regional or national published instrument. In this context a flag Administration is one of the Society's customers.

3.4.3 Evidence of service

Documents (e.g. reports, certificates, letter, electronic records etc.) which confirm that the defined services provided are in compliance with specified internal and external requirements.

3.5 Customer

The recipient of a product or service provided by the Society.

NOTE:

The customer may for example be the direct user (e.g. ship designer, engineering company, marine equipment manufacturer, ship yard, ship owner, charterer, ship-management company) or the beneficiary (e.g. national Administration, port State, underwriter, cargo interest or the public at large). See also: "Interested party" in ISO 9000.

3.6 Contract

Agreed and binding set of requirements between a Society and a customer transmitted by any written means.

3.7 Fundamental processes

All technical and administrative processes affecting service; these include:

- a) Development of the Society's Rules and Regulations for classification services, including the associated research;
- b) Publication of the Society's Rules and Regulations;
- c) Application of the Society's Rules, Operational Instructions, Regulations and statutory requirements, through:
 - Verification and/or approval of documents and/or drawings relevant to the design,
 - Approval and survey of materials and equipment,

- Survey during construction and installation,
 - Survey during service,
 - Issue of class and statutory certificates,
 - Maintenance of class and statutory records
- d) Publication and maintenance of the register of ships and mobile offshore installations
- e) Provision of a network of qualified and competent surveyors, including the related supervision and training systems.

3.8 Location

Location is a place:

- from which surveys are managed, or
- where plan approval is carried out, or
- from which processes are managed.

3.9 Site

The place at which a surveyor conducts the survey in respect of a specific contract or a series of contracts (e.g. port, shipyard, firm, company, etc.). All sites are to be controlled by a location.

3.10 Vertical Contract Audit

VCA is a contract/order specific audit of production processes, including witnessing work during attendance at a survey, audit or plan approval in progress and, as applicable, including relevant sub-processes, VCA is carried out at a location and/or site to verify the correct application of relevant requirements in service realization for the specific work in that contract/order, and their interactions. (Relevant sub-processes include e.g. previous part surveys or thickness measurement processes connected to the survey). Plan approval VCA may be carried out for completed tasks.

3.11 Process Monitoring

Checking on a sample basis the ongoing processes that personnel, such as administrative staff, surveyors, auditors, or engineers, are following specified requirements such as Rules, statutory requirements, procedures, etc.

3.12 Activity Monitoring

An assessment of the individuals of the Society's technical staff by an appointed assessor, during the survey or audit or subsequent to completion of a plan approval review activity to evaluate the performance of the individual at work.

4. Quality Management System

4.1 General requirements

As a minimum the quality management system shall ensure that:

- a) the Society's Rules and Regulations for classification services are created, maintained and published in a systematic manner, including the development of the associated research,
- b) the Society's products, including arrangements to respond to customers' valid needs, are established and maintained in a systematic manner,
- c) the statutory requirements relevant to the work for which the Society is authorised, together with any specific requirements defined in agreements with national Administrations, are implemented and maintained in a systematic manner,
- d) the Society's Rules and Regulations and statutory requirements are complied with through:

- verification and/or approval of documents and/or drawings relevant to the design
 - approval and survey of materials and equipment,
 - survey during construction and installation,
 - survey during service,
 - issue of class and statutory certificates,
 - maintenance of class and statutory records,
- e) the register of ships and mobile offshore installations is published and maintained,
- f) a network of qualified and competent surveyors, including the related supervision and training systems, is provided.

4.2 Documentation requirements

4.2.1 General

4.2.2 Quality Manual

The Quality Manual shall include or reference:

- General information (name, address, phone number, etc. and legal status),
- Management statement on its policy and objectives for, and commitment to quality,
- Management statement assigning the person designated in 5.5.2,
- Description of the Society's areas of activity and competence,
- Information on the Society's relationship to its parent or associated organizations (where applicable),
- Organization charts,
- Relevant job descriptions,
- Policy statement on qualification and training of personnel,
- Other procedures and instructions or references to other procedures or instructions which are required in this Quality Management System Requirements document.

4.2.3 Control of documents

Guidance for Application

The provision of "document control" shall apply to any type of document, including electronic media, IT applications, etc. where said electronic media may affect the reliability of the service or of the recorded data

The provisions ISO 9001 Ch. 4.2.3 a) to e) and g) apply to internal documents, such as e.g.:

- *Quality manual;*
- *Procedures;*
- *Society's Rules and Regulations;*
- *Register of ships and offshore installations;*
- *Other documented process procedures, where such are considered necessary (these include any circulars or letters, which provide the surveyors and administrative staff with up-to-date information on classification, statutory and related matters);*
- *Specifications and diagrams defining or amplifying service processes;*
- *Pro-forma reports, checklists and certificates appropriate to the activities covered by this certification.*

The provisions of ISO 9001 Ch. 4.2.3 f) and g) apply to external documents, such as:

- *National and International Standards necessary for the activities governed by this instrument;*
- *IMO Conventions and Resolutions;*

- *IACS technical resolutions,*
- *National shipping Regulations and standards appropriate to the authorisations current with the Society;*
- *Documents and data submitted to the Society for verification and/or approval; see also 7.5.3 and 7.5.4,*
- *Specified correspondence defined by the Society to be of an important nature;*

4.2.4 Control of records

Records shall include at least those relevant to:

- a) Society's Rules and Regulations development and associated research,
- b) Society's Rules and Regulations and statutory requirements implementation, through:
 - verification and/or approval of documents and/or drawings relevant to the design
 - approval and survey of materials and equipment,
 - survey during construction and installation,
 - survey during service,
 - issue of Certificates.
- c) the register of ships and mobile offshore installations,
- d) all other records required by this Quality Management System Requirements document.

Pertinent records from suppliers shall be an element of these data.

4.3 Additional Classification Society specific requirements

4.3.1 General

- a) The Society, or the organization of which it forms a part, shall be legally identifiable.
- b) A Society which is part of an organization involved in functions other than services rendered by a Classification Society, shall be identifiable within this organization.
- c) The Society shall have adequate documentation which describes its functions and the technical scope of activity for which it is competent.
- d) The precise scope of a service will be determined by the terms of the individual contract or request for service. This shall be defined in documents within the Public Domain – e.g. a Society's published Rules or an International Convention.
- e) The Society, or the organization of which it forms a part, shall have adequate liability insurance unless its liability is assumed by the State in accordance with national laws.
- f) The Society shall have adequate documentation describing the conditions on which it performs its services.
- g) The Society, or the organization of which it forms a part, shall have independently audited accounts.
- h) The Society shall have documented procedures for the consideration and resolution of appeals against the results of its services, where these are carried out under legally delegated authority.

4.3.2 Impartiality and integrity

- a) The personnel of the Society shall be free from any commercial, financial and other pressures which might affect their judgement. Procedures shall be implemented to ensure that persons or organizations external to the Society, cannot influence the results of services carried out.
- b) The Society shall be independent to the extent that is required with regard to the conditions under which it performs its services.

- c) The remuneration of the Society's personnel engaged in the Society's activities shall not directly depend on the activities carried out and in no case on their results.

Guidance for application

A risk assessment may be carried out to identify any risk of conflict of interest between the society and associated organizations which might affect its impartiality.

The society may have an independent "Supervisory Body" ensuring impartiality which the personnel may address to any concern on actions which might affect their judgement.

4.3.3 Independence criteria

- a) The Society shall be independent of the parties involved.
- b) The Society and its staff responsible for carrying out the service shall not be the designer, manufacturer, supplier, installer, purchaser, owner, user or maintainer of the item subject to the service, nor the authorised representative of any of these parties.
- c) The Society and its staff shall not engage in any activities that may conflict with their independence of judgement and integrity in relation to their service activities. In particular, they shall not become directly involved in the design, manufacture, supply, installation, use or maintenance of the items covered by the service, or similar competitive items.
- d) All potential customers shall have access to the services of the Society. There shall not be undue financial or other conditions. The procedures under which the Society operates shall be administered in a non-discriminatory manner.
- e) The Society must not be controlled by shipowners or shipbuilders, or by others engaged commercially in the manufacture, equipping, repair or operation of ships.
- f) The Society is not substantially dependent on a single commercial enterprise for its revenue.
- g) The Society does not carry out class or statutory work if it is identical to or has business, personal or family links to the shipowner or operator. This incompatibility shall also apply to surveyors employed by the recognised organisation.

4.3.4 Confidentiality

The Society shall ensure confidentiality of information obtained in the course of its activities. Proprietary rights shall be protected.

4.3.5 Cooperation

The Society must allow participation in the development of its rules and procedures by Flag administration and other parties concerned.

5. Management Responsibility

5.1 Management commitment

Guidance for application

The commitment of top management should be demonstrated and made visible by e.g.:

- *evidence for the development of clear values and expectations for the organization*
- *acting as a role model for the organization's values and expectations, leading by example*
- *providing and receiving training*
- *making themselves accessible, listening and responding to the organization's people*
- *being active and personally involved in improvement activities*
- *reviewing and improving the effectiveness of the whole management group*

5.2 Customer focus

Guidance for application

See 3.5, definition of customer.

5.3 Quality policy

The society's quality policy shall refer to safety of life, property, and the marine environment.

5.4 Planning

5.4.1 Quality Objectives

Guidance for Application

When establishing these objectives, top management should consider the current and future needs of the Society and the parties influenced by the Society's work.

The Quality Management Reviews, among other sources, should produce input to the establishment of quality objectives.

5.4.2 Quality management system planning

Quality planning is an integral part of the management process. Top management shall implement quality planning for the activities and resources needed to satisfy the quality policy, objectives and requirements. Its output shall be documented, reviewed and revised as necessary.

Guidance for Application

Primary input can be:

- *needs and expectations of the customers and other interested parties; e.g. feedback from IMO, Flag Administrations and Industry Associations.*
- *performance of the products; e.g. Statistics from Port State Control, Casualties, loss trends; feedback on use of software and hardware(see definitions) obtained from internal and external users*
- *performance of the QMS processes; e.g. feedback from internal audits, NCs, and internal comments*
- *lessons learned from previous experience; e.g. from examination of survey reports, casualty investigations or external sources.*
- *risk assessment and mitigation. e.g. an amalgamation of inputs from all of the above, coupled with an evaluation of the affect on safety of life property and the marine environment*
- *other sources of information which identifies opportunities for improvement*

The output of the planning should include:

- *the responsibility and authority for developing improvement plans;*
- *skills and knowledge needed;*
- *improvement approaches, methodology and tools;*
- *the resources needed;*
- *alternative planning needs;*
- *indicators for performance achievements, and*
- *the need for documentation and records.*

5.5 Responsibility, authority and communication

5.5.1 Responsibility and authority

The society shall define and document the responsibilities and reporting structure of its component parts, clearly defining the relationships and functions of those component parts with particular regard to;

- execution of all fundamental processes
- initiate actions to prevent the occurrence of any nonconformity,
- control the further processing until a nonconformity is corrected or concession is accepted,
- verify the implementation, and
- evaluate the result for further improvement.

The Society shall have named persons who will deputise in the absence of any manager responsible for classification or statutory services and products.

5.5.2 Management representative

NOTE: External parties referenced in ISO 9001 Ch. 5.5.2 can be the external audit and/or certification bodies, Flag administrations or similar entity.

5.5.3 Internal communication

5.6 Management review

5.6.1 General

The interval between the management reviews shall not be more than 12 months.

5.6.2 Review input

Any output to management reviews containing information relevant to quality objectives, customer complaints and activity monitoring, throughout the Society, shall be used as input to the top management review.

5.6.3 Review Output

In connection with the requirements of 5.1, top management shall ensure that the results of the top management review of the Quality Management System, including the derived quality objectives, are documented and communicated throughout the organization, as appropriate.

6. Resource Management

6.1 Provision of resources

In implementing the requirements of this paragraph 6 the Society shall take into account the whole range of resources needed to develop and maintain the quality management system and the Fundamental Processes.

The Society shall provide worldwide coverage by its exclusive surveyors or, in duly justified cases, through exclusive surveyors of other societies.

Guidance for application

The Society shall normally perform the work it contracts to undertake with its own exclusive staff

6.2 Human resources

6.2.1 General

This includes the assignment of trained personnel for management and for performance of activities relevant to the Fundamental Processes, including internal audits.

6.2.2 Competence, awareness and training

When implementing the requirements of 6.1 and 6.2, a Society shall consider explicitly the requirements of IMO Resolution A.789(19) and the relevant IACS Procedural Requirements.

6.3 Infrastructure

Guidance for application

Systems provided to the surveyor (hardware and software) shall be identified and relevant training on their use shall be carried out and documented. Special consideration should be given to the situation where a surveyor is working out of a home-based office.

6.4 Work environment

Suitable lighting, ventilation and access conditions shall be made a requirement to permit safe and effective survey to take place. While it is understood that the provision of such environmental conditions is not within the supply of the Society, the environmental conditions under which the survey will be permitted to take place shall be made clear to the customer prior to survey commencing, e.g. stating them in the Society's Rules.

Training of staff on personal safety shall be carried out and documented.

Requirements for personal protective equipment to be used at surveys, and procedures for personal safety of surveyors at work shall be established and documented.

7. Product realization

7.1 Planning of product realization

Additionally the Society shall take the following into account:

- a) the specific provisions of IMO Res. A.739(18) and A.789(19) to be met by a recognised organization;
- b) the requirements of the IACS Procedural Requirements, the IACS Unified Requirements, IACS Common Structural Rules (for tankers and bulk carriers) and the IACS Unified Interpretations which are incorporated in the Society's Rules and Regulations or practices.

Guidance for Application

Quality Plans

Quality plans may be appropriate, when new products are developed or when an existing product will be significantly changed. In developing quality plans, consideration should be given to the fundamental processes followed in classification and statutory activities.

The quality plans may be formatted in a number of ways to suit the Society's method of operation. They may for example be in the form of a process flow chart with cross-references to detailed procedures or they could be in tabular form e.g. a check list.

Which ever way they are presented, they should give a map of the sequence of steps to be followed, the monitoring and measurements to be performed, the verification method, where applicable, to be applied and the specific responsibilities within the process.

Consideration should be given to any controls, skills or equipment which the Society needs to ensure that its quality objectives can be met (e.g. a Society may consider it essential for some

or all survey stations to possess certain gauges to enable random re-inspection by their own personnel. A further example would be the acquisition of computer hardware or software to carry out drawing approval commitments).

When designing new Rules for construction, or planning for the fulfilment of statutory work, full consideration should be given to the viability of the subsequent survey required within the Rules during production and operation of the ship or mobile offshore installation or equipment.

When new survey requirements are developed or introduced, due consideration should be given to how the new requirements can be met in terms of manpower skills and resources and their deployment within the operating structure of the Society.

In considering the above the development of documented procedures, work instructions and reports needed by the Society's staff and suppliers to implement and record the activities carried out should be taken into account.

- *The identification of any measurement requirement involving capability that exceeds the known state of the art, in sufficient time for the needed capability to be developed.*
- *The identification of suitable verification at appropriate stages within each fundamental process should be built into the quality plans or procedures.*

To assure a high degree of consistency between all locations, suitable guidance on standards of acceptability should be provided in process procedures, circulars, computer software or other controlled documents. These standards should cover service matters as well as technical criteria (e.g. target turn around times for drawing approval, survey response and reporting times as well as criteria for units in operation such as wear down limits of propeller shaft bearings).

It is recognised that there will be unanticipated situations where precise technical criteria may not be available but the Society should identify what course of action should be followed in such situations, e.g. specify an outstanding recommendation or provision for contacting supervisory personnel for assistance.

7.2 Customer-related processes

When implementing this paragraph, the specific requirements of the Flag Administrations on whose behalf the Society acts as well as any specific national interpretations of International Conventions and Codes shall be determined.

7.2.1 Determination of requirements related to the product

Review of requirements related to the product

- A.** The above provisions apply inter alia to:
1. contracts for classification and statutory certification of new constructions (usually between the builder and the Society);
 2. contracts for certification of equipment for ships and mobile offshore installations manufactured under type approval or similar programmes (usually between the manufacturer and the Society);
 3. contracts for classification after construction including transfers of class (usually between an owner, an owner's agent or a manager and the Society);
 4. long-term contracts or agreements for units in service (such contracts, determining fee agreements over a fixed term basis may be signed between an owner, an owner's agent or a manager and the Society);
 5. verbal or written requests for attendance, including those from national Administrations or other classification Societies ("service requests");
 6. agreements between the Society and national Administrations or other Classification Societies laying down requirements to be followed when acting on their behalf;

7. contracts for provision of software in connection with the Classification and statutory certification of ships and mobile offshore installations.

B. Before the acceptance of a contract or order, the contract or order shall be reviewed by the Society to ensure that:

1. the stated requirements comply with the Society's Rules and Regulations, or statutory requirements, as appropriate;
2. the location has the necessary capability and resources (or has access to the necessary capability and resources elsewhere within the Society), including reference documents, to meet the contract or order requirements.

Any differences between the contract or order requirements shall be resolved before the work is carried out and shall be recorded.

7.2.2 Customer communication

7.3 Design and development

The following provisions apply to:

- the design, development and publication of the Society's Rules and Regulations,
- the design and development of the classification and statutory services.

Guidance for Application

When considering the design of services offered within the scope of this Quality management System Requirements document, consideration should be given to staff and logistic requirements needed to fulfil the service offered. This includes a means of regularly appraising adequacy of international networks related to customers' needs and a means of assessing staff needs, both in terms of availability and competence related to specific processes or procedures, to permit satisfactory fulfilment of the stated service.

When developing service and service networks to satisfy the needs of National Administrations and other customers, the degree of application of this requirement may be governed by agreement or contract with these parties, either collectively or individually. Consideration to staff and logistic requirements should be especially given when existing services are significantly modified or new services are developed (e.g. the introduction of new statutory codes).

7.3.1 Design and development planning

7.3.2 Design and development inputs

Inputs shall also include in-service experience with ships and mobile offshore installations obtained from within the Society itself and external sources.

7.3.3 Design and development outputs

Classification Rules are, as a minimum, to provide for:

- a) the structural strength of (and where necessary the watertight integrity of) all essential parts of the ship or mobile offshore installation and its appendages,
- b) the safety and reliability of the propulsion and steering systems, and those other features and auxiliary systems which have been built into the ship or mobile offshore installation in order to establish and maintain basic conditions on board,

thereby enabling the ship or mobile offshore installation to operate its intended service.

The achievement of the above is conditional upon continued compliance with the Rules and Regulations and proper care and conduct on the part of the Owner and Operator.

7.3.4 Design and development review

7.3.5 Design and development verification

Guidance for Application

The design and development verification may include activities such as

- *performing alternative calculations,*
- *comparing the new design or development with a similar proven design, if available,*
- *undertaking tests and demonstrations, and*
- *reviewing the design stage documents before release.*

7.3.6 Design and development validation

Design and development validation shall not be limited to the publication of Rules and Regulations but shall apply, to the extent necessary, to all other products (see 3.3).

In the case of proposed Rules and Regulations, and amendments to existing ones, the Society shall submit these to organizations representing material manufacturers, builders, engineering companies, owners, professional institutions and authorities, as appropriate, for review and comment. These organizations may be suitably constituted Committees of the Society.

Guidance for Application

When developing Rules and Regulations, consideration should be given to the processes and equipment needed (by the owner or manufacturer) to build or maintain ships or mobile offshore installations or equipment in accordance with the Society's Rules and Regulations (i.e. Rules and Regulations should not be developed without taking into account the availability of processes or equipment necessary for their implementation). This includes whether the Rules and regulations reflect the latest manufacturing technologies.

7.3.7 Control of design and development changes

7.4 Purchasing

7.4.1 Purchasing process

A. The Society's quality management system must ensure effective control of the service delivery, regardless of whether it is performed by exclusive surveyors or, where so permitted, by non-exclusive surveyors or agents.

The above provisions apply to suppliers, such as:

1. non-exclusive surveyors (i.e. independent, individual surveyors who enter into an agreement with a Society to act on its behalf but who are also free to work on behalf of organizations such as other Classification Societies or underwriters),
2. Agents who undertake surveys or inspection services on behalf of the Society, but who are also free to work on behalf of other organizations,
3. Other Classification societies who perform surveys on behalf of the Society, whether or not a fee is paid,
4. Specialist suppliers providing services to the Society such as radio expertise, NDE measurements, underwater inspections. (Note: Where the service is paid for by the owner or builder, the service is considered as customer property – see 7.5.4),

5. Software houses who undertake design and development of computer software which is intended to be used in the Society's activities affecting quality of products.

B. The Society shall ensure that the control applied to suppliers under items A1, A2 and A3 is not less effective than that applied to their own staff engaged in a similar category of process.

With regard to the application of these provisions to other classification societies, due account may be taken of quality management systems in conformance with these Requirements but the responsibility remains with the Society to ensure that the supplying Society provides services fully compatible with the quality policy, objectives and specific requirements of the Society.

C. In evaluating the type and extent of control over the suppliers, account shall be taken over the level and complexity of the work assigned and its impact on the quality of the final service of the Society.

Before assigning any work to a supplier, the Society shall ensure that any restrictions on the use of suppliers placed on the Society by bodies such as national Administrations are strictly complied with.

7.4.2 Purchasing information

A. When a Society is engaging suppliers to perform activities on its behalf, such as non-exclusive surveyors, agents and other classification societies, appropriate contracts defining the scope of work they are authorised to undertake shall be drawn up. The contracts shall include duties, responsibilities, impartiality and confidentiality requirements to be complied with by the suppliers.

The supplier shall be provided with or have access to the Society's relevant Rules and Regulations.

Purchasing documents for each job shall include instructions appropriate to the level of work authorised.

Such documents shall be maintained in a controlled system ensuring the supplier is always provided with applicable issues of documents appropriate to the works being undertaken.

When engaging suppliers such as other classification societies, the contracts or agreements shall clearly stipulate which Rules and Regulations apply.

B. When engaging specialist suppliers, the Society shall provide them with clear guidance on the Rules and Regulations to be applied and/or clear instructions on a case by case basis.

The specialist supplier shall be approved in accordance with the Society's requirements.

7.4.3 Verification of purchased product

7.5 Production and service provision

7.5.1 Control of production and service provision

This shall be carried out at appropriate stages of the product realisation process.

Evidence of conformance with the acceptance criteria used shall be documented.

During the surveys, progress shall be documented.

Records shall indicate the authority responsible for release of product or the evidence of service.

Controlled production and service operations include the following issues:

- a) ready access to the correct issue of the Society's Rules and Regulations, statutory requirements, standards, codes and specifications appropriate to the work to be done,

- b) documented procedures and/or instructions delineating work to be done and defining responsibilities for such work, where the absence of such procedures/instructions could adversely affect quality,
- c) monitoring and control of suitable process parameters and product characteristics, which shall include a supervisory system which monitor the actions and work carried out.

Evidence for work carried out shall not be released until all the activities specified in the quality plan and/or procedures and/or instructions have been satisfactorily completed. Records of the above shall be maintained.

Where post-delivery activities are included in specified requirements, the Society shall establish and maintain procedures for ensuring that these activities meet the specified requirements.

The Society shall have documented procedures for the consideration and resolution of appeals against the results of its surveys.

The equipment mentioned under item 7.5.1 c) of the ISO 9001 standard include computers and associated software used by the Society in drawing approval, survey activities, Rule development or database maintenance. It would also include any measuring and monitoring devices used by the Society within a production process.

NOTE: Post-delivery activities mentioned above refer to:

- a) Updating of drawing approval software and of other software to internal and external customers, unless they are superseding the Rules.
- b) Updating of Rules, Regulations and statutory requirements.
- c) Supply of survey status and information to customers.
- d) Supply of information to customers, e.g. damages, failures.

7.5.2 Validation of processes for production and service provision

7.5.3 Identification and traceability

The identification of products shall be maintained either directly or by cross-reference, for all relevant documents or data. These shall be traceable through the above identification, identity of the ship or the mobile offshore installation (e.g. register number, international code, construction number, name), customer's name or other suitable means.

7.5.4 Customer property

Customer property include:

- a) documents submitted by customers to the Society for verification and approval,
- b) documents provided by customers to the Society for evidence of activities performed by them, "documents provided" are those contributing to survey decisions, such as computer calculations, radio experts' reports, underwater inspection reports, NDE measurements,
- c) services supplied on behalf of the customer witnessed by the Society; where a Society is verifying testing at manufacturers, builders, repairers or owners premises and reporting the same, the Society shall ensure that the measuring devices used in the process are identified and that evidence of calibration is obtained; where a Society is witnessing testing of service equipment installed or available onboard, a means shall be established so that the Society is satisfied as to the appropriate accuracy of the measuring equipment.
- d) documents provided by flag Administrations relevant to services on their behalf.

Records of the above shall be maintained.

7.5.5 Preservation of product

Guidance for Application

The Society should provide methods for unique identification of products, evidence of services and documents.

The Society should provide methods of handling products, evidence of services and documents that prevent damage or deterioration both during processing, storage and transmittal.

The Society should ensure appropriate conditions for storage in its locations and archives to prevent damage or deterioration of products, evidence of services and documents.

Appropriate methods for authorising receipt to and dispatch from locations and storage facilities should be stipulated.

The Society should control packaging processes of products, evidence of services and documents to ensure conformance to specified requirements.

The Society should ensure protection of products, evidence of services and documents (including those stored on computer) to prevent access by unauthorised persons both during processing, storage and transmittal. (e.g. a surveyor's recommendation should be prevented from being changed by anyone other than authorised personnel, a recommendation's fact should be preserved until closed out a further survey).

7.6 Control of monitoring and measuring devices

The provisions of 7.6. apply generally to monitoring and measuring equipment owned or leased by the Society or by a supplier, to provide evidence of conformity of product to determined requirements.

It does not apply to equipment used by manufacturers, builders, repairers or owners (see 7.5.4).

8. Measurement, analysis and improvement

8.1 General

Guidance for Application

Measurement, analysis and improvement should include issues such as the following:

- *measurement, analysis and improvement should be used to establish appropriate priorities for the Society;*
- *the measurements employed by the Society should be reviewed periodically, and data should be verified on a continual basis for accuracy and completeness;*
- *the benchmarking of selected processes as well as customer satisfaction should be employed as an improvement tool;*
- *the use of measurements and the generation of information are essential for good communication and they should be the basis for improvement and involvement of all interested parties; such information should be current, and be clearly defined as to its purpose;*
- *appropriate tools for the communication of information resulting from the analyses of the measurements should be implemented;*
- *the effectiveness of communication to interested parties should be measured to determine whether the information is clearly understood;*
- *self-assessment should be considered on a periodic basis to assess organizational performance and to define improvement opportunities.*

8.2 Monitoring and measurement

8.2.1 Customer satisfaction

Guidance for Application

The Society should identify internal and external sources of customer and end - user information available and establish processes to gather, analyse and deploy this information.

Examples of customer - related information include:

- *feedback on all aspects of Society's product,*
- *customer requirements and contract information,*
- *market needs,*
- *product delivery data, and*
- *information related to competition.*

The Society's process for requesting, monitoring and measuring feedback of customer satisfaction and dissatisfaction should provide information, on continual basis. It should address conformance to requirements, meeting needs and expectations of customers.

The Society should establish and use sources of customer information and should cooperate with its customers in order to anticipate future needs. The Society should plan and establish processes to listen effectively and efficiently to the" voice of the customer".

The Society should specify the methodology and measures to be used and the frequency of gathering and analysing data for review.

The Society should plan data collection methodologies.

Examples of sources of information on customer satisfaction include:

- *customer complaints,*
- *direct communications with customer,*
- *Society's questionnaires for customer and own personnel,*
- *Public opinion poll,*
- *Results of surveys,*
- *Reports in various media, and*
- *Studies and Publication on the Maritime and Technical Supervisory Sectors*
- *Different Awards for Quality.*

8.2.2 Internal audit

A. Scope

The audit scope shall cover the fundamental processes for the classification and statutory services at various locations with a focus on verification of the efficient and effective implementation of the QMS and applicable work processes at the individual location. The audit periods, which may be established according to the findings, shall ensure that each location is audited at least once per three years.

Audits at locations shall also include visits to selected sites, which operate under the control of the location.

B. Planning

When planning the internal audits, consideration shall be given to complaints received in the past (either related to the location or in general) and to the results of previous internal audits and to the operation of the locations. Also, when planning specific audits, the check lists may need to have a different emphasis depending on the type of location.

C. Effectiveness and efficiency

The Society shall evaluate and improve the effectiveness and efficiency of the internal audit process.

Internal auditors shall also look for and communicate improvement suggestions.

8.2.2.1 Vertical Contract Audit

The Society shall carry out, annually, Vertical Contract Audits for each of the following processes:

- Plan Approval
- New Construction Survey
- In-Service periodical survey / audit
- Type approval (where applicable) or survey of other materials and equipment.

Evidence of completion of VCAs and findings thereof, shall be formally recorded.

Guidance for Application:

See IACS Recommendation 107

8.2.3 Monitoring and measurement of processes

Guidance for Application

The implemented methods should consider:

- accuracy
- timeliness of product delivery
- reliability
- responsiveness
- reaction time of staff to special requests and/or external requests
- staff turnover, as it affects the delivery of products.

8.2.4 Monitoring and measurement of product

Guidance for Application

The implemented methods may consider issues such as:

- Port State Control detentions
- casualties
- rework of plan approval letters and survey reports

8.3 Control of nonconforming product

With reference to ISO 9001 Ch. 8.3 b), Statutory services nonconformities shall be reported for concession to the relevant flag Administration.

Guidance for Application

Controls should provide for identification, documentation, evaluation, non-issuance or withdrawal of report or certificate, disposition (treatment) of nonconforming products, and for notification to the functions concerned.

Identifying of nonconforming product

All people within the Society should have the authority to report nonconformities at any stage of the processes to initiate prompt corrective action.

Review and disposition of nonconforming product

Review of nonconformities should be conducted by designated persons to determine whether they constitute trends or a repetition of earlier occurrences. They should be competent to

evaluate the effects of the nonconformity and have the authority and resource to define corrective action.

Nonconforming product should be reviewed in accordance with documented procedures It may be:

- *corrected to meet the specified requirements,*
- *accepted with or without correction by concession,*
- *rejected.*

However, in no instance shall the actions taken by the Society endanger the safety of the vessel.

Corrected product should be re-verified in accordance with the quality plan and/or documented procedures.

Documented procedures

The procedures should define the responsibility for review and authority for the disposition (treatment) of nonconforming product.

Concession

For accepting with or without correction by concession, consideration should be given to the nonconformities with Rules and Regulations or statutory requirements during:

- *drawing approval,*
- *survey of materials and equipment,*
- *survey during construction and installation,*
- *survey during service.*

8.4 Analysis of data

Guidance for Application

The Society should analyse data from various sources to assess performance against plans and goals and to identify areas for improvement.

The Society should foresee the use of statistical methodologies for data analysis, which can help in assessing, controlling, and improving performance of processes.

The analysis of data can help in determining the cause of problems, and therefore guide effective corrective and preventive action. This may require analysis of the product requirements, as well as analysis of relevant processes, operations and quality records.

Information and data from all parts of the Society should be integrated and analysed to evaluate the overall performance of the Quality Management System.

The results of analysis should be documented and used to determine:

- *trends,*
- *operational performance,*
- *customer satisfaction and/or dissatisfaction through complaints or other quality indicators (PSC detentions, Administration nonconformities, etc),*
- *effectiveness and/or efficiency of processes,*
- *performance of supplier's.*

8.5 Improvement

Sources of Information

The Society should identify sources of information and establish processes for collection of information for planning continual improvement, corrective and preventive actions. The examples of such sources of information include:

- *customer complaints*
- *nonconformance reports*

- *outputs from management reviews*
- *internal audit reports*
- *outputs for data analysis*
- *relevant records*
- *outputs from customer feedback and satisfaction measurements*
- *process measurements*
- *results of self assessment*
- *in-service experience.*

8.5.1 Continual Improvement

Guidance for Application

The Society should continually seek to improve its processes, rather than wait for a problem to reveal opportunities for improvement.

Potential improvements can range from continual activities to long-term improvement projects.

The Society should have a process in place to identify and manage improvement projects.

The efficiency and effectiveness of processes should be emphasized when actions are taken. These actions should be monitored to ensure that desired goals are met. Identification of causes of deviations may result in changes to products, processes and even revision of the quality management system.

8.5.2 Corrective action

Guidance for Application

A corrective action, being an action aimed at eliminating the causes of a nonconformity to prevent its recurrence, should consider two aspects:

- *to eliminate the nonconformity,*
- *to eliminate the cause to avoid the recurrence,*

and should apply to both the quality management system and the product.

When identifying the causes for nonconformities, consideration should be given to documented procedures, appropriate resources, manpower, skills and qualification of personnel.

The Society should plan and establish a process for corrective action. Corrective action planning should evaluate the significance of problems affecting quality in terms of their potential impact on such aspects as operating costs, costs of nonconformity, performance, dependability, safety and customer satisfaction.

Appropriate Society functions should be represented in the corrective action process.

Efficiency as well as effectiveness of processes should be emphasized when actions are taken and actions should be monitored to ensure that desired goals are met.

Corrective actions should be considered for inclusion in the management review process, especially corrective actions with high financial impact or those that have significant potential impact on customer satisfaction.

8.5.3 Preventive action

Guidance for Application

The Society should use preventive methodologies to identify the causes of potential nonconformances.

Examples of such methodologies may include risk analyses, trend analyses, statistical process control, fault tree analyses, failure modes and effects and criticality analyses.

Society's appropriate representatives should participate in the preventive actions.

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