



Integrated management systems onboard ships

Safety, Quality, Environment and Occupational Health and Safety

DNV Maritime



Preamble

Organisations of all kinds are increasingly concerned about achieving and demonstrating sound safety, environmental and quality performance. Procedures related to the identified occupational health and safety risks concerning deck and ballasting operations, where control measures need to be applied, shall be established. The ISM Code focuses on the safe management and operation of ships and pollution prevention. ISO 14001 provides the elements of an effective environmental management system. OHSAS 18001 gives requirements for an occupational health and safety management system, to enable an organisation to control its OH&S risks and improve its performance. ISO 9001 is designed to ensure that customer requirements for quality are met. The ISM Code and the three standards are complementary in nature and may be integrated in one management system.

The intention of this guidance is to assist DNV personnel in the interpretation of the requirements of ISO 9001, ISO 14001 and OHSAS 18001 when applied to a marine management and ship operation that complies with the ISM Code.

The guidance can also be useful to companies planning to implement the ISM Code, ISO 9001, ISO

14001 and OHSAS 18001 in knowing the common elements and differences between the ISM Code, OHSAS 18001 and the ISO standards. Where the ISM Code requirements are common to the three other standards the text is printed in black, and in these cases no distinguishing points are made. The clause references that apply to the ISM Code are shown in **blue**, to ISO 9001 in **red italics**, ISO 14001 in **underlined green**, and OHSAS 18001 in **orange bold**.

Where possible extra attention and additional requirements may be needed to satisfy the ISO 9001 standard, such text and references are shown in **red italics**, for the ISO 14001 standard in **underlined green**, for the OHSAS 18001 standard in **orange bold**, and for the ISM Code in **blue**.

Two sets of guidelines have been made: one for onboard ship and one for ship operating companies. The x-matrix shows the correlation between the different requirements in the ISM Code, ISO 9001:2000, ISO 14001, and OHSAS 18001.

The layout of this guideline follows a typical structure of a shipping company, but there may be variation in company structures and this is to be considered going through this guideline.



DNV as your certification partner

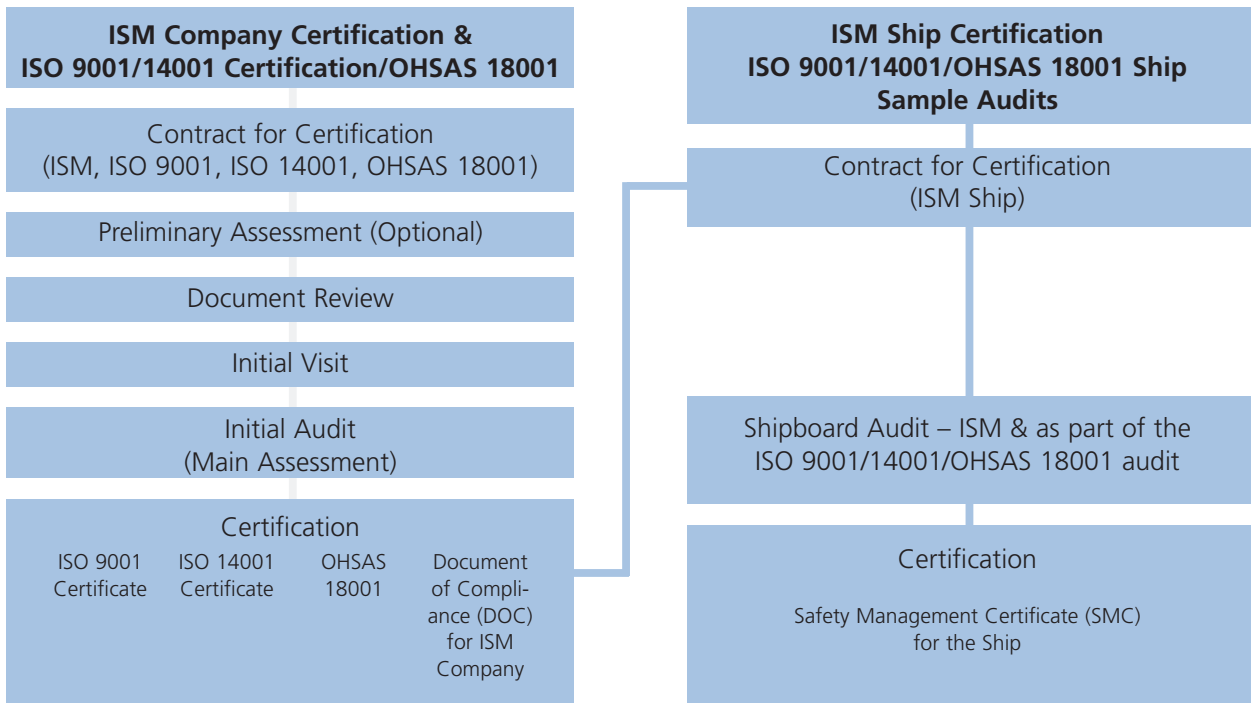
The international code and standards applicable to management systems in the shipping industry are ISM, ISO 14001, ISO 9001 and OHSAS 18001. There are many common or interfacing requirements, therefore any combination of these systems leads to a more efficient way of managing safety, environmental issues, occupational health and safety, and quality. DNV provides international certification for ISO 14001/9001/OHSAS 18001 as an Accredited Certification Body.

The overall scope and objectives of the code and standards have to be the dominant element in developing and implementing management systems.

This guideline is not a substitute for the ISM Code, the two ISO standards and the OHSAS standard. To fully implement the ISM Code and the three standards the contents of the relevant code and standard must be studied.



Assessment and Certification Process





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Shipboard management

Objectives and policies

A copy of the company's safety and environmental protection policy describing how ISM Code objectives are to be achieved, implemented and maintained should be on board. (Ref. 1.2; 1.4.1; 2.1; 2.2)

A copy of the organisation's quality policy and objectives should be on board and be implemented. (Ref. 5.3; 5.4)

A copy of the organisation's environmental policy shall be on board and be implemented. The organisation's environmental objectives and targets shall be reflected in shipboard specific objectives and targets.

The targets should be measurable. (Ref. 4.2; 4.3.3)

A copy of the organisation's occupational health and safety policy shall be on board and be implemented. The organisation's occupational health and safety objectives and targets shall be reflected in shipboard specific objectives and targets. The targets should be measurable. (Ref. 4.2; 4.3.3; 4.3.4)

Responsibilities and authorities

Instructions and procedures to operate the ship safely, whilst protecting the environment, control OH&S risks and being in compliance with relevant international and Flag State legislation, are required. Defined levels of authority, responsibility and lines of communication are required.

(Ref. 1.4.3; 1.4.6; 3.2; 3.3; 7; 12) (Ref. 4.1; 4.2; 5.5; 8.2) (Ref. 4.4.1; 4.4.3; 4.5.4) (Ref. 4.4.1; 4.4.3; 4.4.6)

Designated person ashore

Contact for officers and crew in the company ashore with regard to safety and pollution prevention. (Ref. 4)

No specific requirement.

No specific environmental requirement.

No specific occupational health and safety requirement.

Master's responsibility and authority

The Master's responsibility and authority is to be defined, including verification procedures.

(Ref. 5) (Ref. 5.5.2) (Ref. 4.4.1) (Ref. 4.4.1)

The Master has to implement company policy, motivate crew, and review the management system on board.

A clear statement of the Master's overriding authority is also required. (Ref. 5)

Customer needs, expectations and requirements have to be taken into account. (Ref. 5.2)

Mandatory requirements, laws and regulations

The shipboard management system should comply with all mandatory requirements and take into account all applicable codes, guidelines and standards. Such requirements, updated laws and regulations shall be onboard the ship. (Ref. 1.2.3; 1.4.2; 3.1) (Ref. 7.2.1c) (Ref. 4.3.2) (Ref. 4.3.2)

Shipboard management

Objectives and policies

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
1.2	4.2	5.4	4.2	Policy implemented and maintained.
1.4.1		5.1; 5.3	4.3.3	<i>Quality policy.</i>
2.1; 2.2	4.3.3 4.3.4			<i>Objectives and targets at shipboard level.</i> <i>Objectives and targets at shipboard level.</i>

Responsibilities and authorities

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
1.4.3; 1.4.6	4.4.1	4.1	4.4.1	Responsibilities and authorities, organisational
3.2; 3.3;	4.4.3	4.2	4.4.3	chart, job description.
7; 12	4.5.4	5.5 8.2.2	4.5.5	Documentation, communication lines, internal audits, resources and supports.

Designated person ashore

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
4	-	-	-	<i>Officers and crew knowledge of DP role.</i>

Master's responsibility and authority

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
5	4.4.1	5.5.2	4.4.1	Responsibility and authority, policy implementation,
5		5.2		<i>crew motivation</i> , verification, <i>SMS review</i> . <i>Authority statement.</i> <i>Customers needs.</i>

Mandatory requirements, laws and regulations

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
1.2.3.1	4.3.2	7.2.1c	4.3.2	SOLAS, MARPOL, STCW 95, COLREGS and
1.4.2; 3.1				Flag & Port states requirements etc. Last revision.

Human resources/personnel

The ship shall be manned with seafarers that are qualified, certified and **medically fit**.

(Ref. 6.2) (Ref. 6.1; 6.2.2) (Ref. 4.4.2) (Ref. 4.4.2)

A common working language and effective communication are required plus essential instructions and familiarisation before sailing are needed.

(Ref. 6.3)

Training needs for all relevant personnel onboard shall be identified. Procedures for environmental awareness and competence training are required.

(Ref. 4.4.2)

Training needs for all relevant personnel onboard shall be identified. Procedures for occupational health and safety awareness and competence training are required.

(Ref. 4.4.2)

Plans for key operations

Procedures to produce plans and instructions are required for key shipboard operations concerning the safety of the ship, prevention of pollution and to control OH&S risks.

(Ref. 7) (Ref. 5.4.2; 7.1; 7.5) (Ref. 4.4.6) (Ref. 4.4.6)

Plans and procedures shall reflect the identified significant environmental aspects onboard.

(Ref. 4.4.6)

Plans and procedures shall reflect the identified risks related to occupational health and safety onboard where control measures need to be applied.

(Ref. 4.4.6)

Emergency preparedness

Procedures to deal with potential emergency shipboard situations (environmental and occupational health and safety) including drills and exercises are required.

(Ref. 8.2; 8.3)

No specific requirement.

As ISM above.

(Ref. 4.4.7)

As ISM above.

(Ref. 4.4.7)

Bridge operations

Voyage planning, Navigation, Collision avoidance, Pilotage, Master's Standing orders, Watchkeeping requirements, Emergency contingency etc. all require procedures.

(Ref. 7) (Ref. 7.1; 7.5) (Ref. 4.4.6) (Ref. 4.4.6)

Procedures for internal communication as well as receiving, documenting and responding to communication from external interested parties shall be established.

(Ref. 4.4.3)

Procedures for ensuring that pertinent OH&S information is communicated to and from employees and other interested parties. Employee involvement and consultation arrangements shall be documented and interested parties informed.

(Ref. 4.4.3)

Engine-room operations

Procedures for controlling the operation of main and auxiliary machinery, steering gear, bunkering, waste management, chemical handling and storage, etc. as well as standing orders, are required.

(Ref. 7) (Ref. 7.1; 7.5) (Ref. 4.4.6) (Ref. 4.4.6)

Human resources/personnel

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
6	4.4.2	6.1	4.4.2	Correct certification, SMS training, adequate resources, familiarisation before sailing , rules and regulation knowledge, training needs, common working language and communication. <u>Environmental awareness training.</u> Occupational health and safety awareness training.
6.3	4.4.2	6.2.2	4.4.2	

Plans for key operations

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
7	4.4.6 4.4.6	5.4.2 7.1 7.5	4.4.6 4.4.6	Procedures to produce plans and instructions involving risk assessment. <u>Procedures for operations reflecting the significant environmental aspects.</u> Procedures for operation reflecting the identified risks related to occupational health and safety onboard where control measures need to be applied.

Emergency preparedness

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
8.2 8.3	4.4.7	–	4.4.7	Drills, exercises and emergency plans SOLAS, MARPOL, OPA if applicable. <u>Review and revise emergency response procedures based on lessons learned.</u> Review and revise emergency response procedures based on lessons learned.

Bridge operations

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
7	4.4.6 4.4.3	7.1; 7.5	4.4.6 4.4.3	<u>Procedures for internal and external communication.</u> Procedures for internal and external communication.

Engine-room operations

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
7	4.4.6	7.1; 7.5	4.4.6	

Deck and ballasting operations

Port state ballast change requirements

Key shipboard operations such as mooring/unmooring, anchoring, ship/shore access, watertight integrity, stress and stability, waste management, etc. require procedures.

(Ref. 7) (Ref. 7.1; 7.5) (Ref. 4.4.6) (Ref. 4.4.6)

Procedures related to the identified significant environmental aspects concerning deck and ballasting operations shall be established. (Ref. 4.4.6)

Procedures related to the identified occupational and health and safety risks concerning deck and ballasting operations, where control measures need to be applied, shall be established. (Ref. 4.4.6)

Cargo operations

Key shipboard operations concerning safe cargo handling and pollution prevention such as hold/tank preparation, cargo specifications, loading/discharging plans, reporting and waste management, etc. require procedures.

(Ref. 5.1.4; 7) (Ref. 7.1; 7.5) (Ref. 4.4.6) (Ref. 4.4.6)

Instructions for cargo handling and care are required. (Ref. 7.5)

Procedures related to the identified significant environmental aspects concerning cargo and operations type of ship shall be established. (Ref. 4.4.6; 4.3.1)

Procedures related to the identified occupational and health and safety risks concerning cargo and operations type of ship, where control measures need to be applied, shall be established. (Ref. 4.4.6; 4.3.1)

Oil tanker

(DNV's ISM reference guide – H)

Charter party (quality and timing). Non-conformity control. (Ref. 8.3)

Chemical tanker

(DNV's ISM reference guide – I)

Charter party (quality and timing). Non-conformity control. (Ref. 8.3)

Gas carrier

(DNV's ISM reference guide – J)

Charter party (quality and timing). Non-conformity control. (Ref. 8.3)

Deck and ballasting operations

Port state ballast change requirements

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
7	4.4.6 4.4.6	7.1; 7.5	4.4.6 4.4.6	<u>Procedures related to significant environmental aspects.</u> Procedures related to the identified occupational health and safety risks where control measures need to be applied.

Cargo operations

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
5.1.4; 7	4.4.6 4.3.1 4.5.2	7.1; 7.5 7.5	4.4.6 4.3.1 4.5.3	<u>Procedures related to significant environmental aspects.</u> Cargo handling. Procedures related to the identified occupational health and safety risks where control measures need to be applied.

Oil tanker

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
5.1.4; 7 8.1	4.4.6 4.3.1 4.5.2	7.1; 7.5 8.1; 8.2.4 8.3 8.4; 8.5 8.3	4.4.6 4.3.1 4.5.3	Charter party (safety); Charter party (quality and timing) cargo plans; cargo handling and stowage; Cargo measurement; Non-conformity control. <u>Procedures related to significant environmental aspects.</u> Procedures related to the identified occupational health and safety risks where control measures need to be applied.

Chemical tanker

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
5.1.4; 7 8.1	4.4.6 4.3.1 4.5.2	7.1; 7.5 8.1; 8.2.4 8.3 8.4; 8.5 8.3	4.4.6 4.3.1 4.5.3	Charter party (safety); Charter party (quality and timing) cargo plans; cargo handling and stowage; Cargo measurement; Non-conformity control. <u>Procedures related to significant environmental aspects.</u> Procedures related to the identified occupational health and safety risks where control measures need to be applied.

Gas carrier

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
5.1.4; 7 8.1	4.4.6 4.3.1 4.5.2	7.1; 7.5 8.1; 8.2.4 8.3 8.4; 8.5 8.3	4.4.6 4.3.1 4.5.3	Charter party (safety); Charter party (quality and timing) cargo plans; cargo handling and stowage; Cargo measurement; Non-conformity control. <u>Procedures related to significant environmental aspects.</u> Procedures related to the identified occupational health and safety risks where control measures need to be applied.

Bulk carrier

(DNV's ISM reference guide – K)

Charter party (quality and timing). Non-conformity control.

(Ref. 8.3)

Passenger/RoRo

(DNV's ISM reference guide – L)

Passenger service. Non-conformity control. *Passenger complaints*.

(Ref. 8.3)

High speed craft

(DNV's ISM reference guide – M)

Passenger service. Non-conformity control. *Passenger complaints*.

(Ref. 8.3)

General cargo ship

(DNV's ISM reference guide – N)

Charter party (quality and timing). Non-conformity control.

(Ref. 8.3)

Engine, deck, hull

Maintenance of ship and equipment

Shipboard maintenance procedures are required for mandatory and classification items. Also procedures for identifying and maintaining critical systems and additional company requirements, as well as inspection routines and monitoring measuring equipment are required. Records shall be maintained.

(Ref. 10; 11) (Ref. 6.3 ; 7.1; 7.5.1) (Ref. 4.4.6) (Ref. 4.4.6)

Planning and control of maintenance procedures are required as are spares and store requisition procedures. Ship management companies maintain the ship as "Customer property". Procedures and routines for calibration of those devices that are used to measure and monitor the cargo are required. (Ref. 7.4.1;7.5.3; 7.6)

Shipboard maintenance activities that are associated with the identified significant environmental aspects, environmental objectives and targets should be planned and carried out under specified conditions. Critical systems and tasks could be refrigerator plants (with CFC), incinerators, oil-water separators, cargo handling systems (tankers), handling of chemicals, detergents and hazardous waste etc. Maintenance and calibration of equipment used for monitoring & measurement. (Ref. 4.4.6; 4.5.1)

Shipboard maintenance activities that are associated with the identified occupational health and safety risks where control measures need to be applied, occupational health and safety objectives and targets shall be planned and carried out under specified conditions. (Ref. 4.4.6; 4.5.1)

Bulk carrier

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
7.5; 1.4	4.4.6	7.1; 7.5	4.4.6	Charter party (safety); Charter party (quality and timing) cargo plans; cargo handling and stowage; Cargo measurement; Non-conformity control. <u>Procedures related to significant environmental aspects.</u> Procedures related to the identified occupational health and safety risks where control measures need to be applied.
8.1	4.3.1	8.1; 8.2.4	<u>4.3.1</u>	
	4.5.2	8.3	<u>4.5.3</u>	
		8.4; 8.5	8.3	

Passenger/RoRo

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
7.5; 1.4	4.4.6	7.1; 7.5	4.4.6	Charter party (safety); Charter party (quality and timing) cargo plans; cargo handling and stowage; Cargo measurement; Non-conformity control. <u>Procedures related to significant environmental aspects.</u> Procedures related to the identified occupational health and safety risks where control measures need to be applied.
8.1	4.3.1	8.1; 8.2.4	<u>4.3.1</u>	
	4.5.2	8.3	<u>4.5.3</u>	
		8.4; 8.5	8.3	

High speed craft

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
7.5; 1.4	4.4.6	7.1; 7.5	4.4.6	Charter party (safety); Charter party (quality and timing) cargo plans; cargo handling and stowage; Cargo measurement; Non-conformity control. <u>Procedures related to significant environmental aspects.</u> Procedures related to the identified occupational health and safety risks where control measures need to be applied.
8.1	4.3.1	8.1; 8.2.4	<u>4.3.1</u>	
	4.5.2	8.3	<u>4.5.3</u>	
		8.4; 8.5	8.3	

General cargo ship

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
7.5; 1.4	4.4.6	7.1; 7.5	4.4.6	Charter party (safety); Charter party (quality and timing) cargo plans; cargo handling and stowage; Cargo measurement; Non-conformity control. <u>Procedures related to significant environmental aspects.</u> Procedures related to the identified occupational health and safety risks where control measures need to be applied.
8.1	4.3.1	8.1; 8.2.4	<u>4.3.1</u>	
	4.5.2	8.3	<u>4.5.3</u>	
		8.4; 8.5	8.3	

Engine, deck, hull

Maintenance of ship and equipment

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
10; 11	4.4.6	6.3; 7.1	4.4.6	Maintenance procedures. Inspection routines. Identification procedures for equipment and technical systems (hazardous situations), Records, Customer property, Verification of Class items. Measuring equipment. <u>Critical equipment and systems.</u> Critical equipment and systems.
	4.4.6	7.5.1	<u>4.4.6</u>	
	4.5.1	7.4.1; 7.5.3	<u>4.5.1</u>	
		7.6		

System functions

System structure

A company supplied management system for use on board is required.

(Ref. 1.4) (Ref. 4) (Ref. 4.1) (Ref. 4.1)

System familiarisation

Procedures for master, officers and crew to be given familiarisation with the management system and their duties on board are required, also training and follow up as required. Essential instructions prior to sailing to be given.

(Ref. 6.3) (Ref. 6.2.2) (Ref. 4.4.2) (Ref. 4.4.2)

Internal audits

Internal audits on board to verify compliance and system efficiency, by an independent auditor are required.

(Ref. 12) (Ref. 8.2.2) (Ref. 4.5.5) (Ref. 4.5.4)

Document control

Procedures for controlling the documentation on board are required. i.e. master lists, instructions for removal of obsolete documents etc.

(Ref. 11) (Ref. 4.2.3) (Ref. 4.4.5) (Ref. 4.4.5)

Non-conformities, corrective and preventing actions

On board procedures for reporting non-conformities and hazardous situations are required. Procedures for on board implementation of corrective and preventive actions and continual improvement are required.

(Ref. 9; 10.2) (Ref. 8.2.1; 8.3; 8.4; 8.5) (Ref. 4.5.3) (Ref. 4.5.2)

Master's review

The master shall review the management system, and report deficiencies and verify compliance with special requirements. (Ref. 5.1.5)

No specific requirement.

No specific environmental requirement.

No specific occupational health and safety requirement.

Records

The output from procedures is often records, registrations, checklist etc. To monitor the implementation and effectiveness of the shipboard systems, procedure for how operational records, registrations and documentation are to be maintained and filed is required. (Ref. 10.2.4; 11.1) (Ref. 4.2.4) (Ref. 4.5.4) (Ref. 4.5.3)

System functions

System structure

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
1.4	4.1	4	4.1	Company supplied system.

System familiarisation

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
6.3	4.4.2	6.2.2	4.4.2	Procedure to support familiarisation with management system. Training and follow up.

Internal audits

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
12	4.5.4	8.2.2	4.5.4	Audits to verify compliance, system efficiency, independent auditors.

Document control

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
11	4.4.5	4.2.3	4.4.5	Status and updating controls. Master lists. Removal of obsolete documents.

Non-conformities, corrective and preventing actions

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
9	4.5.2	8.2.1; 8.3	4.5.2	Improvement processes, implement corrective actions.
10.2		8.4; 8.5		

Master's review

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
5.1.5	-	-	-	On board system assessment.

Records

ISM	OHSAS 18001	9001: 2000	14001:2004	Functional requirements/areas to be considered
10.2.4	4.5.3	4.2.4	4.5.3	Maintenance, inspection, operational records.
11.1				

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