



STANDARD FOR CERTIFICATION
No. 4.1

MANAGEMENT SYSTEMS FOR
SAFE AND ENVIRONMENTALLY
SOUND SHIP RECYCLING FACILITIES

OCTOBER 2005

DET NORSKE VERITAS

FOREWORD

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A list of Standards for Certification is found in the latest edition of Pt.0 Ch.1 of the "Rules for Classification of Ships" and the "Rules for Classification of High Speed, Light Craft and Naval Surface Craft".

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CONTENTS

1. APPLICATION AND CERTIFICATION.....	4	2.5 Quality manual, document and data control.....	8
1.1 Scope and application.....	4	2.5.1 Quality manual.....	8
1.1.1 Scope.....	4	2.5.2 Document and data control procedures.....	8
1.1.2 Application.....	4	2.5.3 Records.....	8
1.2 Certification.....	4	2.5.4 Communication.....	8
1.2.1 Certificates.....	4	2.5.5 Complaints.....	8
1.3 Certification principles.....	4	2.6 Evaluation of suppliers and (sub-) contractors.....	9
1.3.1 General.....	4	2.6.1 Purchasing process.....	9
1.3.2 Auditor or surveyor qualifications.....	4	2.6.2 Disposal process.....	9
1.3.3 Assessment of the documentation of the management system.....	4	2.6.3 Contractors and sub-contractors.....	9
1.3.4 Initial and or implementation audit.....	4	2.7 Internal audits.....	9
1.3.5 Annual periodical audits for retention of the certificate.....	4	2.7.1 General.....	9
1.3.6 Audits of contractor, sub-contractor, or supplier.....	4	2.7.2 Audit procedure.....	9
1.3.7 Unannounced audits.....	4	2.7.3 Audit plan.....	9
1.3.8 Renewal audits.....	4	3. PLANNING, DEVELOPMENT AND PREPARATION PHASE.....	9
1.3.9 Additional audits.....	4	3.1 Planning.....	9
1.4 Minimum requirements for recycling activity.....	4	3.1.1 General.....	9
1.4.1 General.....	4	3.1.2 Agreement.....	9
2. GENERAL.....	5	3.1.3 Risk assessment.....	10
2.1 Management responsibility.....	5	3.1.4 Planned activities.....	10
2.1.1 Policy.....	5	3.2 Development of plans.....	10
2.1.2 Policy objectives.....	5	3.2.1 Input – requirements for operational control.....	10
2.1.3 Responsibility and authority.....	5	3.2.2 Customer provided items.....	10
2.1.4 Management representative.....	6	3.2.3 Output.....	10
2.1.5 Review.....	6	3.3 Development review.....	10
2.1.6 Non-compliance, accidents, incidents; corrective and preventive actions.....	6	4. OPERATION PHASE.....	10
2.1.7 Improvement.....	6	4.1 General.....	10
2.2 Resources.....	6	4.1.1 Receipt control.....	10
2.2.1 Lay-out of the recycling facility.....	6	4.1.2 Operational control.....	10
2.2.2 Maintenance and use of equipment.....	7	4.1.3 Monitoring.....	10
2.2.3 Human resources: training, awareness and competence.....	7	4.1.4 Sampling and measurements.....	11
2.2.4 Staff competence and training.....	7	4.1.5 Maintenance and calibration.....	11
2.2.5 Non-conforming staff.....	7	4.2 Storage and removal of materials.....	11
2.3 Legislation and requirements.....	7	4.3 Customer property.....	11
2.4 Emergency plans and response.....	7	4.3.1 General.....	11
2.4.1 Alarm.....	7	5. RESULT PHASE.....	11
2.4.2 Evacuation.....	7	5.1 Control and tests.....	11
2.4.3 Evaluation, notification and planning.....	7	5.1.1 General.....	11
2.4.4 Containment and counter measures.....	7	5.1.2 Analysis.....	11
2.4.5 Clean-up and disposal.....	8	6. DEFINITIONS AND ABBREVIATIONS.....	12

1. Application and Certification

1.1 Scope and application

1.1.1 Scope

This standard gives requirements for the management system of ship recycling facilities. The objective is to ensure that ship recycling is properly planned, is carried out safely and environmentally friendly by qualified staff and is evaluated and improved in line with market demands, experience and national and international rules and regulations.

The ship recycling facility may include quality objectives in addition to those covered by this standard(s). The certification service may then be used to verify that the arrangements needed for the achievement of such objectives are implemented, maintained and effective.

This standard does not replace any national or international law or regulation. Every facility shall comply with existing laws and regulations.

1.1.2 Application

This standard is applicable to all types of ship recycling facilities, as well as to all ships being recycled.

1.2 Certification

1.2.1 Certificates

Ship recycling facilities that comply with the requirements of this standard may receive a DNV Ship Recycling Facility Certificate.

The certificate will be valid for 3 years. Validity of the certificate is subject to annual verification. The certificate may be renewed following the satisfactory completion of a renewal audit.

Certificates may also be issued for separate facilities and sites, in particular if such facilities and sites are organized as separate legal entities with corresponding management, organization and responsibilities.

If the recycling activities are divided between more than one facility the operator shall provide a list of sites performing recycling activities in order to have them included in the certification.

1.3 Certification principles

1.3.1 General

The certification will include:

- assessment of the documentation of the management system
- initial/implementation audit
- audits of contractor, sub-contractor, or supplier
- un-announced visits
- annual periodical audits
- renewal audits.

Audits consist of observations during tours of the ship and facility premises and interviews with involved parties at the facilities.

Audits shall be conducted in accordance with the requirements of ISO 19011.

1.3.2 Auditor or surveyor qualifications

Only surveyors or auditors with the qualification: "recycling surveyor" shall carry out the audits of recycling facilities and projects.

Auditors should comply with the requirements of ISO19011.

1.3.3 Assessment of the documentation of the management system

An assessment of the documentation of the management system shall be performed to verify compliance with the applicable requirements in this standard.

Corrective actions shall be taken on identified non-conformities before the initial and or implementation audit will be carried out.

1.3.4 Initial and or implementation audit

An implementation audit including on-site verification shall be performed to determine if there is a "working" system, in compliance with the documented system and the requirements of this standard. This includes the preparation phase, dismantling phase and waste stream management.

Identified non-conformities will be reported in writing to the ship recycling facility's management. Corrective and preventive actions shall be taken to the non-conformities within 3 months. When the actions are closed out, or a plan for closing is available and accepted (may include a separate follow-up visit), certification will be recommended. Non-conformities will be tracked in a non-conformity log.

1.3.5 Annual periodical audits for retention of the certificate

Periodical audits shall be carried out annually. Periodical audits shall be satisfactorily completed in the three month period either side of the certificate anniversary date.

Identified non-conformities shall be reported in writing to the ship recycling facility's management. Corrective and preventive actions shall be taken to identified non-conformities within agreed time, normally not exceeding 3 months.

1.3.6 Audits of contractor, sub-contractor, or supplier

For each ship to be recycled the involved contractors, sub-contractors and suppliers shall be audited at each phase of the recycling process where applicable: preparation, dismantling and demolishing and waste stream management.

1.3.7 Unannounced audits

Every year 2 unannounced audits shall be carried out: 1 during a project preparation phase and 1 during the dismantling and demolishing phase.

1.3.8 Renewal audits

Within three months before the expiry date of the certificate a renewal audit shall be carried out.

Identified non-conformities shall be reported in writing to the ship recycling facility's management. Corrective and preventive actions shall be taken to the non-conformities. When the actions are closed out or a plan for closing is available and accepted, re-certification will be recommended.

1.3.9 Additional audits

If audits indicate that the management system is not working as intended or verification of implementation of corrective or preventive actions are needed, additional audits to verify implementation of corrective actions may be required at the discretion of DNV.

Where required by contract or legislation a follow-up of a ship demolition and re-cycling project may be carried out as a project specific audit, including an audit at the closing of the project.

1.4 Minimum requirements for recycling activity

1.4.1 General

The facility shall provide recycling services in accordance with a well established, documented, implemented and maintained Safety, Health and Environment Management System

October 2005

(SHE). Continual improvement shall be incorporated in this system.

The organization shall determine how it will fulfil these requirements by analysing the interrelation of at least the following elements:

- purpose
- criteria and methods
- safety, including occupational hazards
- risk
- protection of the environment
- evaluation of operations.

2. General

2.1 Management responsibility

2.1.1 Policy

The ship recycling facility's top management shall establish a SHE-/quality policy and ensure that it:

- is applicable for the type of facility
- includes a commitment to comply with applicable requirements, investment of resources, and continual improvement of effectiveness of the management system
- provides a framework for establishing, monitoring, and review of quantifiable short term and long term goals and objectives.

Over and above the policies and objectives described above the organization shall establish, document, implement, maintain and continually improve a Safety, Health and Environmental Management System for the disposal, dismantling and breaking of ships in accordance with the requirements of the International code for the recycling of ships and all applicable legislation and requirements.

The policies should be available to the public.

2.1.2 Policy objectives

Policy shall address the following issues:

- "ready for recycling declaration"
- ship recycling plan
- gas-free certificate
- use of standard ship recycling contract, such as BIMCO
- arrival inventory and or Green Passport (ref. IMO Resolution on ship recycling)
- licence for ship breaking
- extraction procedures, hazardous substances and SHE-exposure
- procedures for identification of products for reuse
- procedures for search, filing and retention of relevant documentation and documents issued by:
 - authorities
 - classification societies
 - yards, manufacturers and supplier of materials and components
 - operational data and or logs
 - repairs and or refurbishments of ship, installations and systems
 - other.

Guidance note:

A review of the policy may be part of the management review.

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The ship recycling facility's management shall ensure that quality objectives are established and that the objectives are measurable and consistent with the quality policy.

The ship recycling facility's management shall ensure that customer requirements are determined and met with the aim of enhancing customer satisfaction. The ship recycling facility's management shall also ensure that authority requirements are determined and met.

Guidance note:

This may be determined through questionnaires to ship owners, ship managers, meetings with authorities etc.

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The ship recycling facility's management shall ensure that planning of the quality management system is performed in order to:

- identify the needed processes
- determine the sequence and interaction of these processes between the processes
- ensure that operation and control of the processes are effective
- ensure availability of necessary resources
- monitor, measure and analyse the different processes
- ensure continual improvement of the processes
- maintain the integrity of the management system when modifications are planned and implemented.

Guidance note:

Typical output of planning might be the quality manual, documented procedures, instructions, flow-charts etc.

Planning of resources might include:

- who shall perform the work
- who shall perform the verification
- identification of training needs
- assure that appropriate equipment is available.

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Guidance note:

The organization shall determine how it will fulfil these requirements by use of e.g. the following:

- the aim at preventing illness and injury to health arising from the cleaning, disposal, dismantling and breaking of ships through the identification of hazards and safeguarding the risks from all activities and situations in the working environment.
- the commitment for investment in resources for their continuous review, planning maintenance, implementation, evaluation and action.
- the SHE-Management System should be an integral part of the overall management structure.
- compliance with legislation, collective agreements and other requirements to which the organization subscribes.
- the encouragement to participate actively in all parts of the SHE-Management System.
- the management commitment to and leadership of the safety, health and environmental system.
- continual improvement and maintenance of the SHE-Management System and review of its effectiveness.

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2.1.3 Responsibility and authority

The responsibility, authority and the interrelation of all personnel who manage, perform and verify work affecting the quality of the ship recycling facility's activities shall be defined, particularly for personnel with the responsibility for:

- training, including identifying and recording deficiencies related to training
- monitoring of process
- initiating action to prevent the occurrence of non-conformities
- initiating, recommending or providing solutions through designated channels
- verifying the implementation of solutions

- controlling the process until the deficiency has been corrected.

The ship recycling facility shall determine and provide resources needed to:

- implement and maintain the SHE-/quality management system and continually improve its effectiveness
- enhance customer satisfaction by meeting their requirements.
- ensure adherence to the requirements of the management system.

2.1.4 Management representative

Top management shall appoint a member of the management who, irrespective of other duties, shall have responsibility and authority for:

- ensuring that the SHE management system is established, implemented and maintained in accordance with the requirements of this standard
- reporting on the performance of the management system to the facility's management for review including recommendations for improvement
- ensuring the promotion of awareness of customer requirements throughout the organisation.

2.1.5 Review

The management shall review the management system at defined intervals to ensure its:

- continuing suitability
- adequacy
- effectiveness in satisfying the requirements of this standard
- identification of improvement.

Reviews to be carried out in each phase of the recycling process.

Such reviews shall be performed at least annually, and records shall be retained. Reviews shall consist of well structured and comprehensive evaluations that include, but are not limited to:

- follow-up actions from previous management reviews
- considerations for up-dating the management system in relation to changes in current and new regulations, market demands, new technology, changed circumstances, etc.
- internal and external audit results
- recommendations for improvement
- feedback from authorities and other interested parties
- process performance and effectiveness of training, including evaluation of contractors, sub-contractors and suppliers
- status of preventive and corrective actions.

Output from the management review shall include decisions and actions related to:

- improvements in the SHE-system consistent with the commitment to continual improvement
- improvements in the policy, objectives or goals
- improvement of the effectiveness of the quality system and its processes.

Guidance note:

Records of management review should include, but should not be limited to:

- who performed the review
- date of review
- what was reviewed
- result of the review
- action points
- assignments of action points
- due dates

- status of previous actions
- conclusion.

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2.1.6 Non-compliance, accidents, incidents; corrective and preventive actions

The Safety, Health and Environmental system should include procedures ensuring that non-compliances, accidents, incidents are reported to the organization, investigated and analyzed to identify basic causes with the objective of continual improvement.

The organization should establish procedures for taking corrective and preventive actions to avoid re-occurrence. The procedures shall define requirements for reviewing the effectiveness of corrective and preventive actions taken.

The ship recycling facility shall initiate action to eliminate the cause of non-conformities in order to prevent recurrence. A documented procedure shall be established for:

- review of non-conformities and complaints
- investigation to find the root causes
- evaluate actions to prevent recurrence
- determine and implement needed action
- records of action taken
- review of corrective action taken.

The ship recycling facility shall initiate actions to eliminate the cause of potential non-conformities in order to prevent their occurrence. A documented procedure shall be established for:

- determine potential non-conformities and causes
- evaluate actions to prevent occurrence of non-conformities
- determine and implement needed action
- records of action taken
- review of preventive action taken.

2.1.7 Improvement

The ship recycling facility shall continually improve the effectiveness of the SHE-/quality system through the use of quality policy and objectives, audit results, data analyses, corrective and preventive actions and management review.

The ship recycling facility shall establish procedures for reporting and dealing with non-conformities and unintended events. Records shall be maintained.

Guidance note:

The documented procedure might include, but should not be limited to:

- how to report
- who should report
- what information to include in the report
- follow up
- closing
- statistical use.

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2.2 Resources

The Management shall identify the need for and ensure the availability of resources essential to establish, implement, maintain and improve a Safety, Health and Environmental Management System. Resources include human resources, organizational resources, infrastructure, technology and financial resources.

2.2.1 Lay-out of the recycling facility

A documented lay-out of recycling facility should be available.

The infrastructure should be adequately designed based upon a risk assessment. This should include the movements of persons, vehicles and equipment.

October 2005

2.2.2 Maintenance and use of equipment

The organization shall ensure that all equipment and tools and the premises are maintained in conformity with applicable requirements and manufacturers instructions. In meeting the requirements the organization shall ensure that inspections are held at appropriate intervals, any non-compliance is reported with its causes, appropriate corrective action is taken and records of these activities are maintained.

Procedures shall be established to ensure that:

- equipment and systems are operated in a safe, environmental friendly and efficient manner
- equipment and systems are operated and maintained according to makers instructions
- operators of such systems use relevant personal protective equipment
- measuring devices which influence safety, health or environment are calibrated periodically.

Guidance note:

Important equipment could be:

- welding or cutting equipment
- machinery systems including pumps
- lifting equipment including cranes and slings
- transport equipment
- systems for discharging
- fire detection and extinguishing equipment
- safety equipment
- computers
- gas measuring instruments.

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Guidance note:

Devices needed to be calibrated might be, but should not be limited to:

- manometers on compressors
- oxygen meters
- gas detectors.

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2.2.3 Human resources: training, awareness and competence

All persons engaged in ship recycling operations must be familiar with their tasks and duties and the respective protective and preventive measures necessary to protect their safety, health and the environment. Personnel should be aware of their roles and responsibilities in achieving conformity with the requirements of the Safety, Health and Environmental Management System and be aware of the potential consequences of departure from specified procedures.

The organization shall establish procedures for: selection of employees and contractors, including criteria for education, background, medical requirements, induction and safety training, periodic training and mandatory emergency drills.

Special attention should be given to critical task operators and supervisors.

2.2.4 Staff competence and training

The ship recycling facility shall at predetermined intervals, but at least annually:

- identify the necessary competence for personnel including contractors and sub-contractors.
- identify training need and provide training or take other actions to satisfy these needs
- evaluate the effectiveness of action taken
- ensure that personnel are aware of the importance of their work and how they contribute to achieve objectives.

Records of competence status and training needs shall be maintained.

Guidance note:

Training needs might be identified through appraisal interviews.

Actions taken might be verified through evaluation of production.

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The above also applies for sub-contractors working at the recycling facility or in close co-operation with the recycling facility's organization.

2.2.5 Non-conforming staff

The ship recycling facility shall establish routines for handling staff not performing as required.

Actions to assist the member of staff shall be taken at an early stage of employment, and shall be seen as part of training and management follow-up.

2.3 Legislation and requirements

The organization shall establish, implement and maintain a procedure or procedures to identify and have access to the applicable legal requirements and other requirements to which the organization subscribes related to its activities and services and ensure that these requirements are taken into account when establishing and maintaining a Safety, Health and Environmental Management System.

The organization shall periodically evaluate compliance with applicable legal requirements and other requirements to which it subscribes

2.4 Emergency plans and response

The organization shall establish, implement and maintain a procedure to identify potential emergency situations and accidents and how it will respond to them. The organization shall respond to actual emergency situations and accidents and prevent or mitigate associated adverse impacts. The organization shall adapt to continuous changing situations. Alternative control measures should be implemented in case the designated control area is unavailable due to the emergency. The organization shall periodically review and where necessary amend its procedures, in particular after occurrences, incidents, accidents or emergency situations. At the start of the preparation phase or when major changes occur the emergency response procedures shall be tested where practical.

2.4.1 Alarm

An alarm signal should be determined to alarm all personnel working on board and at the surrounding premises in case of an emergency. A dedicated emergency muster station should be determined, clearly marked at the muster station and on the emergency control plan.

2.4.2 Evacuation

A procedure should be established, implemented, maintained and documented to evacuate all personnel working on the ship or at the surrounding premises.

2.4.3 Evaluation, notification and planning

An emergency response plan shall be available for the complete facility including annexes for the ships with specific response procedures based on the identified risks.

Notification and evaluation: procedures should be implemented to notify all involved parties, including task forces to immediately respond to the emergency situation.

2.4.4 Containment and counter measures

The measures should be appropriate for the magnitude of the emergency situation. Proper coordination shall be established between all parties responding to the emergency. A central command function should be assigned.

2.4.5 Clean-up and disposal

Based upon the risk identification adequate segregation of substances and materials should be carried out after the emergency situation. Adequate resources should be at the scene.

2.5 Quality manual, document and data control

2.5.1 Quality manual

A quality manual shall be prepared covering and including those issues having a bearing on all matters for the provision of the services offered, including back-up and administrative services. The quality manual shall include or make reference to procedures affecting the overall quality and outline the structure of the documentation used in the quality system.

Management system documentation shall include:

- documented procedures consistent with the requirements of this standard as well as the ship recycling facility's stated objectives and policies
- a description on how to effectively implement the management system and its documented procedures
- a description of interaction between the processes of the management system.

If the ship recycling facility decides to outsource any of these processes, it shall ensure control of these processes.

2.5.2 Document and data control procedures

The ship recycling facility shall establish and maintain documented procedures to control all documents and data related to the requirements of this standard.

The documents and data shall be reviewed and approved for adequacy by authorised personnel prior to issue. A master list or equivalent document control procedure identifying the current revision status of documents shall be established and be readily available to preclude the use of invalid and or obsolete documents or data. The control shall as a minimum ensure that:

- that pertinent issues of appropriate documents and data are available at all relevant locations
- invalid and or obsolete documents and data are promptly removed from all points of issue or use, or otherwise assured against unintended use
- changes to documents and data shall be reviewed and approved by the same functions that performed the original review and approval, unless specifically designated otherwise
- changes to the documents shall be clearly identified
- up-to-date documents are available as necessary to meet requirements
- documents of external origin are identified and their distribution controlled
- documents remain legible and readily identifiable.

Arrangements shall also include:

- clear identification of which information is controlled
- clear responsibility for its upkeep
- relevant versions of applicable documents are available at point of use.

Guidance note:

Controlled documents may be:

- quality manuals
- regulations and requirements which are implied that shall be met
- relevant legislation
- contracts.

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2.5.3 Records

Records shall be established and maintained to provide evi-

dence of conformity to requirements and of the effective operation of the quality management system. Records shall remain legible, readily identifiable and retrievable.

The ship recycling facility shall establish a documented procedure, including file key(s), to define the controls needed for the identification, storage, protection, retrieval, retention time and disposition of records.

Retention times for records shall be established taking regulatory requirements into consideration.

If using a computerised system, electronic backup procedures shall be established.

Guidance note:

Examples of records could be:

- reports from external validating bodies
- approved external specialists
- internal audit records
- management review records
- evaluation results
- non-conformities
- staff registers
- personnel archives.

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Guidance note:

Traceability:

A master list or equivalent document identifying the current revision status of documents shall be established and be readily available to preclude the use of invalid and or obsolete documents or data. The control procedure shall as a minimum ensure that:

- initiation, review and approval authorities are clear that pertinent issues of appropriate documents are available at the points of use
- invalid and or obsolete documents are promptly removed from all points of issue or use, or otherwise assured against unintended use
- changes to documents shall be reviewed and approved by the same functions that performed the original review and approval, unless specifically designated otherwise
- changes to the documents shall be clearly identified
- up-to-date documents are available as necessary to meet requirements
- documents of external origin are identified and their distribution controlled
- documents remain legible and readily identifiable.

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2.5.4 Communication

The organization shall establish, implement and maintain procedures for internal and external communication to receive, document and respond to relevant communication from interested parties.

The ship recycling facility's management shall ensure that appropriate communication channels are established within the organisation and that communication regarding the effectiveness of the management system takes place.

Guidance note:

Examples might be:

- notice-boards
- web-sites
- meetings, briefings, orientations
- internal magazines
- suggestion forms.

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2.5.5 Complaints

The ship recycling facility shall establish effective arrangements for handling complaints. Responsibility for reviewing,

October 2005

handling and follow-up of complaints shall be defined.

2.6 Evaluation of suppliers and (sub-) contractors

2.6.1 Purchasing process

The ship recycling facility shall ensure that purchased products and services conform to specified purchase requirements. The type and extent of control applied to the supplier and the purchased products and services, shall be dependent upon the effect of the purchased product on the services provided.

The ship recycling facility shall evaluate and select suppliers based on their ability to supply products and services in accordance with the ship recycling facility's requirements. Criteria for selection, evaluation and re-evaluation shall be established.

Records of evaluation and re-evaluation of suppliers shall be maintained.

Purchasing information shall describe the product to be purchased, including where appropriate:

- approval requirements
- requirements for qualification of personnel
- requirements to quality management system.

Guidance note:

Adequacy of the requirements shall be considered before suppliers are contracted.

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Responsibilities and tasks including reporting requirements are documented in agreements between the organization and the contractors, sub-contractors and suppliers. A re-evaluation should be carried out of the performance of the contractors, sub-contractors and suppliers.

2.6.2 Disposal process

The ship recycling facility shall ensure that all disposals of materials and equipment conform to specified disposal requirements. The type and extent of control applied to the receiver and the treatment of disposed products shall be dependent upon the identified properties of the disposed product.

The ship recycling facility shall evaluate and select reception facilities based on their ability to treat products in accordance with specified requirements. Criteria for selection, evaluation and re-evaluation shall be established.

Records of evaluation and re-evaluation of reception facilities shall be maintained.

Disposal information shall describe the product to be disposed, including where appropriate:

- disposal requirements
- requirements for qualification of personnel
- requirements to the SHE- and quality management system
- applicable legislation.

Adequacy of compliance with the requirements shall be considered before reception facilities are contacted.

The ship recycling facility shall establish inspection or other follow-up activities necessary for ensuring that the disposal of products is carried out according to specified requirements.

2.6.3 Contractors and sub-contractors

Those with responsibility for engaging and deploying contractors and sub-contractors make sure the work to be carried out by these persons does not conflict with the work being performed by others.

2.7 Internal audits

2.7.1 General

The ship recycling facility shall carry out internal audits to ver-

ify that the management system is implemented and maintained and to determine its effectiveness.

The audits and follow-up actions shall be carried out in accordance with documented procedures. The audit frequency shall ensure, as a minimum, annual audits.

The results of the audits shall be brought to the attention of the personnel having responsibility of the area audited. The management responsible for the area shall take timely corrective action on the deficiencies found during the audit.

The audit shall be carried out by qualified personnel not directly involved or responsible in the area being audited.

Records of internal audits shall be maintained.

2.7.2 Audit procedure

Audit procedures shall include responsibilities, requirements for planning and conducting audits, reporting results, recording and the determination of audit criteria, scope, frequency and methods.

The results of the audits and reviews should be brought to the attention of all personnel having responsibility in the area involved.

2.7.3 Audit plan

An audit plan shall be established. Specifically the plan shall as a minimum cover the following points:

- specific areas or operations to be audited
- audit schedule
- scope and criteria.

Audit plans shall take into consideration the results from previous audits and operational control.

Specifically at the end of each phase, e.g. preparation, dismantling and waste stream management an audit should be carried out to determine that the system complies with the planned arrangements, has been properly and effectively implemented and maintained through the respective phase of the project.

3. Planning, Development and Preparation Phase

3.1 Planning

3.1.1 General

The ship recycling facility shall plan and control the operations.

The ship recycling facility shall manage the interfaces between the different parties involved in the planning to ensure effective organization and clear assignments of responsibilities, authority and tasks.

The following phases or tasks should as a minimum be defined and documented:

- preparation phase
- dismantling phase
- waste stream management.

Guidance note:

Examples of stages in development:

- project plan
- establish input requirements
- identification of needed equipment
- documentation.

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3.1.2 Agreement

There shall be an agreement between the facility and the owner for the dismantling work to be carried out.

3.1.3 Risk assessment

Risk assessment should be carried out including the determination of processes, activities and existing procedures for each of the core phases and as a whole. Critical tasks should be determined. This includes identification and periodic assessment of the hazards and risks to safety and health from hazardous ambient factors at work areas, storage areas, from different operations, tools, machines, equipment and substances: physical, mechanical, biological, ergonomic, psychosocial.

An evaluation should be carried out of environmental aspects and their impact on the environment. Those aspects should be determined that have or can have significant impact on the environment. Significant environmental aspects should be taken into account in establishing, implementing and maintaining a safety, health, and environmental friendly management system.

New developments, new or modified activities, products and services should be taken into account.

Due to the changing nature of the process of disposal, dismantling and breaking of ships a risk assessment should be carried out on every ship to develop a ship-specific plan. A risk assessment should be carried out when significant changes occur and should be reviewed.

3.1.4 Planned activities

Planned activities should include inventory of best practices and suitable housekeeping: resulting in control measures (protective and preventive). Also the risk assessment carried out shall be taken into account when planning measures of each area of the ship.

Where hazards and or risks cannot be controlled by measures at the source, collective measures should be implemented and maintained. Personal Protective Equipment should be provided and maintained.

Removal, transport and storage should be planned in advance so that the reception facility is equipped and able to safely accommodate the materials without any negative impact regarding health, safety or the environment.

3.2 Development of plans

3.2.1 Input – requirements for operational control

Input relating to operational control shall be determined and records maintained based on the risk assessment carried out. Input shall include:

- functional and performance requirements
- applicable statutory and regulatory requirements
- information derived from previous similar projects
- resources required, including:
 - qualification of personnel involved in planning.

The input shall be reviewed for adequacy. Requirements shall be complete, relevant, clear and not in conflict with each other.

3.2.2 Customer provided items

The ship recycling facility shall review the customer provided items (the ship and the accompanying documentation) to establish the overall status and the required processes to fulfil identified requirements and process output.

3.2.3 Output

The production plans shall be provided in a form that enables verification against the requirements and shall be approved prior to release.

Development of production plans shall:

- meet input requirements
- provide appropriate information for purchasing
- specify safety, health and environmental issues related to operational control as a result of the risk assessment.

3.3 Development review

The organization should establish, implement and maintain procedures to monitor and measure on a regular basis the key characteristics of its operations based on the risk assessment carried out. This includes re-evaluation, review, verification and validation.

4. Operation Phase

4.1 General

4.1.1 Receipt control

The ship recycling facility shall ensure that receipt of ships or marine structures takes place according to documented procedures. The control shall ensure that the ships satisfy safety, health and environmental requirements for receipt. The control data shall be verified and recorded.

When determining method and extent of control, the control carried out by the supplier shall be taken into account, together with proof of previous documented characteristic.

4.1.2 Operational control

The organization should establish, implement and maintain a procedure to control the recycling process. Operating criteria should be stipulated based upon the risk assessment results for the planning of the process. Errors, omissions or deviations detected should be noted, reported and resolved before permitting any work.

During the process the following should be controlled and documented:

4.1.2.1 Cleaning

A waste management plan shall be based on the inventory of the waste and the risk assessment results. Liquids shall be removed from the equipment as indicated in the risk assessment. A waste management plan shall include the location and marking of materials and the disposal of the waste as defined in the inventory. Material safety data sheets of the products should be available.

4.1.2.2 Securing

The ship shall be adequately moored or secured at the recycling facility during all phases of the recycling process.

Specifically for the dismantling phase stability and strength should be sufficient for the ship and parts, and sections of the ship.

4.1.2.3 Gas freeing

Confined spaces shall be made gas free. Each area shall be gas free and marked, prior to commencing any work.

4.1.3 Monitoring

The ship recycling facility shall establish, implement and maintain procedures for monitoring production progression on a regular basis. The result of the monitoring shall be reported to the ship recycling facility's management and work managers including key characteristics of its operations based on the risk analysis carried out ensuring conformity with the policies, objectives and targets.

The ship recycling facility shall:

- continually control and test the production activities and measure production in accordance with documented procedures

October 2005

- not permit any staff to remove any items from the site before it has been approved according to relevant procedures for control and testing
- ensure that calibrated or verified monitoring and measurement equipment is used and maintained.

4.1.4 Sampling and measurements

Specifically for safety and health issues exposure and toxicity limits should be defined. During each phase of cleaning, dismantling and ship breaking sampling should be carried out regarding safety, health and environmental impacts. Periodical medical checks shall be carried out for all personnel. Critical task operators and supervisors should undergo more frequent examinations based upon the risk assessment.

4.1.4.1 Inspections

For the recycling of each ship daily inspections should be carried out by the organization to verify compliance with the requirements. Periodical inspections should be carried out of the facility and its resources.

4.1.5 Maintenance and calibration

Records of maintenance and calibration shall be kept. The identification of the equipment as well as the calibration status (latest and next) shall be clearly marked on the equipment. A reference shall also be included.

Materials that pose safety, health or environmental hazards shall be identified and procedures established for safe handling, use, storage and disposal. The procedures shall reflect relevant requirements from data-sheets covering the chemicals and hazardous substances to be handled.

Guidance note:

Such materials could be, but should not be limited to:

- foam
- powder
- diesel-lubrication oils
- tools
- chemicals
- welding rods
- insulation materials.

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4.2 Storage and removal of materials

Adequate segregation and separation should be provided for the different materials.

Collection of materials including waste shall be stored temporarily on board.

Arrangements shall be made for timely transport of materials and waste. Storage of materials and waste should include clear marking of product, destination, name of the reception facility and hazardous class. Storage areas should be designed for type, size and quantity of components.

Materials, including sections of the ship and waste should be stored in such a way that exits and escape routes are not obstructed. Sufficient space for safe transportation to and from the storage area should be available. Materials and waste should be stored in accordance with applicable regulations and/or legal requirements.

Sufficient and secure storage areas should be provided for flammable liquids, solids and gasses. When transferring waste all storage units should be properly secured and any unintended disposal of waste should be avoided. Measures should be in place to collect any waste that has been released from the ship.

4.3 Customer property

4.3.1 General

The ship recycling facility shall exercise care with customer properties while it is under the ship recycling facility's control

or being used by the ship recycling facility.

Guidance note:

For definition of "customer" see 6. Example of customer property might be:

- sensitive information about ships or maritime structures
- equipment, plans, facilities provided by companies for use in the recycling process
- equipment, plans, etc., that the owner does not intend to be part of the recycling process, but removed from the ship in its entity.

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If any customer belongings are lost or damaged, this shall be reported to the customer and records shall be maintained.

5. Result Phase

5.1 Control and tests

5.1.1 General

The ship recycling facility shall plan and implement the monitoring, measurement, analysis and improvement process needed to:

- demonstrate conformity of the production according to specified standards
- ensure conformity of the quality management system
- continually improve the effectiveness of the quality management system.

Guidance note:

This should include determination of applicable methods, including statistical techniques and the extent of their use.

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The ship recycling facility shall ensure that recycling is delivered according to customer requirements.

Guidance note:

This could be performed by, but should not be limited to:

- proper handling of any complaints
- direct communication with customers
- questionnaires or evaluations
- reports from authorities.

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The ship recycling facility shall apply suitable methods for monitoring and, where applicable, measurement of the quality management system process.

Guidance note:

This could be, but should not be limited to:

- evaluation forms from customers
- internal and external audits
- competence of staff
- progress in line with time schedules.

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5.1.2 Analysis

The ship recycling facility shall determine, collect and analyse data in order to demonstrate effective implementation of the management system and evaluate where continuous improvement can be made.

The analyses shall contain information about:

- customers satisfaction
- conformity of requirement
- trends of processes and opportunities for preventive actions

— suppliers.

Guidance note:

This could be, but should not be limited to:

- evaluations
- external audits
- internal audits
- input from groups of experts
- media.

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This might be valuable input to management review.

6. Definitions and Abbreviations

Within the ship recycling industry emphasis needs to be made on aspects, materials and definitions not necessarily in common use in other industries. The list below therefore includes definitions and abbreviations encountered when working in the ship recycling industry, even if otherwise not necessarily used in the document.

Although comprehensive, the attached listing does not claim any form of completeness.

ACM:	Asbestos contained material (>1% asbestos)
Accident:	An event that results in unintended harm or damage.
Asbestos Chrysotile (white asbestos):	Fine, silky flexible white fibres, cylindrical and arranged in bundles.
Asbestos Amosite (brown asbestos):	Straight, brittle fibres that are light grey to pale brown.
Asbestos Crocidolite (blue asbestos):	Straight blue fibres like tiny needles.
Audit:	A systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which defined criteria are fulfilled.
Auditor:	Person with the competence to conduct an audit.
Authorities/ Administrations:	National or international maritime legislative institutions, e.g. flag state, port state, recycling state, state receiving hazardous waste, EU, UN.
Ballast water:	Water to compensate for sufficient stability of the ship; aquatic organism and pathogens are often found inside the ballast water.
Ballast water tanks:	Storage tanks for ballast water. Will often contain mud.
Bilge water:	A mixture of water and other liquids at the lowest inner part of the ship: the bilge.
Confined space:	A compartment of small size and with limited access such as a double bottom tank, cofferdam, or other space which by its small size and confined nature can create or aggravate a hazardous exposure.

Continual improvement:	Recurring process for enhancing performance. Particularly important for the Safety, Health and Environmental Management System in order to achieve improvements in overall performance regarding Safety, Health and the Environment consistent with the organizations SHE-policy.
Contractor:	An organization which makes a business contract with the organization of the recycling facility.
Corrective action:	Action to eliminate the cause of a detected non-conformity.
Customer:	The ship recycling facility shall define their customers, which typically are ship brokers and owners, ship and offshore construction yards, offshore operation owners and managers, national navies and authorities.
Demolishing phase:	The phase during which dismantling, destruction and breaking of a ship or parts of a ship takes place.
Demolition:	The dismantling, destruction and breaking of a ship or parts of a ship.
Disposal:	Any operation which does not lead to the possibility of recovery, recycling, reclamation, direct reuse or alternative uses of resources.
Document:	Any information or medium carrying information either on paper, in a database or using other devices to communicate the intended message.
Enclosed space:	Any space other than a confined space which is enclosed by bulkheads and decks, e.g.: <ul style="list-style-type: none"> — cargo holds — tanks — quarters — machinery (and boiler) spaces.
Environment:	Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.
Facility:	A location, site or yard (ref. definition of ship recycling facility below) at which the dismantling or scrapping of a ship at a beach, pier, dry dock, or dismantling slip is carried out by a company, operation, firm, undertaking, establishment, enterprise, institution or association, whether incorporated or not, public or private, that has its own functions and administration.
Friable ACM:	Any material containing more than 1 % asbestos that, when dry, may be crumbled, pulverized or reduced to powder by hand.
Green Passport:	Document providing information with regards to materials known to be potentially hazardous utilized in the construction of the ship, its equipment and systems. The document remains on board during the life cycle of the ship.
Guidance note:	An advice which is not mandatory, but with which DNV, in light of general experience, advises compliance, hence, it is for the client to decide whether to apply the guidance note or not.
Hazardous ambient factor:	Any factor in the workplace which may in some or all normal conditions have an impact to the safety and health of the worker or other person.

October 2005

Hazardous material:	Material posing harm to human health or the environment as identified in the IMDG-code, the Basel Convention, or other international instruments.(e.g.: Appendix 1 and Appendix 2 to IMO Assembly Resolution A.962(23), IMO Guidelines on Ship Recycling).	Recycling auditor:	Auditor from DNV qualified according to DNV's VQSC to carry out audits for recycling of ships.
Impact:	Any change to the environment, safety and health circumstances adverse, wholly or partial resulting from the environmental aspects and safety and health conditions.	Recycling facility:	See "Facility", above.
Internal audit:	Systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent of fulfilment of the requirements set by the organization and the code.	Reuse:	When a product is used again following normal use. Implies recovery and in most cases refurbishment before the product can be re-used.
Management system:	A framework of processes and procedures used to ensure that the organization can fulfil all tasks required to achieve its objectives.	Reuse:	When a product is used again following normal use. Implies recovery and in most cases refurbishment before the product can be re-used.
MSDS:	Material Safety Data Sheet: product document with specifications regarding the Product towards Safety, Health and the Environment.	Review:	Activity to determine the suitability, adequacy and effectiveness of the subject matter to achieve established objectives.
Non-conformity:	Non-fulfilment of a requirement.	Risk assessment:	The process of determining and evaluating the likelihood, consequence and exposure of undesired events, harm or loss.
Non-friable ACM:	Any material containing more than 1% asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure: — Category I: floor coverings, packings and gaskets — Category II: all other materials not being category I.	Safe and environmentally sound disposal of wastes:	Taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner that will protect human health and safety and the environment against the adverse effects that may result from such wastes.
Organization:	Company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its functions and administration.	Safety:	The control of accidental loss.
PEL:	Permissible exposure limit: not in excess of a certain limit collectively agreed or regulated.	SHE-management system:	Safety, Health and Environmental Management System (Management System, see definition above) that enable an organization to reduce its safety-, health- and environmental impacts and increase its operating efficiency.
Preparation phase:	Planning and cleaning of the ship before the dismantling and breaking of the ship.	Ship:	A vessel of any type whatsoever operating in the marine environment, including hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms and a vessel that has been stripped of equipment or is towed. In the context of this standard comprising all maritime constructions and installations, offshore and onshore process plants in general and for offshore activities in particular.
Preventive action:	Action to eliminate the cause of a potential non-conformity.	Ship recycling:	The process of cleaning, disposing, dismantling, breaking of a ship and the recovery of its materials and equipment, including beaching, mooring or docking of such a ship.
PACM:	Presumed asbestos contained material.	Ship recycling facility:	See "Facility", above.
PCB, Polychlorinated Biphenyls:	Mixture of synthetic organic chemicals with non-flammability, chemical stability, high boiling point and electrical insulating properties.	Sub-contractor:	Party who undertakes part of, or the entire contract between the organization of the recycling facility and the organization of the contractor.
Policy:	Overall intentions and direction of an organization related to its performance and scope of activities.	Top-management:	Head of the management team of an organization.
PPE:	Personal protective equipment.		
Procedure:	Specified way to carry out an activity or a process.		
RACM:	Regulated ACM: identified and treated asbestos contained material, which can be removed according applicable regulations.		
Record:	Document stating results achieved or providing evidence of activities performed.		
Recycling:	The recovery and reprocessing of waste materials for use in new materials or products.		
Recycling activities:	All activities organised by a facility (ref. definition above) which dismantle, sort, dispose and prepare for reuse of products, including materials, components, systems, plants and structures.		

Validation:	Confirmation, through provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled.
Verification:	Confirmation, through provision of objective evidence, that specified requirements are fulfilled.
Wastes:	Substances or objects that are disposed of or are intended for disposal or are required to be disposed of by legislative requirements or other requirements.
Waste management plan:	A documented plan consisting of identification of waste, disposal of waste, identification of reception facility and transport and storage of waste.