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Safety and Environmental Management System for Offshore Wind Operations and Assets

API RECOMMENDED PRACTICE 75W

FIRST EDITION, MONTH 2024

Introduction

This document describes the elements of a Safety and Environmental Management System (SEMS) for offshore operations, in the offshore wind energy sector focusing on the purpose and minimum expectations for each element. In reviewing this document, the focus should be on assuring that the applicable elements and their expectations are addressed rather than the formatting, organization, or order of the elements and expectations.

This document is not intended to be prescriptive or limiting on the expectations of each element; rather, it allows flexibility appropriate to the size, scope, and risk of a Company's assets and operations. It is advised that users of this document review and comply with applicable legal and regulatory requirements and conform with applicable industry codes and standards.

Once the SEMS is established and implemented, it should be maintained and periodically reviewed to facilitate continual improvement. For the purposes of simplicity and clarity, in this document the words "safety" or "safely" refers to the management of safety and the environment. Consideration may be given to using this document to help systematically manage other aspects of operations, such as security and health.

Background

RP 75W is an offshore wind energy specific recommended practice consistent with API RP 75 4th edition. There are many operators and contractors that implemented a safety management system to conform with API RP 75 4th edition. To drive consistent expectations for safety management systems, there is a desire from these companies to operate offshore energy activities under a single safety management system. RP 75W leverages global knowledge with the safe development and operation of offshore wind assets and decades of development and operational experience from offshore industries.

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This edition (75W) includes the following:

- Performance-driven expectations: This edition provides guidance for the systematic and thoughtful evaluation of assets and operations to better identify and manage risks. It is written to account for evolutions in technology, operations, and knowledge to promote continual improvement and active management of risks. It is not intended to be prescriptive in how to satisfy the expectations.
- Global applicability: This edition can be utilized globally for offshore operations and is not limited to a particular region or regulatory regime.
- Relevant to all companies and personnel: This edition applies to operators, contractors, and others performing work within the scope of this recommended practice.
- Interface management: This edition enhances the guidance on managing the interfaces and related risks among other entities performing work offshore.
- Full scope of operations: This edition expands applicability to all offshore operations.
- Human performance: This edition enhances the previous edition's general consideration of human factors by integrating more detailed human performance expectations throughout the document.
- Structure and consistency: This edition has a standardized format for all elements and provides clear and consistent expectations.

1 Scope

This recommended practice provides companies engaged in offshore operations in the offshore wind sector with a framework for the establishment, implementation, and maintenance of a Safety and Environmental Management System (SEMS) to manage and reduce risks associated with safety and the environment to prevent incidents and events.

This recommended practice applies, in part or whole, to companies engaged in offshore operations, through the project life cycle.

For the purpose of simplicity and clarity in this recommended practice, the words "safety" or "safely" can refer to the management of safety and environmental risks.

NOTE Although this recommended practice is written for the offshore wind energy sector, its principles can be applied to other offshore industries after performing an engineering and management analysis.

2 Normative References

There are no normative references in this document.

3 Terms, Definitions, and Abbreviations

3.1 Terms and Definitions

For the purposes of this document, the following definitions apply.

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3.1.1

adequate

Sufficient for a specific need or requirement.

3.1.2

administrative change

A change to processes, practices, policies, procedures, standards, or controlled documents.

3.1.3

asset

The equipment (individual items or integrated systems) or software used offshore.

3.1.4

commissioning

When a component or system is ready to operate as designed and transitions to operational readiness

3.1.5

company

An operator, contractor, or partnership engaged in offshore operations.

3.1.6

contractor

The individual, partnership, firm, or corporation retained by the Company to perform work or provide an asset, supplies, or information.

3.1.7

convention

The format, writing style, and pictorial style to be used in the preparation of a document.

3.1.8

deviation

Requested or existing departure(s) from a requirement, process, or expectation.

3.1.9

effective

The extent to which the desired result or outcome is achieved.

3.1.10

entity

An operator, contractor, or partnership that performs work or provides facilities, services, equipment, supplies, or information for a Company or on a Company's asset.

3.1.11

hazard

An object, physical effect, or condition with the potential to harm people, the environment, or property.

3.1.12

human performance

Systematic application of knowledge and learnings to improve management systems and the interactions of individuals with each other, equipment, and systems as an enabler of safety and environmental performance.

3.1.13

interface agreement

Agreement that provides clarity on which SEMS policies, processes, practices, or procedures will be followed for the performance of the work.

3.1.14

knowledge

A person's understanding of the requirements needed to perform a role or fulfill an activity.

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3.1.15

offshore operations

Offshore activities and tasks from lease evaluation through project life cycle

3.1.16

offshore wind energy

The energy taken from the force of the winds at sea, transformed into electricity and supplied into the electricity network

3.1.17

operator

The individual, partnership, firm, or corporation controlling or managing the operations.

3.1.18

organizational change

A change in personnel or organizational structure affecting safety or environmental risks or SEMS interfaces.

3.1.19

procedure

Approved and documented instructions about a specific task or activity that is used to enable the safe and consistent execution of that task or activity.

3.1.20

Renewables

Natural resources or sources of energy that are not depleted by use, such as water, wind, or solar power

3.1.21

risk assessment

An act of identifying hazards; evaluating the risks posed by the hazards, including the potential consequences and likelihood of such consequences; and identifying risk controls.

3.1.22

risk control

The actions (human or otherwise), equipment, or administrative measures to be established, implemented, or maintained to eliminate, reduce, or mitigate the identified safety and environmental risks, including risks from the interactions of individuals with each other, equipment, processes, and systems.

3.1.23

role

A function assigned to a person with specific responsibilities.

3.1.24

safe work management

Documented requirements used in the planning, preparation, risk assessment, authorization, execution, monitoring, and completion of offshore work that help minimize the potential harm to people, the environment, and property.

3.1.25

safe work practice

Documented requirements for performing a specific type of work that helps minimize the potential harm to people, the environment, and property.

3.1.26

simultaneous operations (SIMOPS)

Two or more activities being conducted under common operational control in which the activities of any one operation can impact the safety of personnel, equipment, or the environment of the other(s).

3.1.27

skill

A person's ability to apply knowledge and demonstrate proficiency in performing a role or work.

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**3.1.28
suitable**

Appropriate for a specific purpose or situation.

**3.1.29
technical change**

A change in either design, operations, specifications of materials or assembly, replacement of not in-kind equipment, and commissioning of new equipment.

**3.1.30
work**

An activity or task in offshore operations.

3.2 Abbreviations

MOC	management of change
O&M	operations and maintenance
PSR	pre-startup review
SEMS	safety and environmental management system
SIMOPS	simultaneous operations

4 Safety and Environmental Management System Application and Principles

4.1 Application

Companies shall develop a SEMS addressing the elements of this recommended practice that is appropriate to its operations. In assessing an existing or new management system against the provisions in this recommended practice, the focus should be on assuring that the applicable elements and expectations are addressed rather than the formatting, organization, or order of the elements and expectations. The rationale shall be documented when an element, or any part of an element, is determined not to be applicable.

4.2 Principles

4.2.1 General

The principles described below in 4.2.2 through 4.2.5 are fundamental to the establishment, implementation, maintenance, effectiveness, and continual improvement of a Company's SEMS.

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4.2.2 Commitment

The Company and all affected personnel, regardless of title or position, take responsibility and demonstrates through their actions a commitment to the SEMS.

- a) Personnel accept accountability for understanding and achieving the expectations of the SEMS, continuously monitoring existing conditions, and avoiding complacency.
- b) An environment exists where successes, concerns, mistakes, and observations are seen as opportunities to learn and can be raised without negative repercussions to the Company or individual.
- c) An environment exists where communication is open, clear, and concise to foster understanding, encourage diverse opinions and constructive debate, and promote transparency.
- d) Personnel perform work in accordance with the SEMS, stop work when it is believed to be unsafe to the asset, facility personnel and/or a threat to the environment, and communicate any opportunities for improvement in the SEMS.

4.2.3 Risk Management

Risk management is central to the establishment, implementation, maintenance, effectiveness, and continual improvement of a SEMS. The SEMS provides a framework for managing safety and environmental risk by incorporating the following concepts.

- a) The design of the SEMS is based on the Company's organizational structure, culture, operations, and identified safety and environmental risks.
- b) The elements interact and support one another to manage and reduce safety and environmental risk. The impact on other elements is considered when amending the SEMS.
- c) Decisions are made by personnel that possess the appropriate authority, have access to appropriate resources, and understand the safety and environmental risks.
- d) The SEMS addresses and manages the safety and environmental risks associated with the full scope of a Company's operations.

4.2.4 Human Performance

Achieving effective human performance results from the systematic application of knowledge and learnings to improve the interactions of individuals with each other, equipment, and systems. The SEMS influences human performance by recognizing that humans will make mistakes, and therefore integrates the following concepts.

- a) Leaders commit to managing failures and successes in a proactive way that improves human and team performance.
- b) Systems are designed to account for the variability and error-likely situations that occur in the interactions of individuals with each other, equipment, and systems.
- c) The Company recognizes that human input and adaptability enable effective safety and environmental performance and continual improvement in the SEMS.

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- d) An effective SEMS considers human factors, the end user, the interfaces, the work, and the decision-making processes in the establishment, implementation, maintenance, effectiveness, and continual improvement of the SEMS.

4.2.5 Continual Improvement

The SEMS is based on a cycle of continual improvement that is communicated to affected personnel. The following steps are applicable to the SEMS as a whole, as well as to the individual elements.

- a) Set expectations: Set objectives and expectations; assign accountability and responsibility; and engage involved or affected personnel.
- b) Establish a plan: Identify risks; assign roles and appropriate resources; establish actions and develop a plan to achieve expectations.
- c) Execute the plan: Implement the established actions to achieve expectations.
- d) Assess performance: Verify the plan is being executed; evaluate and review performance to determine effectiveness in meeting expectations; and identify and analyze improvement opportunities.
- e) Act on results: Establish and prioritize improvement actions; use results to enhance expectations.

5 Safety and Environmental Management System Elements

5.1 General

Each of the elements in this recommended practice follows the same structure with respect to content.

- Element name: identifies the topic of the element.
- Context: provides a brief introduction, framework, and additional clarifying information.
- Description: explains what the element is about and why the element is important.
- Purpose: provides the overall objectives of the element.
- Expectations: lists the recommendations to effectively deliver the purpose of the element.

The following elements and their purposes are addressed by this recommended practice.

- a) Leadership: The Company's management is accountable for the establishment, implementation, maintenance, effectiveness, and continual improvement of the SEMS.
- b) SEMS interface management: The Company identifies, agrees on, establishes, communicates, implements, and maintains applicable SEMS interfaces with other entities.
- c) Risk assessment and risk controls: The Company identifies hazards, assesses risk, determines and implements risk controls for assets, activities, and tasks, and communicates these to affected personnel.
- d) Procedures: The Company manages risks associated with specific activities and tasks through development and use of procedures to consistently achieve the desired results.

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- e) Safe work management and safe work practices: The Company uses safe work management, which includes safe work practices, to accomplish work safely.
- f) Knowledge and skills: The Company manages the knowledge and skills of personnel such that individuals can safely perform assigned roles or work.
- g) Asset design and integrity: The Company manages the integrity of its assets so that the assets are fit for purpose and perform their intended functions throughout their life cycle.
- h) Management of change: The Company manages changes that have the potential to introduce or affect safety and environmental risks and the accuracy of SEMS information.
- i) Pre-startup review (PSR): The Company uses a pre-startup review to confirm that assets are ready for safe startup and operations.
- j) Emergency preparedness and response: The Company prepares for and responds to emergencies to mitigate safety and environmental consequences.
- k) Investigating and learning from incidents: The Company investigates incidents, identifies causes, and acts on the results to eliminate, reduce, or mitigate safety and environmental risks.
- l) Evaluation and improvement of SEMS: The Company evaluates and improves the SEMS to assure its suitability, adequacy, and effectiveness.
- m) SEMS information: The Company identifies, manages, and uses accurate, available, current, and historical (if relevant) SEMS information throughout the full scope of operations.

5.2 Leadership

5.2.1 Context

The active commitment to safety from leaders at all levels of a Company is critical to the success of the SEMS. An effective SEMS requires leaders who own and support the SEMS and actively steward its establishment, implementation, maintenance, effectiveness, or continual improvement. Leaders' actions dictate and demonstrate the direction, expectations, and acceptable behaviors to the workforce and influence all aspects of a Company's performance. For the purposes of this element, the term "leader" encompasses all who influence or direct the action of others, regardless of their title or formally defined responsibilities. For the purposes of this element, the term "management" specifically refers to leaders who have formally defined authority and accountability for the establishment, implementation, maintenance, or continual improvement of the SEMS.

5.2.2 Description

Leadership is essential to achieving SEMS establishment, implementation, maintenance, effectiveness, and continual improvement to deliver safe, environmentally responsible operations.

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5.2.3 Purpose

The Company's management is accountable for the establishment, implementation, maintenance, effectiveness, and continual improvement of the SEMS.

5.2.4 Expectations

The Company shall establish, implement, and maintain requirements for management for the following.

- a) Defining and documenting management commitment to and ownership of the SEMS.
- b) Assuring that safety and environmental risks are managed commensurate with the nature and magnitude of the risk, including risks associated with the interactions of individuals with each other, equipment, processes, systems, and the environment.
- c) Defining an organizational structure and clearly designating roles, accountabilities, and responsibilities to enable the establishment, implementation, maintenance, effectiveness, and continual improvement of the SEMS.
- d) Determining the roles, responsibilities, authorities, knowledge, and skills for all personnel within the scope of the SEMS.
- e) Providing the necessary resources and engaging affected personnel, including subject-matter experts, for the establishment, implementation, maintenance, effectiveness, and continual improvement of the SEMS.
- f) Engaging proactively and visibly in the establishment, implementation, maintenance, effectiveness, and continual improvement of the SEMS.
- g) Establishing objectives and requirements, and timeframes for meeting the objectives and requirements
- h) Considering historical data, lessons learned, current activity, and future operations to establish indicators to monitor and improve performance.
- i) Providing personnel appropriate access to the SEMS.
- j) Communicating the expectations and effectiveness of the SEMS to personnel and stakeholders and appropriately responding to feedback.
- k) Identifying jurisdictional and internal requirements to be included in the SEMS.
- l) Holding personnel accountable for performing their work in accordance with the SEMS.
- m) Maintaining a work environment that promotes the stoppage of work when it is believed to be unsafe and the sharing of concerns, mistakes, and observations as opportunities to learn.
- n) Evaluating the SEMS to assure and improve its suitability, adequacy, and effectiveness.

5.3 SEMS Interface Management

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5.3.1 Context

A variety of working relationships exist in offshore operations that can require multiple SEMS interfaces among the engaged entities. For the purpose of this element, a Company with a capital “C” represents an operator, contractor, or partnership who intends to establish, implement, and maintain a SEMS. The term “entity” represents an operator, contractor, or partnership that performs the work or provides assets, services, supplies, or information for a Company, or on a Company’s asset(s). The expectations in 5.3.4 can apply to a Company, other entities, or both, depending on the relationship.

In the simplest case, a Company can use its own employees and assets, and if it does not use other entities to work on its behalf, there may be no SEMS interfaces to manage unless needed to address different internal organizations within the same Company.

Pictorial examples are shown in Figure 1, Figure 2, and Figure 3 to illustrate increasingly complex cases as follows.

- a) Example case 1: An offshore wind farm operator (Company) engaged in a relationship with an interconnection entity (other entity).

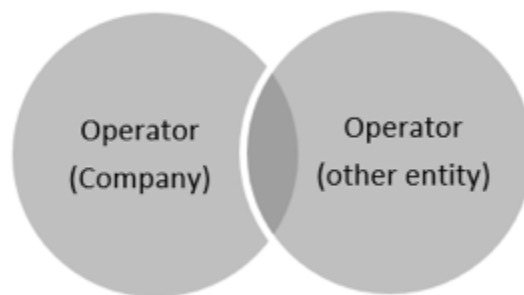


Figure 1—SEMS Interface Example Case 1

- b) Example case 2: An offshore wind farm operator functioning as the primary organization in a relationship with one or more other entities to conduct work on its behalf (e.g. a wind farm operator hires an O&M contractor [Example 2a]), or a O&M contractor hires a subcontractor for blade repair and a vessel operator to support the activity [Example 2b]).

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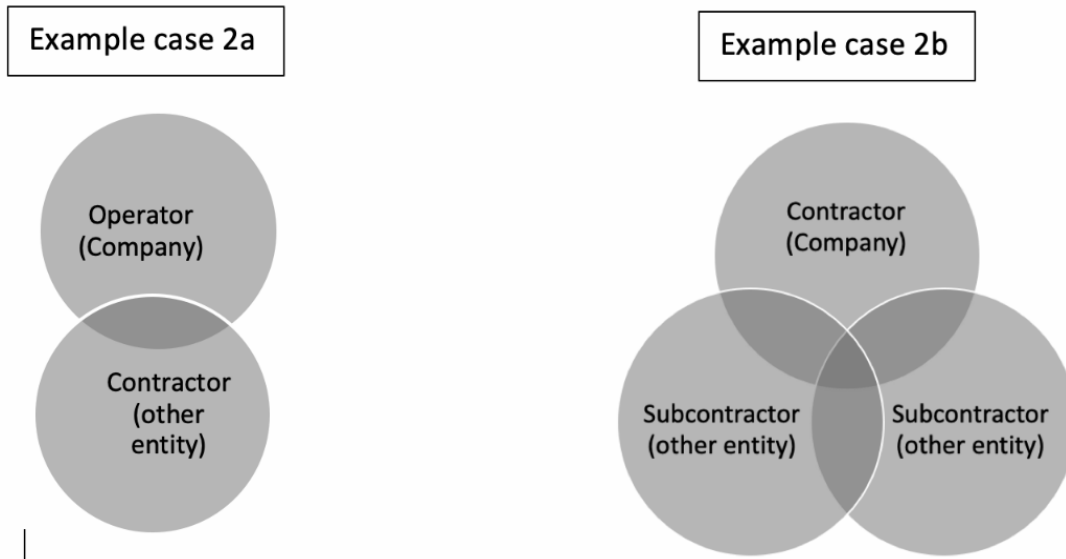


Figure 2—SEMS Interface Examples Case 2

- c) Example case 3: A Company that operates wind farms using other entities to conduct work on its behalf (e.g. contractors), and those other entities likewise use additional other entities (e.g. subcontractors) to conduct work under their direction on behalf of the Company. In such a case, there are multiple SEMS interfaces to manage by the Company and the other entities, with some entities acting as both the Company (primary organization) and as the other entity (subordinate) (e.g. a wind farm operator hires an installation contractor who brings in a service company to install driven piles).

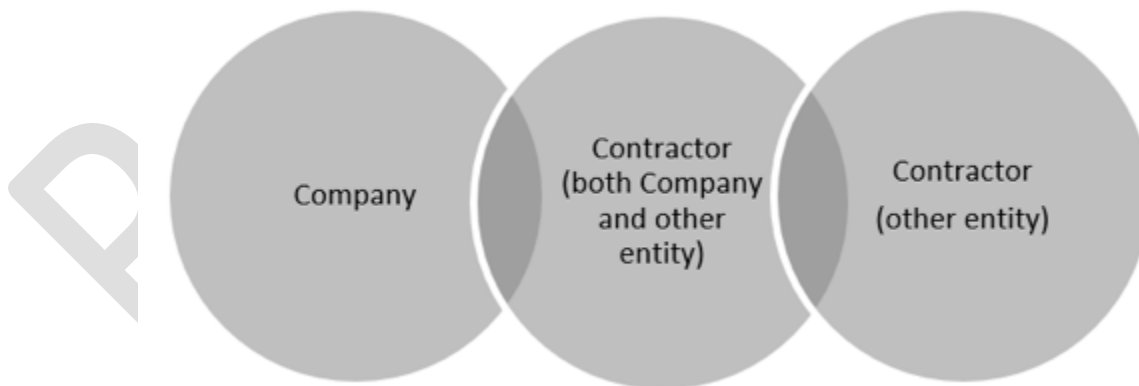


Figure 3—SEMS Interface Example Case 3

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There are multiple relationship cases in addition to these examples. By its very nature, work involving multiple other entities is more complex than a single Company performing work on its own. This complexity can introduce additional risks that should be considered when establishing, implementing, and maintaining SEMS interfaces.

5.3.2 Description

Management of SEMS interfaces involved in the planning and execution of the work is essential in delivering safe and environmentally responsible operations. SEMS interface management addresses what is required to manage SEMS alignment, communication, and coordination with respect to the assets, activities, and tasks.

5.3.3 Purpose

The Company identifies, agrees on, establishes, communicates, implements, and maintains applicable SEMS interfaces with other entities.

5.3.4 Expectations

The Company shall establish, implement, and maintain requirements for the following.

- a) Defining scope of work to be performed by other entities.
- b) Determining the roles, responsibilities, authorities, knowledge, and skills of personnel involved in identifying, developing, and managing SEMS interfaces.
- c) Determining personnel skills and knowledge needed by other entities for the work.
- d) Determining the assets, supplies, and/or information to be provided by other entities for the work.
- e) Communicating the Company's applicable SEMS requirements to other prospective companies that engage with the work.
- f) Communicating safety and environmental hazards that other entities can encounter or introduce.
- g) Determining the criteria for evaluating and selecting other entities.
- h) Agreeing on and communicating applicable SEMS requirements between the Company and other entities involved in the work.
- i) Documenting the SEMS interfaces.
- j) Providing site orientation for other entities' personnel performing the work,
- k) Verifying the skills and knowledge of other entities' personnel performing the work.
- l) Verifying that other entities' facilities, equipment, supplies, and information for the work meet Company requirements.
- m) Verifying that the work is performed in accordance with agreed Company SEMS requirements and/or SEMS interfaces.

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- n) Providing feedback on other entities' safety and environmental performance and the SEMS interfaces to drive improvement.
- o) Managing applicable SEMS interfaces among multiple other entities concurrently engaged in the work, including managing communications and decision-making in response to changing conditions.
- p) Using applicable expectations to manage interfaces among multiple other entities concurrently engaged in the work but hired by separate other entities.
- q) Managing requested deviations from the SEMS interface management process.
- r) Resolving identified deficiencies and improvement opportunities in SEMS interfaces.
- s) Managing changes to SEMS interfaces.

5.4 Risk Assessment and Risk Controls

5.4.1 Context

This element gives guidance on the management of safety and environmental risks associated with the full scope of offshore operations. It is intended to cover risk from a facility level to an activity and task level. Risk assessment involves identifying hazards, evaluating the risks posed by the hazards (including the potential consequences and the likelihood of such consequences), and identifying risk controls. While risk assessments are based on the known or anticipated hazards, user judgment is necessary to account for and react to real-time changes and conditions. Risk controls are the actions (human or otherwise), equipment, engineering resources and parameters, or administrative measures established, implemented, or maintained to eliminate, reduce, or mitigate the identified safety and environmental risks, including risks from the interactions of individuals with each other, equipment, processes, and systems.

5.4.2 Description

A systematic approach to managing safety and environmental risk covering assets, activities, entities and tasks is essential to a successful SEMS. This approach involves identifying hazards, assessing and evaluating risk, and determining appropriate risk controls. This applies to both planned work and to unanticipated circumstances.

5.4.3 Purpose

The Company identifies hazards, assesses risk, determines and implements risk controls for assets, activities, tasks, and communicates these to affected personnel.

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5.4.4 Expectations

The Company shall establish, implement, and maintain requirements for the following.

- a) Identifying the assets, activities, and tasks that require risk assessment and risk controls.
- b) Selecting a risk assessment schedule and methodology.
- c) Determining the roles, responsibilities, authorities, and knowledge and skills of personnel involved in risk assessment and risk controls.
- d) Determining the personnel to be involved in risk assessments and risk controls.
- e) Identifying hazards associated with the assets, activities, and tasks that require risk assessment, including those associated with the interactions of individuals with each other, equipment, and systems.
- f) Performing risk assessment(s) for the identified hazards.
- g) Performing or revalidating risk assessments when work conditions change or when unanticipated hazards are identified during the course of the work.
- h) Recommending and approving actions and risk controls to manage risk based on Company decision-making processes.
- i) Communicating risks and risk controls to affected personnel.
- j) Completing actions and implementing risk controls within an approved timeframe.
- k) Periodically reviewing risk assessments and risk controls to evaluate if they remain suitable, adequate, and effective.
- l) Managing requested deviations from risk assessment and risk controls.
- m) Resolving identified deficiencies and improvement opportunities in risk assessments and risk controls.
- n) Managing changes to risk assessments and risk controls.
- o) Documenting risk assessments and risk controls.

5.5 Procedures

5.5.1 Context

Procedures provide instructions that enable work to be performed consistently and safely based on knowledge at the time the procedure is developed. Procedures are approved and recorded for identified work that requires a documented process.

A systematic way to manage procedures allows for applicable personnel to be involved, incorporates appropriate risk controls, and considers end users at all stages. While procedures detail prescribed actions, user judgment is necessary to account for and react to real-time changes and conditions and applying stop work.

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5.5.2 Description

A systematic approach for the establishment, implementation, and maintenance of procedures is essential to operating in a safe and environmentally responsible manner.

5.5.3 Purpose

The Company manages risks associated with specific activities and tasks through development and use of procedures to consistently achieve the desired results.

5.5.4 Expectations

The Company shall establish, implement, and maintain requirements for the following.

- a) Identifying the activities and tasks that require procedures.
- b) Incorporating risk controls from risk assessments for the identified activities and tasks and other applicable sources into procedures.
- c) Determining the roles, responsibilities, authorities, and knowledge and skills of personnel accountable for developing, approving, maintaining, and using procedures.
- d) Determining the type, content, conventions, method of delivery, and communication of procedures, taking into account the intended procedure users.
- e) Developing, documenting, and approving procedures.
- f) Initially and periodically verifying procedures can be performed as documented and validating they will consistently produce the desired results.
- g) Accessing and using procedures as documented.
- h) Managing requested deviations from procedures.
- i) Responding to and communicating when procedures cannot be performed as documented or when procedures produce an unintended result.
- j) Engaging procedure users when verifying and validating procedures.
- k) Resolving identified deficiencies and improvement opportunities in procedures, including those identified from internal and external learnings.
- l) Managing changes to procedures.

5.6 Safe Work Management and Safe Work Practices

5.6.1 Context

Safely executing the work offshore is an essential aspect of SEMS. Work that is effectively managed using safe work practices incorporating risk controls has a higher likelihood of a safer result. This element contains the expectations of SEMS focused on safe work, from planning through execution (e.g. work permitting, use of job safety analyses, use of simultaneous operations (SIMOPS) plans, use of safe work

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practices, etc.). Safe work management encompasses the documented requirements of how to execute the work safely, whereas safe work practices refer to specific requirements for specific types of work (i.e. working at height, confined space entry, diving, etc.).

5.6.2 Description

Systematically managing offshore work is essential to accomplishing the work safely and in an environmentally responsible manner. In the context of this element, systematically managing safe work includes the planning, preparation, risk assessment, authorization, execution, monitoring, and closeout of the work. Examples of systematic approaches include work permitting, job safety analyses, SIMOPS plans, etc.

5.6.3 Purpose

The Company uses safe work management, which includes safe work practices, to accomplish offshore work safely.

5.6.4 Expectations

The Company shall establish, implement, and maintain requirements for the following.

- a) Identifying work that requires a documented process for safe work management and developing that process.
- b) Assessing risks and actions to be taken to address risks for each step to be undertaken prior to the execution of the work.
- c) Establishing criteria for escalating the review and authorization of the work.
- d) Handing over management of ongoing work.
- e) Managing SIMOPS.
- f) Identifying the types of work that require a documented safe work practice and for developing the safe work practices.
- g) Determining the roles, responsibilities, authorities, and knowledge and skills of personnel involved in developing and using safe work management and safe work practices.
- h) Engaging end-users in the development of safe work management and safe work practices to help mitigate error-likely situations from the interactions of individuals with each other, equipment, and systems.
- i) Communicating safe work management and safe work practices to affected personnel.
- j) Periodically verifying that the safe work management and safe work practices can be performed or used as documented.
- k) Validating safe work management and safe work practices.
- l) Managing requested deviations from safe work management and safe work practices.
- m) Resolving identified deficiencies and improvement opportunities in safe work management and safe work practices.

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- n) Managing changes to safe work management and safe work practices.
- o) Documenting information related to safe work management and safe work practices.

5.7 Knowledge and Skills

5.7.1 Context

This element covers the knowledge and skills of personnel for all assets, activities, and tasks within the scope of the SEMS. This element addresses the knowledge and skills of individuals, not teams. Each member of a team should have the required knowledge and skills to conduct the activities or tasks that are to be completed by that member. Training is one of several methods to deliver knowledge and skills; it is up to the Company to determine the appropriate method(s).

5.7.2 Description

Systematically managing the knowledge and skills of personnel is essential to working safely and in an environmentally responsible manner, and includes determining the knowledge and skills required, delivering the required knowledge and skills, and verifying that personnel have the required knowledge and skills prior to work execution.

5.7.3 Purpose

The Company manages the knowledge and skills of personnel such that individuals can safely perform assigned roles or work.

5.7.4 Expectations

The Company shall establish, implement, and maintain requirements for the following.

- a) Identifying the roles and work that necessitate documented knowledge and skills management.
- b) Determining the roles, responsibilities, knowledge, and skills of personnel involved in knowledge and skills management.
- c) Incorporating human performance aspects, including the interactions of individuals with each other, equipment, and systems, and error-likely situations, into knowledge and skills management.

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- d) Engaging applicable personnel in the design and continual improvement of knowledge and skills management.
- e) Determining the knowledge and skills for the identified roles, responsibilities, and work.
- f) Selecting the schedules and methods for delivering the knowledge and skills to the personnel assigned to the identified roles and work.
- g) Delivering the knowledge and skills to the personnel assigned the identified roles, responsibilities, and work.
- h) Periodically assessing personnel assigned the identified roles, responsibilities, or work to validate retention of the determined knowledge and skills, and remediating if applicable.
- i) Periodically reviewing that the determined knowledge and skills are suitable, adequate, and effective.
- j) Periodically evaluating that the content, methods, and personnel delivering the knowledge and skills are producing the desired results.
- k) Managing requested deviations from knowledge and skills requirements.
- l) Resolving identified deficiencies and improvement opportunities in knowledge and skills management.
- m) Managing changes to the determined knowledge and skills for the identified roles or work.
- n) Documenting the appropriate knowledge and skills management information.

5.8 Asset Design and Integrity

5.8.1 Context

It is essential for a Company to manage the design and integrity of its assets to establish and maintain a safe operating environment. Typical assets could include fixed or floating structures, temporary/permanent/rental equipment, or software used by or on behalf of the Company. This element addresses site investigation, basis of design, design, procurement, fabrication, construction, transportation, installation, commissioning, handover, startup, operation, maintenance, inspection, testing, or decommissioning. A Company can assume responsibility for an asset at any point in its life.

5.8.2 Description

The systematic approach to managing asset design and integrity activities is essential to site investigation, basis of design, designing, procuring, fabricating, constructing, transporting, installing, commissioning, starting up, operating, maintaining, or decommissioning an asset in a safe and environmentally responsible manner, and to maintaining overall asset integrity. Typical asset design and integrity activities include, but are not limited to, review verification, inspection, testing, monitoring, maintenance, quality assurance, and quality control.

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5.8.3 Purpose

The Company manages the integrity of its assets so that the assets are fit for purpose and perform their intended functions throughout their life cycle.

5.8.4 Expectations

The Company shall establish, implement, and maintain requirements for the following.

- a) Identifying the assets that are within the scope of the SEMS.
- b) Determining the roles, responsibilities, authorities, knowledge, and skills of personnel involved in asset design and integrity management.
- c) Determining the basis of design, operational limits, and expected performance of the identified assets.
- d) Determining the SEMS information necessary to safely manage asset design and integrity.
- e) Incorporating risk assessment actions and risk controls into asset design and integrity activities.
- f) Incorporating human performance aspects, including the impacts of the interactions of individuals with each other, equipment, and systems, into asset design and integrity activities.
- g) Determining the asset design and integrity activities to appropriately manage risk.
- h) Verifying that the asset design and integrity activities can be performed as intended.
- i) Verifying asset design specifications for new, newly acquired, or significantly modified assets.
- j) Determining the acceptance criteria, procedures, prioritization, frequency, schedule, and documentation information for the asset integrity activities.
- k) Reviewing the results and verifying the timelines of the asset design and integrity activities.
- l) Managing requested deviations from asset design and integrity activities.
- m) Resolving identified deficiencies and improvement opportunities in asset design and integrity activities.
- n) Managing spare parts for the identified assets.
- o) Managing changes to asset design and integrity activities.
- p) Documenting asset design and integrity activities.

5.9 Management of Change

5.9.1 Context

Management of change (MOC) is a documented process used to manage safety and environmental risks associated with changes, whether permanent, temporary, or as the result of incremental change. These changes are typically technical, administrative, or organizational in nature. The MOC process should also address how changes and their impacts are communicated to affected personnel.

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5.9.2 Description

Systematically managing temporary and permanent changes with potential safety and environmental impacts is essential for a successful SEMS. The MOC process involves identifying the changes and the risks introduced or impacted by the changes, reviewing and approving the changes, communicating with those affected by the changes, and documenting the changes. Control and management of the risks introduced by the changes shall be addressed through the appropriate elements of SEMS.

5.9.3 Purpose

The Company manages changes that have the potential to introduce or affect safety and environmental risks and the accuracy of SEMS information.

5.9.4 Expectations

The Company shall establish, implement, and maintain requirements for the following.

- a) Identifying the types of changes that initiate the use of a MOC process.
- b) Identifying the MOC process, including the closure criteria, to be used for a given type of change.
- c) Determining the roles, responsibilities, authorities, knowledge, and skills of personnel involved in the MOC process.
- d) Defining the reason, scope, and planned duration of changes.
- e) Determining when a pre-startup review is necessary.
- f) Conducting risk assessment and implementing risk controls of safety and environmental hazards introduced or affected by the changes.
- g) Reviewing and approving changes and related actions prior to implementation.
- h) Communicating the changes and their impacts, including new or revised risk controls, to those determined to be affected by the changes, as appropriate.
- i) Completing actions and implementing changes within the approved timeframe.
- j) Determining how and when a change is closed.
- k) Managing requested deviations from the MOC process.
- l) Resolving identified deficiencies and improvement opportunities in the MOC process.
- m) Managing changes to the MOC process.
- n) Documenting the changes, including updating appropriate SEMS information.

5.10 Pre-startup Review

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5.10.1 Context

A pre-startup review (PSR) assures that assets meet the design or operating intent, and verifies the completeness, operability, and safety of the assets. The PSR shall be conducted based on Company criteria. A PSR is conducted prior to startup of new, significantly modified, or out-of-service assets and may also be conducted prior to restart based on risk.

5.10.2 Description

The PSR is a systematic safety and environmental review conducted prior to startup of new, significantly modified, or out-of-service assets to achieve incident-free startup.

5.10.3 Purpose

The Company uses a pre-startup review to confirm that assets are ready for safe startup and operations.

5.10.4 Expectations

The Company shall establish, implement, and maintain requirements for the following.

- a) Identifying the criteria that trigger a PSR.
- b) Identifying the PSR process(es) to be used, taking into account the current state of the asset(s).
- c) Determining the roles, responsibilities, authorities, knowledge, and skills of personnel involved in the PSR.
- d) Confirming the actual fabrication, construction, and equipment meets specifications.
- e) Confirming procedures are adequate and in place.
- f) Confirming relevant SEMS information is accurate and accessible.
- g) Confirming risk assessments and risk controls have been addressed and implemented.
- h) Confirming affected personnel have the required knowledge and skills.
- i) Confirming applicable SEMS interfaces are managed.
- j) Managing requested deviations from the approved pre-startup process.
- k) Confirming identified deficiencies and improvement opportunities have been addressed prior to startup.
- l) Managing changes identified in the PSR or to the PSR process.
- m) Authorizing and communicating that the asset is ready for safe startup and operations.
- n) Documenting the PSR.

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5.11 Emergency Preparedness and Response

5.11.1 Context

Emergency preparedness consists of being ready to respond to emergencies, including developing and exercising response plans. Emergency response consists of the execution of both the immediate and long-term onsite and offsite response actions. The scope of this element is limited to the actions that are necessary to stabilize conditions such that no harm or no further harm is caused. Long-term restoration or remediation activities are outside the scope of this element. Emergency preparedness and response drills and exercises should include scenarios where one or more risk controls do not function as intended, as well as ones in which risk controls function as intended.

5.11.2 Description

Systematically preparing for and responding to emergencies is essential to mitigating safety and environmental consequences.

5.11.3 Purpose

The Company prepares for and responds to emergencies to mitigate safety and environmental consequences.

5.11.4 Expectations

The Company shall establish, implement, and maintain requirements for the following

- a) Identifying scenarios that could necessitate emergency response.
- b) Developing documented emergency response plan(s) for identified scenarios.
- c) Determining the roles, responsibilities, authorities, knowledge, and skills for personnel involved in emergency preparedness and response.
- d) Communicating emergency response plans to affected organizations and personnel before an emergency and making plans appropriately accessible.
- e) Communicating or engaging with affected organizations and personnel during an emergency response.
- f) Identifying and using an incident command system as applicable.
- g) Organizing responders and resources to work together, make decisions, and respond to emergencies.
- h) Identifying and verifying the availability and capability of organizations and resources for emergency preparedness and response.
- i) Periodically reviewing emergency response plans and revising as necessary.

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- j) Defining, planning, and conducting drills and exercises on identified emergency scenarios on a periodic basis.
- k) Assessing drills, exercises, and actual responses to evaluate that the emergency preparedness and response delivers the desired results and to identify continual improvement opportunities.
- l) Managing requested deviations in emergency preparedness and response.
- m) Resolving identified deficiencies and improvement opportunities in emergency preparedness and response.
- n) Managing changes to emergency preparedness and response plan(s).
- o) Documenting emergency response information, including emergency response plans, drills and exercise scenarios, and results, and communicating these as appropriate.

5.12 Investigating and Learning from Incidents

5.12.1 Context

The recommendations in this element apply to activities following incidents. The primary objective of the investigation of an incident is the prevention of incidents. Incident investigation learning supports preventing incidents by understanding what happened, why it happened, and what can be done to prevent recurrence. Holistic analysis of incident investigation results can provide valuable insights to proactively support learning.

5.12.2 Description

Systematically applying learnings from incidents is an essential contributor to continual improvement in SEMS. Incidents can be inclusive of events that have actual or potential safety and environmental consequences. Learnings captured through investigations can reveal systemic problems and opportunities for improvement within the management system. Actions should include sharing of the causes and lessons learned within the organization and externally as appropriate.

5.12.3 Purpose

The Company investigates incidents, identifies causes, and acts on the results to eliminate, reduce, or mitigate safety and environmental risks.

5.12.4 Expectations

The Company shall establish, implement, and maintain requirements for the following

- a) Defining the types of incidents to be reported and/or investigated.

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- b) Determining the roles, responsibilities, authorities, knowledge, and skills of personnel involved in incident investigation and sharing learnings.
- c) Determining the appropriate knowledge and skills needed by the individuals or team conducting the investigation, with consideration being given to knowledge of the operations, familiarity with investigation techniques, and other specialized knowledge that is viewed as relevant or necessary.
- d) Identifying the causes of incidents during an investigation.
- e) Incorporating human performance aspects into investigations and the identification of causes, including the role of the interactions between individuals, equipment, and systems, in contributing to or mitigating the incidents.
- f) Assigning personnel responsibilities and target dates for implementation and completion for actions that address the causes of the incident and tracking to resolution.
- g) Verifying and validating that the assigned actions were effective in addressing the causes of the incident.
- h) Appropriately sharing the cause(s) and lessons learned from internal or external incidents applicable to the offshore wind industry.
- i) Managing requested deviations from incident investigation and learning requirements.
- j) Resolving identified deficiencies and improvement opportunities in incident investigation and learning.
- k) Managing changes to incident investigation and learning.
- l) Documenting incident investigations and learnings.

5.13 Evaluation and Improvement of SEMS

5.13.1 Context

The scope of this element includes activities that evaluate the SEMS. Evaluation activities can vary widely and can range from formal evaluations to use of performance indicators to observations. Evaluation activities provide an understanding of the effectiveness of the SEMS and identify deficiencies and improvement opportunities.

Typical SEMS evaluation activities (internal or external) can include, but are not limited to:

- a) audits,
- b) assessments (including self-assessment),
- c) performance indicators,
- d) observations, and
- e) formal reviews.

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5.13.2 Description

Evaluating the SEMS is essential to providing assurance that the management system elements are established, implemented, maintained, and effective. Evaluation activities also facilitate continual improvement of the SEMS.

5.13.3 Purpose

The Company evaluates and improves the SEMS to assure its suitability, adequacy, and effectiveness.

5.13.4 Expectations

The Company shall establish, implement, and maintain requirements for the following

- a) Identifying the organizations, assets, and work to be evaluated.
- b) Determining the scope, criteria, and objectives for evaluation activities.
- c) Selecting the types and methodologies for evaluation activities.
- d) Defining roles, responsibilities, authorities, knowledge, and skills of personnel planning, performing, and analyzing evaluation activities.
- e) Performing the evaluation activities per established schedules, and frequencies.
- f) Analyzing the results of evaluation activities to assure that the SEMS continues to be suitable, adequate, and effective.
- g) Analyzing the results of evaluation activities to identify deviations, deficiencies, and improvement opportunities of the SEMS.
- h) Managing, prioritizing, and resolving the identified deviations, deficiencies, and improvement opportunities, including corrective and preventive actions.
- i) Communicating the results of evaluation activities to the appropriate stakeholders.
- j) Managing changes to SEMS evaluation and improvement activities or requirements.
- k) Documenting SEMS evaluation and improvement information, including the scope, results, and subsequent actions.

5.14 SEMS Information

5.14.1 Context

SEMS information is used to make informed decisions during offshore operations. Information created or used within design, procurement, fabrication, construction, commissioning, handover, startup, operation, maintenance, inspection, testing, or decommissioning is within the scope of this element. The objective of this element is to have the right SEMS information available to the right people at the right time.

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5.14.2 Description

Systematically creating and managing SEMS information is essential to operating in a safe and environmentally responsible manner. SEMS information is created or used during the establishment, implementation, and maintenance of the SEMS elements during offshore operations.

5.14.3 Purpose

The Company identifies, manages, and uses accurate, available, and current and historical (if relevant) SEMS information throughout the full scope of offshore operations.

5.14.4 Expectations

The Company shall establish, implement, and maintain requirements for the following.

- a) Determining the SEMS information to be created or managed, taking into account the intended users, interfaces, work, and decision-making processes.
- b) Determining the roles, responsibilities, authorities, knowledge, and skills of personnel involved in creating or managing SEMS information.
- c) Determining the criteria for controlling SEMS information, including access, security, documentation, communication (internally and externally), use, and retention.
- d) Managing the availability, control, distribution (internally and externally), use, and retention of SEMS information.
- e) Periodically verifying SEMS information is available, accurate, and controlled.
- f) Managing requested deviations from SEMS information management requirements.
- g) Resolving identified deficiencies and improvement opportunities in SEMS information.
- h) Managing changes to SEMS information.

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