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EXHIBIT/P-00056

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1.2 May 15, 2000 CAPP letter
1.3 June 19, 2001 CAPP letter + attached five page Research Summary
1.4 February 12, 2003 C-NLOPB letter
1.5 March 20, 2003 CAPP letter + attached 17 page EBS Discussion Paper
1.6 April 8, 2003 C-NLOPB letter
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**Document**

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# Topic 4: Escape, Evacuation and Rescue Guide (EER)

## 4.1

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August 28, 2009

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**RE: Request for Review and Ratification of the CAPP *Atlantic Canada Offshore Petroleum Industry Escape, Evacuation and Rescue Guide***

Howard / Dave:

Attached for your review is a final draft of the CAPP *Atlantic Canada Offshore Petroleum Industry Escape, Evacuation and Rescue Guide* (EER Guide). The EER Guide has been prepared by a development committee consisting of representatives from the offshore petroleum industry (Suncor, Husky Energy , ExxonMobil, EnCana), CAPP, Canadian Association of Oilwell Drilling Contractors, Offshore Petroleum Boards, and advice from Transport Canada. The development of the EER Guide was extensive and included a test case scenario exercise, stakeholder workshop, review by the industry workforce and was assisted by a consultant (Dr. Brian Veitch, professor at Memorial University).

The attached Guide is presented to you for ratification, the final step in the development of the EER Guide. During the month of September 2009, the CAPP Atlantic Canada Executive Policy Group will also be reviewing the draft EER Guide with the intent of ratification.

Please call me at (709) 724-4202 if you wish to discuss this in greater detail or have any questions.

R. Paul Barnes
Manager, Atlantic Canada

Attachment

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DRAFT

pending ratification

GUIDE

# Atlantic Canada Offshore Petroleum Industry Escape, Evacuation and Rescue

**April 2009**

DRAFT

Publication Number

The Canadian Association of Petroleum Producers (CAPP) represents 130 companies that explore for, develop and produce natural gas, natural gas liquids, crude oil, oil sands, and elemental sulphur throughout Canada. CAPP member companies produce more than 90 per cent of Canada's natural gas and crude oil. CAPP also has 150 associate members that provide a wide range of services that support the upstream crude oil and natural gas industry. Together, these members and associate members are an important part of a $120-billion-a-year national industry that affects the livelihoods of more than half a million Canadians.

Review by March 2014

**Disclaimer**



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## Overview

' There are those who seek reduction of risks through increased regulation. During the past few decades, there has been a great increase in regulatory control without comparable discernible benefit. Regulations do not themselves ensure safety and may be counterproductive in their consequences. Responsibility for safety may become a complacent acceptance of rules and regulations, and the evolving technology that is applied may be only as good as the rule and the rule formulators.'

- Royal Commission on the *Ocean Ranger* Marine Disaster. 1985.

Recommendation 81. 'That (a) more extensive guidance notes be developed. (b) insofar as it is practical, regulations be framed in terms of principles, performance standards and criteria, which supplemented with a comprehensive body of guidance notes, are made available in a consolidated form.'

- Royal Commission on the *Ocean Ranger* Marine Disaster. 1985.

Recommendation 107. ' That (a) government and industry without delay establish performance standards [regarding evacuation systems]...'

- Royal Commission on the *Ocean Ranger* Marine Disaster. 1985.

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# 1 Introduction

This Guide is to be used by the Canada-Newfoundland and Labrador Offshore Petroleum Board and the Canada-Nova Scotia Offshore Petroleum Board to assist in the interpretation of applicable legislation when reviewing escape, evacuation and rescue systems employed on any petroleum installations proposed for use in the Newfoundland and Labrador and Nova Scotia Offshore Areas. This includes new installations that might be purpose-built for these areas in future, existing installations in operation prior to the publication of the Guide and any other petroleum installations without exception, such as mobile drilling units that have been or might be brought into the jurisdiction.

The Guide is meant to assist operators meet their duties with respect to escape, evacuation and rescue by establishing the broad *performance goals* of escape, evacuation and rescue (EER) emergency response. How the goals are met, and how they are judged to have been met, are matters of practical concern and a particular concern of the present Guide. *Expectations* of each goal are provided to help the operator understand the scope of the goals. *Guidance notes* are used to supplement the expectations where appropriate. The Guide does not supersede existing legislation. Rather, it complements existing legislation and regulations. To do so effectively, the connection between specific *expectations* and *guidance notes*, and the corresponding existing regulations pursuant the Newfoundland and Nova Scotia Accord Acts, is made explicitly through *references*. Escape, evacuation and rescue regulations applicable in the Canadian East Coast Offshore Areas are thereby consolidated under this Guide. References are also made to additional material that maybe helpful to the operator in achieving the goals. Such references include other guides, international standards and industry best practices that may offer effective alternative means of achieving the goals and intent of the Guide.

The Guide provides a means for regulators to consider variances from existing applicable regulations and to evaluate assets moving into Canada from other jurisdictions. The Guide frames an approach that is useful to both operators and regulators to avail of the provisions in the Accord legislation that allow for variance from specific requirements where equivalent or superior levels of safety can be demonstrated. This is a use of the Guide that may also be relevant to contractors, such as for mobile drilling units. The Guide may be useful to the contracting parties, although meeting the requirements of the Guide and regulations is ultimately the responsibility of the operator. The Guide also recognizes that operators have an obligation pursuant to the Accord legislation to provide evacuation systems that are "fit for purpose" and to reduce risk to a level that is as low as is reasonable practicable. In this regard, the Guide also provides a framework for demonstrating that operators are using the best available technology.

The Guide sets out the safety requirements and corresponding expectations of the regulator in regards to what arguments and evidence will be needed in order for

the regulator to give approval with confidence that the goals of the regulations are met in practice. In practice, the operator must decide how to present the safety argument and what evidence to use to support the argument. The strength of the plan will correspond to the strength of the evidence and completeness of the argument. Likewise, the confidence of the regulator in the plan can be expected to correspond to its strength. This is an important point as it is reasonable to expect that the requirements of the operator's arguments to instill confidence in the regulator will increase as the risk associated with the issue at hand increases. An operator may choose to claim that compliance with an international standard constitutes meeting best practice. This can be a reasonable approach, but it is not sufficient to claim that compliance in one jurisdiction should equate to compliance in another: evidence must be presented that addresses specific issues identified in the Guide and applicable regulations.

The final introductory remarks concern language. Provisions of the Guide include requirements set out in the performance goals and denoted by the use of "shall". Further provisions of the Guide are presented as expectations corresponding to each of the performance goals and additional guidance on the expectations; these provisions are denoted by the use of "should" to identify recommendations, and "can" and "may" to identify possibility and permission. Informative provisions are denoted by the use of "is/are".

# 2 Approach

The Guide takes a goal-setting approach. In a goal-based regulatory environment, the performance goals are established by the regulator. The operator has the responsibility to meet or exceed the goals and the opportunity to choose the means by which to do so.

Rather than using inspections as the key mechanism to ensure operators are in compliance with regulations, as is generally the case under a specification type regulatory framework, regulators in a goal-based framework rely more heavily on audits of the operator's safety plan. Arising from the operator's responsibility to ensure safety goals are achieved is the general expectation that goal-based regulations promote a culture of safety rather than a compliance culture.

A performance standard is the operator's specification of a solution to achieving a given goal. It constitutes the basis of the operator's argument that safety goals can and will be met. It is a verifiable statement of the performance required of the equipment, procedure, or system. Performance standards should be cast in terms of a relevant measure or measures, such as reliability, functionality, availability, survivability, independence, time or distance. They should manifestly contribute to the overall goal of reducing the risk of harm. Each standard should provide a basis for monitoring and maintaining the requisite fit for purpose performance of the equipment, procedure, or system throughout its lifecycle, and should account for the specific circumstances particular to the installation and its operation.

For this regulatory approach to work, the performance standards must be supported by evidence and be amenable to objective evaluation. Where engineering design and operation matters are covered by codes of practice, industry guidelines, or other accepted norms, the goal-setting approach gives the operators some flexibility in choosing a way forward, including a facility to adopt evolving best industry practice without the delays or obstructions experienced in jurisdictions where specification regulations are embodied explicitly in legislation. In the absence of acceptable norms, the operator has an additional responsibility to propose a new performance standard and demonstrate its efficacy in achieving the performance goals. This can be a challenging requirement and is likely to involve more uncertainty for the operator in terms of meeting the obligations of the law, but can also stimulate innovation. Recognition of and response to this responsibility is critical to the success of implementing and maintaining a goal-based approach to design and regulation.

In the present context of the Guide, this goal-based approach is useful for application to new and existing installations in the jurisdiction, and assets moving into the area from other jurisdictions. The Guide presents clear statements of the goals and corresponding expectations of what is required and sufficient to be addressed in order to achieve adequate safety. The operator must present clear arguments and evidence to give confidence that the regulatory goals are met. The operator must further ensure that there are clear, auditable connections between

the goals and expectations, and the arguments and evidence. The operator's escape, evacuation and rescue plan will be contained within and form part of the operator's safety management system. The operator's escape, evacuation and rescue plan, safety plan and safety management system will form the comprehensive basis of any subsequent requests for regulatory variances. Any such claims can be made via the regulatory query process, complemented and supported by appropriate safety arguments, evidence and documentation.

# 3 Definitions

| | |
|---|---|
| Abandonment | Abandonment refers to the combined processes of escape and evacuation as personnel leave an installation in an emergency. |
| ALARP | As low as reasonably practicable. Within a risk management framework, ALARP reasoning can be applied as part of risk evaluation and control. The evaluation includes a determination of the tolerability, or acceptability of the risks in terms of stakeholders' interests, which is the basis for decisions concerning measures to reduce risk using ALARP principles. Additional guidance on how to apply ALARP can be found elsewhere[1]. |
| Escape | Escape refers to the process in which personnel move via escape routes from where they are at the time of alarm to muster stations, which are normally located within a temporary refuge, and then to means of evacuation. |
| Fit for purpose | A procedure, equipment, or system whose performance goal, captured in an explicit performance standard, is demonstrated to be adequately met via appropriate performance measures or benchmarks, is fit for the purpose for which it is intended. |
| Flight *or* Individual evacuation | In some extreme conditions, personnel may have no recourse to use planned evacuation procedures and equipment, but rather must flee the hazard independently, usually individually. This is sometimes referred to as flight, or direct escape to the sea, and normally involves means for individual evacuation. |
| Inherent safety | Inherent safety[2] practice is a risk minimization strategy used, for example, in the chemical process industry, that aims to reduce or eliminate hazards and the severity of their consequences by applying design principles at early stages of a facility's design (as contrasted with active measures such as controls and emergency shutdown systems, and procedural measures such as operating procedures, including emergency response). A few of these principles are presented for illustration: *substitution*, whereby safer materials and equipment are used rather than lesser alternatives; *error tolerance*, whereby equipment and processes are made more robust and tolerant of errors; *making status clear*, whereby ambiguity in equipment's status and information overload is avoided; and *simplification*, whereby equipment, systems, and procedures are designed to avoid complexities and reduce potential for errors. |
| Installation | According to the Accord legislation, "installation" means a diving installation, a drilling installation, a production installation or an accommodation installation. |
| Marine evacuation | Marine evacuation includes planned evacuation by Totally Enclosed Motor Propelled Survival Craft (TEMPSC), and other means of marine evacuation whereby personnel are substantially protected from the physical environment and the credible major hazards that might give rise to the evacuation. Normally, marine means of evacuation would be available independent of external resources and used when non-marine means, such as helicopter or dry link, are unavailable. |
| Marine evacuation hierarchy | Means of marine evacuation can be organized as a hierarchy of options. For example, in some circumstances, the main means of marine evacuation might be TEMPSC. Other means of planned marine evacuation might include davit |

[1] E.g. http://www.hse.gov.uk/risk/theory/alarp.htm.

[2] Bollinger, R.E., Clark, D.G., Dowell, R.M. III, Ewbank, R.M., Hendershot, D.C., Lutz, W.K., Meszaros, S.I., Park, D.E., Wixom, E.D., Crowl, D.A. (ed.). 1996. Inherently safer chemical processes: A life cycle approach. Center for Chemical Process Safety, AIChE, John Wiley.

| | |
|---|---|
| | launched life rafts or marine evacuation systems such as slides and chutes. Amongst the simplest alternatives are life saving appliances such as scramble nets, ladders, or other means of entering the sea individually, as well as inflatable throw-over life rafts. Means of marine evacuation should be available independent of external resources. |
| Muster area | A relatively safe, protected place. Muster areas are normally located within a temporary refuge, providing a place for personnel to gather while the initiating event and its status are investigated, and the emergency response is undertaken, including preparations for evacuation. |
| Non-marine and precautionary evacuation | Precautionary down-manning, or precautionary evacuation, is a planned procedure that makes use of means of evacuation that normally do not involve entering the sea (i.e. non-marine means of evacuation). Evacuation by helicopter, evacuation by dry link, such as bridges between adjacent installations, and direct transfer to a vessel are typical examples of non-marine, precautionary evacuation. Precautionary evacuation would be expected to be carried out using non-marine means. Evacuation by helicopter and direct transfer are both contingent on external resources. |
| Operator | The operator is the person ultimately responsible under the law for the safety of personnel on the installation. According to the Atlantic Accord legislation, "operator" means a person who has applied for or who has been granted an authorization to conduct a petroleum related activity. |
| Performance objective, performance goal | The objective of a procedure, equipment, or system. |
| Performance measure | A means by which performance can be measured objectively. |
| Performance benchmark | Accepted, measured performance for a given set of known conditions can constitute a performance benchmark. |
| Performance standard | A performance standard is a statement, which can be expressed in qualitative or quantitative terms, of the performance required of a system, item of equipment, person or procedure, and which is used as the basis for managing the hazard – for example planning, measuring, control or audit – through the lifecycle of the installation[3]. A performance standard is specified by the operator and accounts for the circumstances on the particular installation. It can be expressed in terms of a measure such as functionality, availability, reliability, survivability, independence, time, distance, or similar. |
| Personal survival equipment | Personal survival equipment includes personal floatation devices, immersion/survival suits, visual signals, and smoke/gas hoods. This term is not meant to include personal protective equipment (safety shoes, hard hats) in the present context. |
| Practicable | Practicable means feasible, capable of being put into practice or of being used. This is not the same as practical, which means efficient and workable, rather than theoretical. |
| Rescue | Rescue is the process of moving evacuees to a safe place after evacuation, such as from a lifeboat to a rescue vessel. This stage of the EER process is complete when personnel have been removed from the hazard to a place of relative safety, where medical attention is available. |
| Temporary refuge *or* | A temporary refuge is a designated place on the platform to which personnel |

[3] HSE, 1995. Offshore installations regulations: Prevention of fire and explosion, and emergency response on offshore installations. HSE S1 1995/743, Health & Safety Commission.

| | |
|---|---|
| Temporary safe refuge | have recourse as part of the escape process. A temporary refuge (TR), also known as a temporary safe refuge (TSR), should provide an appropriate degree of protection from explosion, fire, smoke, gas releases, and other hazards during the time between the initiating event and the decision to evacuate. |

# 4 Performance Goal: Safety Planning and Management of Escape, Evacuation and Rescue

The operator shall ensure that planning for and management of escape, evacuation and rescue are explicitly addressed in an emergency response plan, which is in turn part of the operator's overall safety management system.

The operator's safety management system shall incorporate planning that assures fitness for purpose of the escape, evacuation and rescue system over the lifecycle of the installation.

## 4.1 Expectations: Safety Management System

The operator should have a safety management system that should ensure that all credible major hazards [1,2,3,4] related to the facility and its operation [A,B,C,D,E] are identified. The circumstances that may necessitate an escape, evacuation and rescue response are a subset of the major hazards to the installation.

### 4.1.1 Guidance: Identification of Credible Hazards

An important basis for many of the decisions concerning escape, evacuation and rescue is the identification of credible major hazards and the ensuing scenarios to which these could credibly give rise, particularly those scenarios that might lead to an abandonment of the installation. In the context of a risk analysis, an estimate of the probability of each initiating event associated with abandonment can be made, along with an estimate of the number of personnel at risk (and requiring evacuation). Similarly, an estimate of the characteristics of each event should be made in terms of the physical processes involved (e.g. a gas or smoke plume from a gas release or fire, extent of radiant heat from a fire, and overpressures due to explosions).

### 4.1.2 Guidance: Consequences of Hazards on the Installation

Under each type of credible hazard scenario, the consequences should be assessed in terms of the damage or impairment of the installation [F,G,H], the number of people likely to be injured or killed by the initiating event, the vulnerability of the installation to the initial hazard or subsequent escalation, and the overall likelihood of being able to carry out a successful abandonment operation.

The safety management system should ensure that all measures necessary to reduce the risks to personnel from major hazards to as low as reasonably practicable (ALARP) are identified and implemented.

### 4.1.3 Guidance: Inherent Safety

The operator should apply the principles of inherent safety[5] at the concept safety stage, where it has the greatest potential to reduce risks and lower costs.

## 4.2 Expectations: Emergency Response Plan

An emergency response plan[6,7] that forms part of the operator's safety management system, should address the management of escape, evacuation and rescue arising from specified credible major hazards.

### 4.2.1 Guidance: Consequences of Hazards on EER

For example, the impacts of the various hazards on the means of escape, evacuation and rescue are of particular interest as they can have a direct bearing on the availability of any given lifesaving appliance (e.g. a lifeboat might be damaged by the initial hazardous event, or might be rendered otherwise unavailable due, for example, to being engulfed in a smoke plume), which can be treated as a performance measure. Following an estimate of the risk associated with each type of event, possible means of control, mitigation and protection can be identified and evaluated, using some measure of utility. The decision-making process is typically iterative, and need not be only quantitative.

This plan should include the response command structure and means of communication, as well as arrangements between the operator and others who might be involved in a planned emergency response.

The emergency response plan should incorporate organizational management responsibilities and identify emergency procedures and training requirements, as well as equipment and hardware.

### 4.2.2 Guidance: Integrated Planning

Decisions concerning escape, evacuation and rescue should be based on an analysis of the entire emergency response system. This should help guide resource allocation to the areas that will benefit most in terms of overall safety improvement (or risk reduction) and help avoid conflicting decisions.

## 4.3 Expectations: Escape, Evacuation and Rescue Plan

The operator's plan for escape, evacuation and rescue should specify and document the provisions made for escape, evacuation and rescue.

### 4.3.1 Guidance: EER Planning

The planning for the EER system is an integral part of the process of reducing risks to as low as reasonably practicable. As such, the operator's performance standards concerning escape, evacuation and rescue should not be treated as separate from the broader assessment and control of risks, and decisions concerning the tolerability of (residual) risk. The plan should explain how the performance goals will be met through appropriate demonstrations.

The plan should explain how the operator ensures that in circumstances necessitating an emergency response, personnel have a reasonable expectation of avoiding harm in the physical environment conditions that can reasonably be expected to prevail during operations. The plan should cover the duties of the operator in each phase of the EER response:

i)To afford adequate means for individual personnel to protect themselves and for personnel to escape the potential harm posed by credible hazards;
ii)To afford adequate means for personnel, including injured personnel, to abandon the installation in controlled procedure; and
iii)To afford adequate means and support for the rescue and recovery of personnel to a place of safety where medical assistance is available.

### 4.3.2 Guidance: Scope of Guide

The duties of the operator with respect to provisions for escape, evacuation and rescue are presented in this Guide.

## 4.4 Expectations: Lifecycle Approach

The management of the escape, evacuation and rescue system should provide for the full lifecycle of the installation, from planning through to operation and decommissioning, and include previsions for the management of changes in the installation or its operation.

### 4.4.1 Guidance: Lifecycle Approach to Safety Management

Taking a lifecycle approach[5] ensures that the safety management system will remain current. There are a variety of ways to describe phases in a lifecycle. For example, it can be broken out into an analysis phase (during which the overall safety issue is identified and assessed), a realization phase (during which the solution to the safety issue is developed), and an operational phase (during which the solution is used).

## 4.5 Expectations: Risk Reduction

Recognizing that there is some uncertainty associated with identifying hazards and assessing risks, and further recognizing that more safety is better than less, it follows that while a given performance standard set by an operator might be

shown to be adequately achieved using one or several options, the operator should use the option that affords the greatest level of safety, as long as it is economically achievable.

Application of the principle of reducing risks to as low as reasonably practicable (ALARP) ensures that the operator should not accept a level of residual risk that, while meeting a nominally acceptable target, can yet be substantially reduced without incurring disproportionate costs.

### 4.5.1 Guidance: Best Available Technology:

This principle is sometimes referred to by acronyms such as BATNEEC (best available technology not entailing excessive costs), or BATEA (best available technology economically achievable).

## 4.6 Expectations: Training and Competence

The operator should ensure that all relevant personnel be trained and competent in the execution of the emergency response plan in accordance with their designated responsibilities and duties. The operator should ensure that all personnel on board the installation be adequately familiar with the operator's safety management system, including the emergency escape, evacuation and rescue response plans and associated performance measures, and that they be adequately trained and competent in accordance with their safety related responsibilities and duties. [I,J,K,8]

# 5 Performance Goal: Escape, Muster and Personal Survival Equipment

The general escape process normally begins with the raising of alarms, followed by movement of personnel to mustering areas, which are normally located within a temporary refuge. The operator shall provide means to enable personnel to avoid harm throughout the escape process:

i) Alarms and Communication

The operator shall ensure that in the event of an emergency that may necessitate an escape, evacuation and rescue response, means are in place to warn personnel and to communicate with them during the emergency.

ii) Escape and Muster

The operator shall ensure that appropriately protected escape routes, muster areas, temporary refuges, and evacuation stations are available and arranged to facilitate implementation of an orderly, planned escape procedure, followed if necessary by an evacuation procedure.

Protection of muster areas and temporary refuges shall be sufficiently robust to provide sustained protection for the duration of the emergency or until a decision is taken to evacuate.

iii) Personal Survival Equipment

The operator shall provide sufficient personal survival equipment to afford means of protection from credible hazards, and from the elements, particularly due to immersion in the sea.

## 5.1 Expectations: Alarms and Communication

Means to warm all personnel of an emergency should include appropriate audible and visible alarms. [9,10,11,A,B]

Where different types of alarm are used to differentiate types of emergency, these should be made known to all personnel.

Alarms and signage should conform to international standards where practicable.

### 5.1.1 Guidance: Standard Alarms

Where practicable, and in particular for new installations, alarms and signage in the operating region should be standardized, reflecting the fact that personnel may occasionally work on more than one installation.

Alarms should continue to be audible/visible throughout the emergency.

Personnel in different parts of the installation should be afforded means of communication with others on board.

Means should also be available to communicate with those external to the installation who might be involved in a planned emergency response. [C,D]

## 5.2 Expectations: Escape Routes

All manned work areas should have more than one escape route, suitably spaced.

Escape route planning[12] should account for potential impairment of escape routes and evacuation equipment due to the emerging hazard.

Escape routes from accommodation and work spaces should be unobstructed at all times.

### 5.2.1 Guidance: Obstructions to Escape Routes

This includes inadvertent obstructions posed by doors that cannot be opened quickly or at all (e.g. in the case of a floating platform with a list), or by unsecured equipment that might shift during an emergency.

All escape routes to muster areas, temporary refuges and evacuation stations should be adequately marked by signage and emergency lighting. [E,F,G]

## 5.3 Expectations: Muster Areas and Temporary Refuges

Muster areas should be accessible via redundant escape routes and should provide for further protected movement of personnel on to temporary refuges and evacuation stations via continued escape routes.

Means to provide basic medical treatment should be available at muster areas and temporary refuges. [H]

## 5.4 Expectations: Planned Protection from Credible Hazards

The protective function of escape routes, muster areas, temporary refuges, and evacuation stations [I,J] should reflect the nature of the hazards identified in the operator's emergency response plan, safety management system, or equivalent, as well as the performance standards set by the operator.

### 5.4.1 Guidance: Standard of Protection

The performance standards can include, for example, target levels of functionality, availability, reliability, survivability, and independence for the time required for mustering under all credible major hazards, which can further inform design decisions regarding technical specifications

concerning, for example, levels of blast protection, insulation, and escape route redundancy.

The operator should ensure that personnel are adequately protected so that they can implement the appropriate emergency response escape and muster procedures, followed by evacuation procedures should those be deemed necessary.

### 5.4.2 Guidance: Planned Evacuation Scenarios

The decision to evacuate, or not, can be based in part on a comparison of the emerging situation (including factors such as the status of the hazard, integrity of the installation, availability of the means of evacuation and rescue, and number of injured personnel) with the operator's emergency response plan.

## 5.5 Expectations: Personal Survival Equipment

Provision of sufficient personal survival equipment[13], such as personal flotation devices, immersion/survival suits, visual signals, breathing apparatus and smoke/gas hoods, is the operator's responsibility.

Such equipment is not a primary means of protection: it is meant to afford basic protection to personnel when other planned means either fail or are unavailable, or supplemental protection when other means are available.

The type of equipment, the number and size of the units of each and their distribution around the installation, should take into account the numbers and sizes of personnel on board, how they are distributed around the platform during operations and the likelihood that equipment will be impaired by initiating hazards. K,L

## 5.6 Expectations: Implementation of Provisions for Escape

The operator should specify and document all provisions made for alarms and communication, for escape and muster and for personal survival, including the types of equipment, their capacities and arrangements and associated performance standards.

## 5.7 Expectations: Maintenance of Fitness of Provisions for Escape

Operators should ensure that the fitness of all means of communication, passive and active protective measures and personal survival equipment on board is maintained in accordance with performance standards. M,N,O

## 5.8 Expectations: Training and Competence

Operators should ensure that all personnel on board be adequately trained and competent in the emergency escape and mustering procedures, and the use of the personal survival equipment on board, and be aware of the operator's key performance measures. Personnel should be made familiar with alarms and signage, escape routes, mustering areas, temporary refuges and evacuation stations. They should also be aware of where they should muster and how they should account for themselves and others in an emergency. P.Q.8

# 6 Performance Goal: Precautionary and Non-Marine Evacuation

The operator shall ensure that in circumstances that may necessitate a precautionary evacuation, or precautionary down-manning, all personnel have reasonable recourse to a means of evacuation other than marine evacuation.

## 6.1 Expectations: Non-Marine Evacuation

The operator should provide adequate means for personnel, including injured personnel, to evacuate the installation as a precautionary measure.

Means of precautionary evacuation include helicopter, direct transfer to crew boats[A], evacuation by dry link (such as bridges between adjacent installations) and other means that are used for routine transportation of personnel and normally do not involve entering the sea.

## 6.2 Expectations: Expected Utility

The operator should assess the expected utility of the means of non-marine evacuation and their use in precautionary evacuation and in emergency evacuation.

### 6.2.1 Guidance: Assessment of Utility

This requirement does not mean that helicopters, bridge links, or other non-marine means of evacuation should be available at all times, but rather that if these are the means of precautionary evacuation, then the likelihood of them being available under all credible evacuation scenarios should be assessed. This assessment can include factors such as limiting effects of the physical environment conditions, the vulnerability of the non-marine means of evacuation to impairment due to various hazards, and the time required to mount an effective response using resources external to the installation.

When such means can be expected to be unavailable, then emergency response planning should concentrate on other means of evacuation, which would normally entail marine evacuation.

## 6.3 Expectations: Implementation of Provisions for Evacuation

The operator should specify and document all means of non-marine evacuation, including the types of equipment, their capacities and arrangements and associated performance standards.

## 6.4 Expectations: Training and Competence

The operator should ensure that all personnel on board be adequately trained and competent in the use of non-marine evacuation systems and the procedures for

their use in precautionary and emergency procedures, and be aware of the operator's key performance measures. [8]

# 7 Performance Goal: Marine Evacuation

The operator shall ensure that in circumstances that necessitate a marine evacuation, all personnel:

(i) have access to an evacuation system,

(ii) be able to embark and be launched safely, clear the installation and survive until rescued, and

(iii) have a reasonable expectation of avoiding harm during the evacuation process in the physical environment conditions that can reasonably be expected to prevail during operations.

## 7.1 Expectations: Marine Evacuation by Lifeboat and Raft

The operator should provide means of marine evacuation that are independent of external resources and are the planned means of emergency evacuation when non-marine means of evacuation are unavailable.

The main means of marine evacuation include evacuation by Totally Enclosed Motor Propelled Survival Craft [A,B,C] (TEMPSC), and other means of evacuation[14] whereby personnel are substantially protected from the physical environment conditions and the hazards that might give rise to the evacuation.

Marine evacuation also includes evacuation by equipment such as davit-launched rafts[B,C] and evacuation systems that include rafts in combination with slides or chutes. [14]

### 7.1.1 Guidance: Protection

Rafts do not offer as much protection from hazards or the elements as some other marine evacuation systems such as lifeboats, but they can avoid immersion in the sea.

## 7.2 Expectations: Evacuation Capacity and Access

The operator should ensure that the means of marine evacuation are of sufficient capacity to evacuate all personnel, including injured personnel, on the installation at any given time. [D]

The capacities and arrangements of the means of evacuation should be determined and justified on the basis of an assessment of the credible hazard scenarios and distributions of personnel during operations, including peak manning operations.

### 7.2.1 Guidance: Evacuation Capacity

The distribution and redundancy of means of evacuation should account for the nature and location of the initiating hazard and vulnerability to impairment of the means of evacuation. [E] Lifeboats are typically arranged adjacent to temporary refuges, in a location relatively well protected (e.g. from blast and fire). The vulnerability of the means of evacuation to various major hazards should be considered and appropriate measures taken to ensure adequate survivability and availability, including through redundancy. [F]

Further, the means of evacuation should be accessible from a temporary refuge or muster station via a safe route.

### 7.2.2 Guidance: Time Available

A detailed assessment of each major hazard that could give rise to a marine evacuation should include an estimate of the time available for personnel to muster and evacuate. These can be incorporated into appropriate performance measures. [G]

## 7.3 Expectations: Evacuation Planning: Physical Environment Conditions

The operator should know the expected capabilities of the means of evacuation in the range of physical environment conditions that can be expected to occur in the operating area, taking into account the location and arrangement of the evacuation stations.

This is site and installation specific: the operator should recognize how risk increases as weather conditions deteriorate and reduce the risk to as low as reasonably practicable.

Fore knowledge of the performance capabilities of the selected means of evacuation, including in terms of launching and clearing should be incorporated into operational planning, including emergency response plans, recognizing the residual risks associated with operations that exceed any of the limits of the means of evacuation. [H]

### 7.3.1 Guidance: Physical Environment Limits

In choosing the means of evacuation, the operator should recognize explicitly how physical environment conditions affect or limit the performance capabilities of the means of marine evacuation. The performance of marine evacuation systems normally degrades as weather conditions (wind, waves, sea ice, fog, icing, etc.) deteriorate. A design physical environment limit is the mildest environmental condition in which the lifeboat is unseaworthy or incapable of being safely launched.

Conditions that cause capsizing, or motions excessive enough to be detrimental to the evacuees' well-being constitute such a limit. So too does an inability to make way. Evacuation using the system should not be planned for the corresponding environmental conditions. The deterioration in performance up to the operational physical environment limits should be accounted for. For example, a practical application of such fore knowledge could be that the OIM would have a set of objective evacuation performance benchmarks, and associated risks, for EER operations in a range of physical environment conditions, against which s/he could compare with the risks under an emerging major hazard scenario, and thereby have rational grounds upon which to make decisions regarding preparations to make the installation as safe as practicable in the emerging circumstances. Such preparations might include limiting some types of work, staging a planned production slow/shut down, and deciding whether (and by what means) or not to abandon the installation. [H]

## 7.4 Expectations: Marine Evacuation by Individual Means

In some circumstances, life-saving appliances such as scramble nets, ladders, or other individual means of entering the sea, as well as inflatable throw-over life rafts, should be provided as a last means of leaving the installation when other planned means either fail or are unavailable. [I]

The emergency response plan should recognize that such equipment is to be used only as a last resort.

### 7.4.1 Guidance: Last Resort

It should be recognized that such equipment is typically used by individuals who are fleeing, rather than by groups following procedures, and that the emphasis in evacuation and rescue planning should be on prevention of the need to evacuate, non-marine evacuation, lifeboats, and rafts.

## 7.5 Expectations: Integration of Evacuation and Rescue

The operator should ensure that the means of evacuation, including lifeboats, life rafts and life-saving appliances used as a last resort by individuals are matched with a corresponding capability and availability of means of rescue and recovery.

### 7.5.1 Guidance: Integrated Means of Evacuation and Rescue

Means of evacuation should be integrated with means of rescue and recovery. Further, evacuation should not be planned in scenarios or physical environment conditions in which means of rescue and recovery are not available, or in which the risks are higher than would be the case by staying on board the installation.

## 7.6 Expectations: Implementation of Provisions for Marine Evacuation

The operator should specify and document all means of marine evacuation and all life-saving appliances provided as a last means of leaving the installation, including the types of equipment, their capacities and arrangements and associated performance standards.

## 7.7 Expectations: Maintenance of Fitness of Provisions for Marine Evacuation

The operator should ensure that the fitness of all marine evacuation equipment on board and all life-saving appliances provided as a last means of leaving the installation are maintained in accordance with performance standards.[J,K]

## 7.8 Expectations: Training and Competence

The operator should ensure that all personnel on board the installation be adequately trained and competent in the use of the marine evacuation equipment on board and all life-saving appliances provided as a last means of leaving the installation, and be aware of the operator's key performance measures. This includes any specialist training required for designated personnel to operate the equipment.[L,8]

# 8 Performance Goal: Rescue

The operator shall ensure that in the event of an evacuation, corresponding means of rescue are available to ensure all personnel have a reasonable chance of reaching a safe place within a reasonable time under the prevailing circumstances and physical environment conditions.

## 8.1 Expectations: Rescue Resources and Coordination

The operator should provide the means of and support for the rescue and recovery of personnel to a safe place where medical attention is available.

Means of rescue include stand by vessels that may be contracted to provide the service, vessels launched from the installation itself[A], neighboring installations or other vessels (e.g. fast rescue craft), and national responders such as Search and Rescue, which might include helicopter borne Search and Rescue Technicians.[15]

### 8.1.1 Guidance: External Resources

It is explicitly recognized here that rescue operations may include support from sources other than the operator.

### 8.1.2 Guidance: Rescue Operations Plan

All measures that the operator plans to bring to bear on rescue operations, whether they are under the operator's direct command and control or not, should be described in the safety management system or equivalent.

### 8.1.3 Guidance: Command-Control-Communication

The procedures for command, control and communication amongst the rescue resources are the responsibility of the operator to develop and maintain, in co-operation with the rescue resources. [B]

## 8.2 Expectations: Rescue Capacity and Access

The capacity of the means of rescue should correspond to the evacuation capacities and be sufficient to rescue all personnel evacuating the installation at any given time.

### 8.2.1 Guidance: Rescue Capacity Assessment

Planning for the rescue response should include considerations of the nature of the initiating hazard and its potential escalation in terms of the vulnerability to impairment of the various means of rescue. For example, a gas release, smoke plume, or radiant heat may limit a rescue vessel's ability to safely approach the installation. Appropriate measures should be taken to ensure adequate capacity of rescue means in credible scenarios.

The operator should treat the means of rescue as integral to the means of evacuation: they should work together.

## 8.3 Expectations: Rescue Planning – Physical Environment Conditions

Rescue planning should account for the exposure to risks of those involved in the rescue operations and their training and competencies in the range of physical environment conditions that can be expected to occur in the operating area.

The residual risks associated with operations in conditions that exceed any of the limits of the means of rescue should be recognized and the operator should explain explicitly in the safety management system, or equivalent, how these risks could be mitigated in such conditions.

Fore knowledge of the performance capabilities of the selected means of rescue, captured in appropriate performance standards, should be incorporated into operational planning, including emergency response plans.

### 8.3.1 Guidance: Physical Environment Limits

In choosing the means of rescue, the operator should recognize explicitly how the performance of rescue operations might be degraded as a function of deteriorating weather conditions, up to any upper operational physical environment limit or limits, for example due to inadequate maneuvering control of a rescue vessel to carry out recovery operations, or of rescue craft responders to recover personnel from the sea.

## 8.4 Expectations: Place of Safety

The operator should ensure that appropriate places of safety are available to effect a complete rescue operation and that evacuees are rescued to a safe place in a timely manner.

### 8.4.1 Guidance: Planned Rescue Scenarios

A detailed assessment of each evacuation scenario, including human factors associated with the physical environment conditions and the expected time available to respond with an emergency rescue operation is critically important as it may govern the choice of the means of rescue and how these are deployed. For example, for some installations, it may be deemed necessary to maintain rescue facilities by using an appropriately equipped rescue vessel that stands by at all times. This may be the best way of meeting a performance standard that specifies the time to respond to emergencies. Further, the same vessel may be equipped with fast rescue craft that can also serve as a means of rescue for man overboard situations.
C

An adequate place of safety includes the availability of specified human and physical resources to recover personnel and give appropriate medical treatment. [D]

## 8.5 Expectations: Implementation of Provisions for Rescue

The operator should specify and document the means of rescue, including the types of equipment, their capacities, the manner in which they are deployed and how they are coordinated, and associated performance standards.

## 8.6 Expectations: Maintenance of Fitness of Provisions for Rescue

The operator should make arrangements to ensure that the fitness of all rescue equipment is maintained in accordance with performance standards. [E]

## 8.7 Expectations: Training and Competence

The operator should ensure that all personnel on board the installation be adequately trained and competent in accordance with their designated responsibilities and duties in the use of rescue equipment and procedures, and be aware of the operator's key performance measures. This includes any specialist training required for designated personnel to operate equipment during rescue operations.[8]

The operator should ensure that all personnel external to the installation and identified in the escape, evacuation and rescue plan as supporting the rescue operations be trained and competent in the execution of the emergency response plan in accordance with their designated responsibilities and duties.

# 9 References

Note that references to the Offshore Area Petroleum Production and Conservation Regulations, the Offshore Petroleum Installations Regulations and the Offshore Drilling Regulations apply to both the Newfoundland and Nova Scotia versions bearing the same titles. Occupational health and safety regulations are entitled Offshore Petroleum Occupational Health and Safety Requirements in Nova Scotia, and Petroleum Occupational Safety and Health Regulations in Newfoundland. References in the Guide to the Offshore / Petroleum Occupational Health and Safety Requirements / Regulations apply to both the Newfoundland and Nova Scotia versions bearing these slightly different titles.

## 9.1 Regulations and Guidance: Safety Planning and Management

### 9.1.1 Cited Regional Regulations: Safety Planning and Management

[A] Offshore Area Petroleum Production and Conservation Regulations 51.(1),(3),(4),(6)-(10) specify the broad requirements of a safety plan for production installations. This is relevant to Paragraph 1.1 and generally to the entire EER Guide.

[B] Offshore Petroleum Installations Regulations 43.(1)-(8) specify the broad requirements of a concept safety analysis for production installations. This is relevant to Paragraph 1.1 and generally to the entire EER Guide.

[C] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations 15.4(d) refer to reporting obligations associated with emergency procedures, which may be relevant to Paragraph 1.1.

[D] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations 17.11-17.12 deal with emergency evacuation plans, which are relevant to Paragraph 1.1 and more generally relevant to this Guide.

[E] Offshore Drilling Regulations 14 and 15 require precautions be taken against hazards, and that the design account for the operating environment, respectively, which is relevant to Paragraph 1.1 and broadly relevant to this Guide.

[F] Offshore Petroleum Installations Regulations 12.(5)(a)-(c) specify emergency power operability requirements in terms of installation damage conditions, which may be relevant to Paragraph 1.1.

[G] Offshore Petroleum Installations Regulations 13.(12)(a)-(c) specify machinery operability requirements in terms of installation damage conditions, which may be relevant to Paragraph 1.1.

[H] Offshore Petroleum Installations Regulations 22.(3)(c) specify operability requirements for launching devices in terms of installation damage conditions, which are relevant to Paragraph 1.1.

[I] Offshore Area Petroleum Production and Conservation Regulations 62. and 63. refer broadly to training requirements. This is relevant to Paragraph 1.6 and all other paragraphs in this Guide that refer to training and competence.

[J] Offshore Petroleum Installations Regulations 64. specifies the requirement of IMO's SOLAS regulations for mobile platforms, which may be relevant to the performance measures noted in Paragraph 1.6.

[K] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations 17.13-17.14 specify emergency procedure training and drill requirements, which are relevant to Paragraph 1.6.

### 9.1.2 Other Cited Guidance: Safety Planning and Management

1 ISO 17776. Petroleum and natural gas industries – Offshore production installations – Guidelines on tools and techniques for hazard identification and risk assessment. ~ The scope of this international standard includes a description some of the main tools and techniques that are used for the identification and assessment of hazards associated with offshore petroleum installation activities. It provides guidance on how these tools and techniques can be used to assist in the development of strategies both to prevent hazardous events and to control and mitigate events that may arise.

2 HSE S1 1995/743. Offshore installations regulations: Prevention of fire and explosion, and emergency response on offshore installations (PFEER). Health & Safety Commission. ~ This HSE (UK) code includes regulations, approved code of practice, and additional guidance on (i) preventing fires and explosions, and protecting personnel from any that occur, and (ii) ensuring effective emergency response in circumstances that may require escape, evacuation, and rescue.

3 ISO Standard 13702. Petroleum and natural gas industries – Control and mitigation of fires and explosions on offshore production installation – Requirements and guidelines. ~ The scope of this international standard includes a description of the objectives, functional requirements, and guidelines for the control and mitigation of fires and explosions on offshore petroleum installations. It includes fire and explosion evaluation and risk management, installation layout, emergency shutdown, emergency power systems, fire protection, explosion mitigation and protection, EER, and maintenance.

4 API Recommended Practice (RP 14J): Recommended practice for design and hazards analysis for offshore production facilities. ~ This standard deals with process risk assessment and includes relevant guidance regarding the identification and analysis of credible hazards.

5 Bollinger, R.E., Clark, D.G., Dowell, R.M. III, Ewbank, R.M., Hendershot, D.C., Lutz, W.K., Meszaros, S.I., Park, D.E., Wixom, E.D., Crowl, D.A. (ed.). 1996. Inherently safer chemical processes: A life cycle approach. Center for Chemical Process Safety, AIChE, John Wiley. ~ This is one example of guidance on inherent safety. It may also be useful in terms of the life cycle approach.

6 ISO 15544. Petroleum and natural gas industries – Offshore production installations – Requirements and guidelines for emergency response. ~ This international standard describes the objectives, functional requirements, and guidelines for emergency response measures on offshore petroleum installations. These measures include emergency response strategy and plans, command and control and communication, competence of personnel, maintenance of emergency of emergency response equipment, and EER.

7 NORSOK Standard Z-013. 1998. Risk and emergency preparedness analysis. ~ This NORSOK standard establishes requirements for planning, execution and use of risk and emergency preparedness analysis.

8 CAPP Guide: Canadian east coast offshore petroleum industry: standard practice for the training and qualification of personnel. ~ This CAPP guide contains a concise description of the minimum qualifications and certificated safety training requirements of personnel working in Canada's east coast offshore petroleum industry.

### 9.1.3 Additional Guidance: Safety Planning and Management

Other guidance that might be useful:

ISO/CD 19906: 2007. Petroleum and natural gas industries – Arctic offshore structures. Chapter 18 Escape, evacuation and rescue; and Appendix A18 Escape, evacuation and rescue. ~ This is a draft of an ISO standard.

## 9.2 Regulations and Guidance: Escape, Muster and Personal Survival Equipment

### 9.2.1 Cited Regional Regulations: Escape, Muster and Personal Survival Equipment

[A] Offshore Petroleum Installations Regulations 36. deal with means of communication, which is relevant to Paragraph 2.1.

[B] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations 17.6 deal with alarms, which may be relevant to Paragraph 2.1.

[C] Offshore Petroleum Installations Regulations 12.(1), especially (e) and (i) specify emergency power requirements relevant to Paragraph 2.1.

[D] Offshore Petroleum Installations Regulations 34. deal with general alarms, which is relevant to Paragraph 2.1.

[E] Offshore Petroleum Installations Regulations 12.(2), especially (a) and (b) specify emergency lighting requirements relevant to Paragraph 2.2.

[F] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations Part VI (6.5) specify emergency lighting requirements relevant to Paragraph 2.2.

[G] Offshore Petroleum Installations Regulations 19.(a)-(g) deal with escape route arrangements, which are relevant to Paragraphs 2.2.

[H] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations Part XVI deal with first aid, which may be relevant to Paragraph 2.3.

[I] Offshore Petroleum Installations Regulations 19.(i)-(k) deal with the protective functions of escape routes and evacuation stations, which are relevant to Paragraph 2.4.

[J] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations 17.3 deal with fire protection, which may be relevant to Paragraph 2.4.

[K] Offshore Petroleum Installations Regulations 22.(1)(c)- (e) specify numbers of immersion suits and lifejackets, and 22.(1)(f)(ii), (iii) and (viii), and 22.(3) and 22.(4) deal with life buoys and transfer baskets, which are relevant to Paragraph 2.5.

[L] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations Part XII deal with personal safety equipment, clothes and devices that may be relevant to Paragraph 2.5.

[M] Offshore Petroleum Installations Regulations 14.(1)(f) and (3)(c) specify operational requirements related to winterization, which may be relevant to Paragraph 2.7.

[N] Offshore Petroleum Installations Regulations 63.(1)(k) deal with operating and maintenance requirements for life saving appliances, which are relevant to Paragraph 2.7.

[O] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations 17.7 deal with emergency power, which may be relevant to Paragraph 2.7.

[P] Offshore Petroleum Installations Regulations 63.(1)(j)(viii) specify drawing requirements related to escape routes and life saving appliances, which is relevant to Paragraph 2.8.

[Q] Offshore Petroleum Installations Regulations 22.(6) specify signage requirements related to life saving appliances, which is relevant to Paragraph 2.8.

### 9.2.2 Other Cited Guidance: Escape, Muster and Personal Survival Equipment

[9] ISO 17631 standard: Ships and marine technology – Shipboard plans for fire protection, lifesaving appliances and means of escape. ~ With reference to paragraph 2.1, the ISO 17631 international standard specifies graphical symbols and illustrations used on ships for matters such as life-saving appliances, means of escape, and fire protection.

[10] IMO Resolution A.952(23). Graphical symbols for shipboard fire control plans. ~ With reference to paragraph 2.1, this IMO resolution provides relevant detailed specifications for symbols that might be useful as a basis for a performance standard in the context of this Guide. This resolution also aims to harmonize symbols with the ISO 17631 standard cited above.

[11] IMO MSC/48(66). International life-saving appliance code (LSA Code). International Maritime Organization. ~ With reference to paragraph 2.1, the IMO's LSA Code (Chapter VII) provides relevant detailed specifications that might be useful as a basis for a performance standard in the context of this Guide.

[12] IMO MSC/Circ.1238 2007 (currently under review, possible amendments pending at time of publication of CAPP EER document). Interim guidelines for evacuation analyes for new and existing passenger ships. International Maritime Organization. ~ With reference to paragraph 2.2, a recent IMO interim guideline deals with the matter of escape planning in considerable detail and might be useful as a basis for a performance standard in the context of this Guide.

[13] IMO MSC/48(66). International life-saving appliance code (LSA Code). International Maritime Organization. ~ With reference to paragraph 2.5, the IMO's LSA Code (Chapters II and III) provides relevant detailed specifications that might be useful as a basis for a performance standard in the context of this Guide.

### 9.2.3 Additional Guidance: Escape, Muster and Personal Survival Equipment

Other guidance that might be useful:

ISO 13702: 1999(E), 14 Evacuation, escape, and rescue.

ISO 13702: 1999(E), B.12.2 Escape routes, B.12.3 Command structure, B.12.4 Mustering,

B.12.5 Communications during an emergency.

ISO 13702: 1999(E), B.12.7 Personal survival & escape equipment.

ISO 15544: 2000(E), 11 Escape, refuge, evacuation, and rescue.

ISO 15544: 2000(E), F.1 Escape, F.2 Refuge and muster areas.

HSE S1 1995/743, PFEER Regulations 11 Communication, 13 Mitigation of fire and explosion, 14 Muster area etc., 18 Suitability of personal protective equipment for use in an emergency, 20 Life-saving appliances.

## 9.3 Regulations and Guidance: Precautionary and Non-Marine Evacuation

### 9.3.1 Cited Regional Regulations: Precautionary and Non-Marine Evacuation

[A] Offshore Petroleum Installations Regulations 22.(1)(f) deal with rescue craft, transfer baskets, and other equipment relevant to rescue generally, including under Paragraph 3.1.

No additional citations or guidance notes are offered.

## 9.4 Regulations and Guidance: Marine Evacuation

### 9.4.1 Cited Regional Regulations: Marine Evacuation

[A] Offshore Petroleum Installations Regulations 22.(2)(a)- (g) specify technical requirements and arrangements of TEMPSC, which are relevant to Paragraph 4.1.

[B] Offshore Petroleum Installations Regulations 22.(2)(i) deal with launching devices for means of evacuation, which are relevant to Paragraph 4.1.

[C] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations Part IV deal with elevating devices, which may be relevant to launching means of evacuation in Paragraph 4.1.

[D] Offshore Petroleum Installations Regulations 22.(1)(a) and (b), and 22.(2)(h) specify the capacities and arrangements of means of evacuation, which are relevant to Paragraph 4.2.

[E] Offshore Petroleum Installations Regulations 22.(3) refer to launching in damaged conditions, which is relevant to Paragraph 4.2.

[F] Offshore Petroleum Installations Regulations 22.(2)(i) deal with protection of TEMPSC, which is relevant to Paragraph 4.2.

[G] Offshore Petroleum Installations Regulations 22.(2)(j) specify the performance requirements of a TEMPSC, which are relevant to Paragraph 4.2.

[H] Offshore Petroleum Installations Regulations 63.(1)(b)(i) refer to operating limits in terms of environmental conditions and associated plans for evacuation, which is relevant to Paragraph 4.3.

[I] Offshore Petroleum Installations Regulations 19.(h) deal with means to descend to the water, which are relevant to Paragraph 4.4.

[J] Offshore Petroleum Installations Regulations 12.(1), especially (a) and (g) specify emergency power requirements relevant to life saving systems and other safety systems, which may be relevant to Paragraph 4.7.

[K] Offshore Petroleum Installations Regulations 14.(1)(f) specify operational requirements related to winterization, which may be relevant to Paragraph 4.7.

[L] Offshore Petroleum Installations Regulations 22.(6) specify signage requirements related to life saving appliances, which may be relevant to Paragraphs 4.8.

### 9.4.2 Other Cited Guidance: Marine Evacuation

[14] IMO MSC/48(66). International life-saving appliance code (LSA Code). International Maritime Organization. ~ With reference to paragraph 4.1, the IMO's LSA Code (Chapters IV and VI) provides relevant detailed specifications that might be useful as a basis for a performance standard in the context of this Guide.

### 9.4.3 Additional Guidance: Marine Evacuation

Other guidance that might be useful:

ISO 15544: 2000(E), 11 Escape, refuge, evacuation, and rescue.

ISO 15544: 2000(E), F.3 Evacuation, rescue, and recovery.

ISO 13702:1999(E), 14 Evacuation, escape, and rescue.

ISO 13702:1999(E), B.12.6 Evacuation and escape to the sea.

ISO 13702:1999(E), C.5 Typical inspection and testing frequencies.

HSE S1 1995/743, PFEER Regulations 15 Arrangements for evacuation, and 16 Means of escape (individual, last resort means of evacuation in case arrangements for marine evacuation fail).

## 9.5 Regulations and Guidance: Rescue

### 9.5.1 Cited Regional Regulations: Rescue

[A] Offshore Petroleum Installations Regulations 22.(1)(f) deal with rescue craft, transfer baskets, and other equipment relevant to rescue generally, including under Paragraph 5.1.

[B] Offshore Petroleum Drilling Regulations 64 and Newfoundland Offshore Area Production and Conservation Regulations 51 deal broadly with contingency plans, which may be relevant to Paragraph 5.1.

[C] Offshore Area Petroleum Production and Conservation Regulations 55 and 56. deal with support craft and standby vessels, which is relevant to Paragraph 5.4.

[D] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations Part XVI deal with first aid, which may be relevant to Paragraph 5.4.

[E] Offshore / Petroleum Occupational Health and Safety Requirements / Regulations 17.15 deal with standby vessel capability requirements in an evacuation, which are relevant to Paragraph 5.6.

### 9.5.2 Other Cited Guidance: Rescue

[15] IMO MSC/48(66). International life-saving appliance code (LSA Code). International Maritime Organization. ~ With reference to paragraph 5.1, the IMO's LSA Code (Chapters V and VI) provides relevant detailed specifications that might be useful as a basis for a performance standard in the context of this Guide.

### 9.5.3 Additional Guidance: Rescue

Other guidance that might be useful:

ISO 13702:1999(E), 14 Evacuation, escape, and rescue.

ISO 13702:1999(E), B.12.8 Recovery and rescue.

ISO 15544: 2000(E), 11 Escape, refuge, evacuation, and rescue.

ISO 15544: 2000(E), F.3 Evacuation, rescue, and recovery.