

# The safety case in context: An overview of the safety case regime

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## Core concepts

- The primary aim of the Australian offshore petroleum and greenhouse gas storage safety case legislation is to reduce risks to the health and safety of the workforce on offshore facilities or in connected activities.
- The Occupational Health and Safety (OHS) law that applies to offshore petroleum facilities in Commonwealth waters includes Schedule 3 to the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* [OPGGs Act] and the *Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009* [OPGGs(S) Regulations].
- The OPGGS(S) Regulations require the operator of each offshore facility to prepare a safety case for submission to NOPSEMA. Activities at a facility must be conducted in accordance with a safety case that has been accepted by NOPSEMA.
- Safety cases need to make provision for the following matters in relation to health and safety of people at or near the facilities:
  - Identification of hazards and assessment of risks
  - Implementation of measures to eliminate the hazards or otherwise control the risks
  - A comprehensive and integrated system for management of the hazards and risks
  - Monitoring, audit, review, and continuous improvement.
- The OPGGS Act provides for, and the regulations specify, a general requirement that risks should be eliminated or reduced to a level that is as low as reasonably practicable (ALARP).
- The regulations provide for a goal setting, performance-based regime under which the operator:
  - identifies hazards that could lead to major accident events (MAEs)
  - identifies the technical and other control measures that are necessary to reduce risks to a level that is ALARP
  - evaluates their appropriateness for the facility and the activities conducted
  - decides how to implement and maintain these controls in practice.
- The chosen control measures facilitate risk reduction through the adoption of appropriate performance standards and the implementation of a safety management system which supports and maintains them. These matters are all described within the safety case for the facility, giving transparent evidence and reasoned, supported arguments that risks are reduced to a level that is ALARP.

- The safety case is a document prepared and submitted by the operator of the facility. However, the operator must ensure there has been effective consultation with, and participation by, members of the workforce in the development or revision of a safety case.
- The safety case must provide for workforce consultation and participation so the workforce can understand the risks and hazards to which they may be exposed on the facility. They must be knowledgeable and informed on the risk controls, the control effectiveness and their vulnerabilities, and the importance of monitoring risk control measure degradation.
- The operator owns the safety case. The regulator's role is one of assessing and deciding on the acceptance or rejection of the operator's safety case and subsequently inspecting / auditing the operator's continued compliance with the safety case in force and the associated legislation.

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## Abbreviations/acronyms

ALARP	As Low As Reasonably Practicable
HSR	Health and Safety Representative
MAE	Major Accident Event
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
OHS	Occupational Health and Safety
OPGGs	Offshore Petroleum and Greenhouse Gas Storage Act 2006
OPGGs(S)	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009
SMS	Safety Management System

## Key definitions for this guidance note

<b>Major Accident Event</b>	an event connected with a facility, including a natural event, having the potential to cause multiple fatalities of persons at or near the facility. [OPGGs(S) regulation 1.5]
<b>Members of the workforce</b>	includes members of the workforce who are: (a) identifiable before the safety case is developed; and (b) working, or likely to be working, on the relevant facility. [OPGGs(S) subregulation 2.11(3)]

## 1. Introduction

### 1.1. Intent and purpose of this guidance note

This document is part of a suite of documents that provide guidance on the preparation of safety cases for Australia's offshore facilities, as required under the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009 (the OPGGS(S) Regulations) and the relevant corresponding laws of each State and of the Northern Territory, where powers have been conferred.

This guidance note, *The safety case in context: An overview of the safety case regime*, is central to the suite of guidance notes and is designed for those new to the Australian offshore legislative regime or those who would like an overall understanding of the expectations of NOPSEMA regarding safety case preparation and implementation. It is intended to provide an overview of the main requirements, concepts, processes, roles and responsibilities, with links to the relevant legislative basis underpinning these requirements.



Figure 1: Safety case guidance note map

Figure 1 illustrates the scope of the NOPSEMA safety case guidance notes overall, and their interrelated nature. The guidance notes are available on the NOPSEMA website, along with guidance on other specific topics such as vessel facilities operating in a hydrocarbon environment and operational risk assessment as well as legislative requirements such as operator nomination, validation, and notifying and reporting accidents and dangerous occurrences.

The purpose of the guidance is to explain the objectives of the regulations and to identify the general issues that should be considered in the context of the occupational health and safety regime administered by NOPSEMA. It is not the intention of the guidance to provide detailed approaches or detailed regulatory assessment criteria.

Guidance notes indicate what is explicitly required by the regulations, discuss good practice and suggest possible approaches. An explicit regulatory requirement is indicated by the word **must**, while other cases are indicated by the words **should**, **may**, etc. NOPSEMA acknowledges that what is good practice and what approaches are valid and viable will vary according to the nature of different offshore facilities and their hazards.

This guidance note is not a substitute for detailed legal advice on the regulations or the Act under which the regulations have been made.

## 1.2. Summary of the legislative requirements

An operator of a vessel or structure which is a 'facility' in the context of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGs Act), including a facility which is a pipeline, is subject to obligations and duties described in Schedule 3 to the OPGGS Act and the associated regulations, including the requirement to have a safety case addressing the facility and its activities under the OPGGS(S) Regulations.

Schedule 3 to the OPGGS Act is comprised of five parts where parts 2 to 5 address, in general terms: the OHS duties-of-care for a range of defined parties, provisions for workplace arrangements, provisions for inspection (including enforcement) by NOPSEMA inspectors and a range of general provisions including the notification and reporting of accidents and dangerous occurrences, that support the objects reproduced below.

### OPGGS Act Schedule 3 - Objects

- Clause 1 The objects of this Schedule are, in relation to facilities located in Commonwealth waters:
- (a) to secure the health, safety and welfare of persons at or near those facilities; and
  - (b) to protect persons at or near those facilities from risks to health and safety arising out of activities being conducted at those facilities; and
  - (c) to ensure that expert advice is available on occupational health and safety matters in relation to those facilities; and
  - (d) to promote an occupational environment for members of the workforce at such facilities that is adapted to their needs relating to health and safety; and
  - (e) to foster a consultative relationship between all relevant persons concerning the health, safety and welfare of members of the workforce at those facilities.

Division 2 of Part 2 of OPGGS Act Schedule 3 contains Clause 17 Regulations relating to occupational health and safety, the first part of which provides for “regulations may make provision relating to any matter affecting, or likely to affect, the occupational health and safety of persons at a facility”.

The OPGGS(S) Regulations are comprised of five chapters. Chapter 2 addresses the nomination and registration of facility operators, safety cases, validation, notifying and reporting of accidents and dangerous occurrences and penalty provisions in support of the objects principally related to safety cases are reproduced below.

### OPGGS(S) Regulations - Objects

- Reg 1.4(1) An object of these Regulations is to ensure that facilities are designed, constructed, installed, operated, modified and decommissioned in Commonwealth waters only in accordance with safety cases that have been accepted by NOPSEMA
- (2) An object of these Regulations is to ensure that safety cases for facilities make provision for the following matters in relation to the health and safety of persons at or near the facilities:
    - (a) the identification of hazards, and assessment of risks;
    - (b) the implementation of measures to eliminate the hazards, or otherwise control the risks;
    - (c) a comprehensive and integrated system for management of the hazards and risks;
    - (d) monitoring, audit, review and continuous improvement.
  - (3) An object of these Regulations is to ensure that the risks to the health and safety of persons at facilities are reduced to a level that is as low as reasonably practicable.

## 2. Key considerations

### 2.1. Major accident events

Activities associated with offshore petroleum operations have the potential for major accident events (MAEs), the consequences of which may be significant in terms of loss of life.

The explosion and fire on the Piper Alpha Platform in the North Sea in July 1988 highlighted the potential catastrophic nature of such incidents in terms of loss of life. Such incidents are not common but other examples (such as Petrobas P36, Mumbai High, Montara and Macondo) show that operators need to take steps to prevent such events and plan for their possible occurrence as they can, in principle, happen to any organisation which operates a petroleum facility.

The relative rarity of events with catastrophic consequences may give rise to the situation where potential MAEs receive little attention as compared with day-to-day operational issues. The safety case regime is a regulatory initiative focused on addressing potential for MAEs while continuing to address occupational health and safety. The focus of the OPGGS(S) Regulations is similar to that under the corresponding regulations in force for onshore and offshore facilities in Europe, and for Australia's onshore Major Hazard Facilities.

It should be stressed that it is not intended that the safety case regime should diminish attention on occupational health and safety issues, which are of generally lower potential consequence but higher frequency. Rather, it is intended to ensure that an adequate level of effort is applied on both MAE prevention and occupational health and safety at offshore petroleum facilities.

Figure 3 (below) shows that the primary area of focus for the safety case is on MAEs.

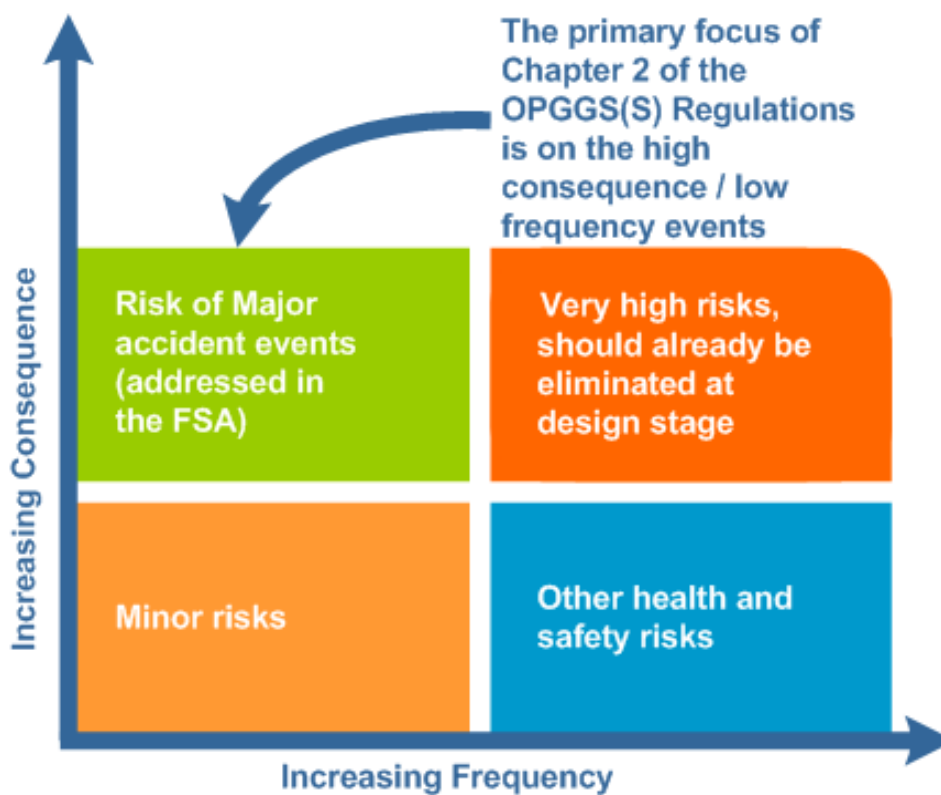


Figure 3: Focus of the safety case

## 2.2. As low as reasonably practicable

The OPGGS Act Schedule 3 and the associated OPGGS(S) Regulations are an example of a proactive, goal-setting regime, as opposed to a prescriptive rule-based system. In this regime, the general expectations for health and safety performance are set, but the detailed interpretation of the performance benchmarks and how to achieve them are the responsibility of the operator.

One of the objectives of the OPGGS(S) Regulations is to ensure that the risks to the health and safety of persons at facilities are reduced to a level that is as low as reasonably practicable [subregulation 1.4(3)].

In simple terms, to reduce risk to a level that is 'as low as is reasonably practicable' means to adopt available and suitable control measures until a point is reached when the incremental benefit of further risk

control measures is outweighed by other issues such as cost, for example, or degree of difficulty of implementing the measure.

Under this goal-setting regime, the responsibility is placed on those in industry to set out and justify their basis for managing the risks associated with working offshore. The effective implementation of this principle is dependent on the correct identification of all hazards with the potential to lead to an MAE and proper selection and application of the necessary control measures for each of them, including showing that any codes and standards used are appropriate and sufficient. Engineering assessment and judgement, together with risk-based methods of safety assessment, such as quantified risk analysis, can be used to provide reasoned arguments and evidence of the safety of installations and the robustness of safety-related decisions.

This type of legislative regime gives the operator of a facility the flexibility to devise health and safety solutions that reduce risks under conditions that best suit their facility and circumstances. The safety objectives of the OPGGS(S) Regulations can be achieved in many different ways; operators can find their own solutions and are encouraged to do so. However, it should be borne in mind that industry good/best practice will weigh heavily on what is considered practicable.

Elements of the operator's risk management are critically examined by NOPSEMA during a safety case assessment and these arrangements are verified during inspections at facilities.



*Further guidance is available in the NOPSEMA guidance note:*

**"ALARP"**



*Further guidance is available in the NOPSEMA guidance note:*

**"Hazard Identification"**



*Further guidance is available in the NOPSEMA guidance note:*

**"Risk assessment"**

### 2.3. Continuous improvement

While the safety case may place emphasis on reducing the risk to a level that is ALARP, it should not detract from the need for continual improvement. Reducing risks to a level that is ALARP and continual improvement are both key objectives of the regulations and relate both to what is done currently and to what is planned for the future.

If carried out properly, the process of developing the safety case will improve safety of offshore activities by ensuring a systematic review of the hazards, their associated risks and the control measures that are applied at the facility to either eliminate the hazards or otherwise reduce the risks. Progress is achieved by applying the process both during initial development of the safety case and subsequently in the course of continuous improvement.

Figure 4 (below) provides a schematic of how the level of risk continues to reduce beyond safety case development and acceptance.



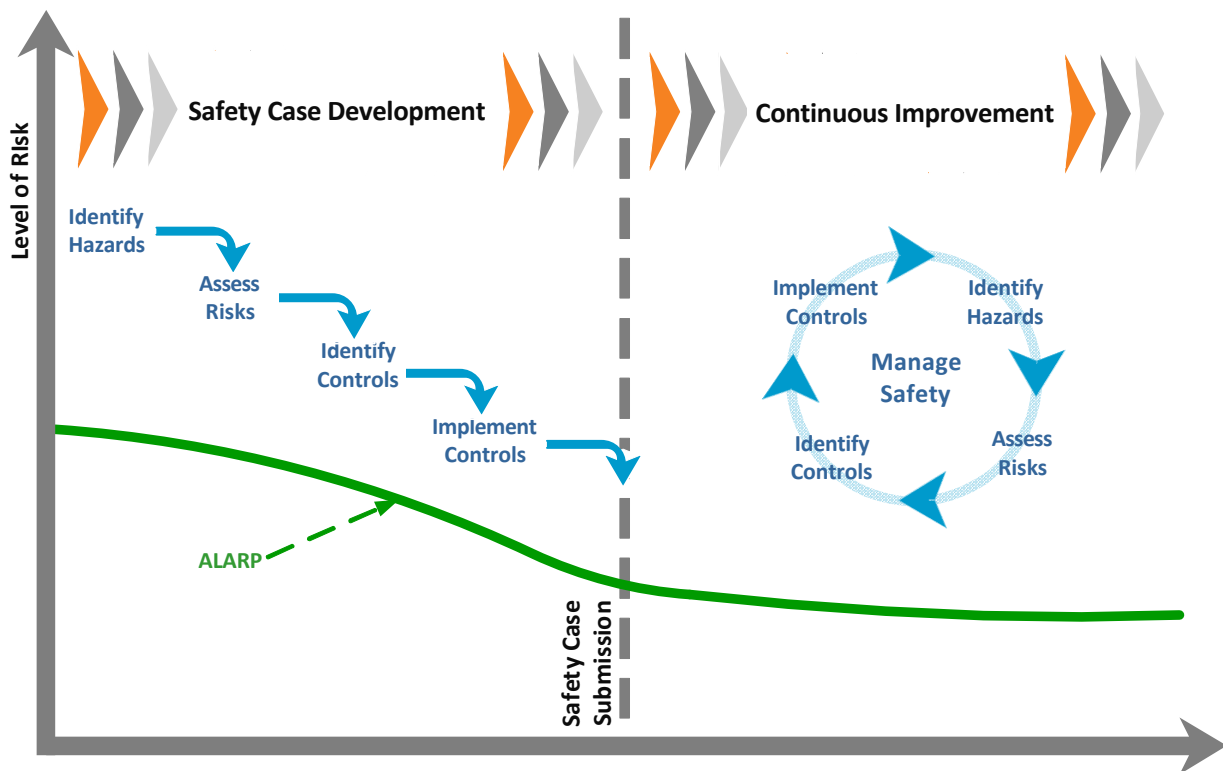


Figure 4: Continuous improvement in safety through implementation of the safety case

## 2.4. The risk management process applied in the safety case

The Australian / International Standard on Risk Management AS ISO 31000 provides a generic framework for establishing the context for risk management as well as identifying, analysing, evaluating, treating, monitoring and communicating risk. The International Organisation for Standardisation has also published guidelines on tools and techniques for hazard identification and risk assessment for managing major accident hazards on offshore oil and gas production installations (ISO 17776). The requirements under the OPGGS(S) Regulations reflect the current thinking on risk management and hence call for application of the key elements of risk management. These are outlined in subregulation 1.4(2) of the Regulation Objects as reproduced below.

### OPGGS(S) Regulations - Objects

- Reg 1.4(2) An object of these Regulations is to ensure that safety cases for facilities make provision for the following matters in relation to the health and safety of persons at or near the facilities:
- (a) the identification of hazards, and assessment of risks;
  - (b) the implementation of measures to eliminate the hazards, or otherwise control the risks;
  - (c) a comprehensive and integrated system for management of the hazards and risks;
  - (d) monitoring, audit, review and continuous improvement.

NOPSEMA has developed guidance notes covering each step of the risk management process, including a guidance note on safety studies conducted in support of the formal safety assessment. The following bullet points outline the key requirements for risk management under the OPGGS(S) Regulations:

- Supporting the entire process is the identification of hazards with the potential to lead to MAEs. Operators must ensure the formal safety assessment identifies all hazards that could cause a MAE at the facility [OPGGS(S) subregulation 2.5(2)(a)]. Specific scenarios need to be documented. Isolatable sections, their inventory and the potential for escalation beyond these sections through interconnecting failures must be explored. As with all risk management processes, risks can only be controlled if the underlying hazards are first identified, and hazard identification therefore is critical to the entire process
- Operators must conduct a formal safety assessment that is a detailed and systematic assessment of the risks associated with each of those hazards, including the likelihood and consequences of each potential MAE in order to provide a detailed understanding of the events that may lead to MAEs [OPGGS(S) subregulation 2.5(2)(b)]
- The safety management system (SMS) must provide for continual identification of hazards, systematic assessment of risks and a reduction of risks to a level that is as low as reasonably practicable. The safety management system will need to be structured to constantly monitor and challenge the assumptions on which the safety case and the ALARP argument are constructed [OPGGS(S) subregulations 2.5(3)(d) & 2.5(3)(e)]. The nature, number and scale of the controls should be such that they are robust, not easily defeated and the level of control is effective for the risks they are intended to manage, prevent or mitigate. A hierarchy of controls should be established, with those that eliminate or prevent MAEs given priority over those that reduce or mitigate the outcomes. Note that control measures can be both ‘technical’ control measures and ‘procedural’ control measures
- Operators must ensure the SMS provides for all occupational health and safety hazards, not just MAEs. The SMS should describe the policy and procedures in place to manage all occupational health and safety risks at the facility. Where prescriptive requirements exist in relation to the management of health and safety such as fatigue, drugs or intoxicants, hazardous substances and noise under Chapter 3 of the OPGGS(S) Regulations, these should be addressed in the SMS. Note that the SMS section of the safety case is to include a description of the SMS and its systems rather than the actual SMS itself
- Operators must demonstrate through the safety case that there are effective means of implementing integrated and comprehensive systems for the management of safety at offshore facilities [OPGGS(S) regulation 2.6]. The safety management system needs to provide the necessary set of procedural control measures, together with procedures for ensuring ongoing effective performance of engineering controls and an overall health and safety management framework for ensuring these procedures are functional, tested, maintained and continually improved [OPGGS(S) subregulations 2.5(3)(b), 2.5(3)(c), 2.5(3)(d), 2.5(3)(e), 2.5(3)(f), 2.5(3)(h), 2.5(3)(i) and 2.6]
- Operators must ensure the safety case describes an emergency response plan for the facility and provides for implementation of that plan [OPGGS(S) regulation 2.20].

Under Schedule 3 to the OPGGS Act, the operator of an offshore facility needs to ensure risks to the health and safety of people at or near the facility are reduced to a level that is as low as reasonably practicable. The OPGGS(S) Regulations require the operator to provide evidence of this achievement using the safety case. Fulfilling this requirement requires that:

- control measures (and associated performance standards) adopted in relation to hazards and MAEs are suitable, available, functional, reliable and with sufficient independent layers of control to eliminate or reduce risks to a level that is as low as reasonably practicable
- the SMS is a comprehensive and integrated management system for ensuring the adequacy and sustainability of control measures adopted in relation to hazards, including hazards could lead to MAEs.

Furthermore, the safety case must provide adequately for effective consultation with, and effective participation of, members of the workforce so they are able to arrive at informed opinions about the risks and hazards to which they may be exposed on the facility [OPGG(S) regulation 2.11]. This requires that suitable consultation and communication processes be established in relation to hazards which could lead to an MAE, and other occupational health and safety hazards, and their associated control measures.

Once a safety case for a facility is accepted by NOPSEMA, the commitments made by the operator in the safety case for reducing risk at the facility must be complied with. The OPGGS(S) Regulations require that work on a facility must not be contrary to the safety case in force [OPGG(S) 2.45] and that people on a facility must comply with a safety requirement of the safety case that applies to them [OPGG(S) regulation 2.48].

## 2.5. Contents of a safety case: Practical considerations

The safety case must include a description of the facility, a detailed description of the formal safety assessment and a detailed description of the safety management system for a facility. The OPGGS(S) Regulations specify those elements that are required to be described in a safety case. In practice, there are a number of principles that make up an effective and well-crafted safety case:

- The level of detail should be proportionate to the extent of potential risks and the complexity of the installation/process/system involved
- The safety case has to have a coherent, integrated overall structure: there must be a logical flow to the process to create strong links between the causes and consequences of major accident events, their associated risks, the selection of strategies and measures to manage the risks, and the performance required from specific measures to reduce risk levels to ALARP
- The regulations are very clear in that operators are to supply *descriptions* of elements (for example, emergency plans) in the safety case, as opposed to copies of the documents themselves. The description should distil the points of value, the best features of the element, as well as any potential deficiencies and how these may be overcome. It should outline the reasoning or what the background thinking was in the development of the element in question and explain how it is connected to other elements.

Overall, a well-structured, coherent safety case will facilitate the operator's ability to demonstrate to others that they have a clear understanding of the factors that influence risk and the controls that are critical to managing risk on their facility.

Figure 5 shows the main elements of a safety case and their interrelationship as they are set out in the OPGGS(S) regulations. It is a visual representation of what the regulations require to be included in each part of the safety case.



*Further guidance is available in the NOPSEMA guidance note:*

***“Safety case content and level of detail”***

Key elements in Figure 5 are as follows:

- The main elements are facility description, formal safety assessment description and the safety management system description. The linkages between these are critical so that the risks and control measures identified by the formal safety assessment are described within the facility description and the SMS description as appropriate.
- Key performance indicators are identified, and performance standards are set for control measures including those elements of the SMS that are required to ensure satisfactory performance of the technical and procedural control measures.
- The identification of relevant performance indicators and the development of performance standards, and a safety management system based on the formal safety assessment, enables the operator to monitor their performance.
- Periodic auditing confirms monitoring is being carried out and that any non-compliance is rectified. Management review ensures controls and performance standards are improved when practicable.

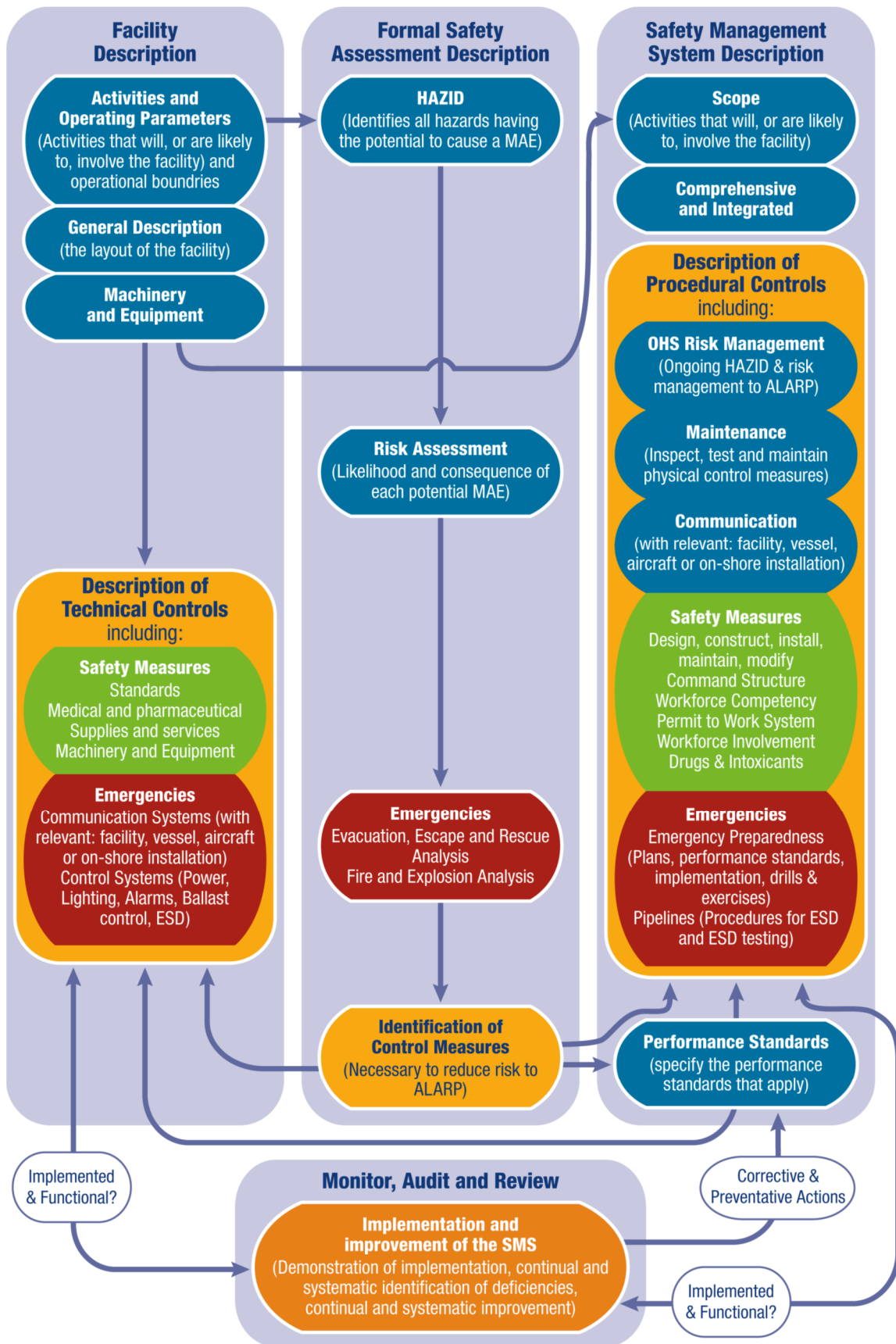


Figure 5: A graphical representation of the OPGGS(S) Regulations

The formal safety assessment process is driven by the requirements of the safety case regime to understand the risks associated with MAEs and to evaluate the adequacy of control measures for those risks in a way which is robust and transparent. The requirement to understand the risks extends to the workforce. The workforce should be able to identify which are the major contributing factors to the risk and which are the critical activities or measures which can significantly influence risk levels. This is best achieved through appropriate participation in the formal safety assessment process.

Having understood the risks and identified the critical control measures, the operator should be able to define the required performance standards (e.g. functionality, availability, survivability, reliability, etc.) of each control measure. These performance standards should be embedded into routine inspection, maintenance and testing tasks and the procedural-type controls into operations tasks. Again, the workforce needs to be involved in the process of determining performance standards in order to be knowledgeable and informed on the risk controls, the control effectiveness and their vulnerabilities, and the importance of monitoring control degradation. The performance standards, if correctly set, maintained and monitored, are the basis for satisfying the overall reduction of risk to a level that is ALARP as required within both Schedule 3 to the OPGGS Act and the OPGGS(S) Regulations.

As part of the identification of control measures that reduce risks to a level that is ALARP, the operator will need to make a convincing case that the identified control measures and their performance standards are applicable, relevant and contemporary for the facility in question, or that it is not practicable to rectify shortfalls. The safety case process often results in operators discovering gaps in their arrangements which then lead to the subsequent development of improvement plans. Implementation of any identified improvement plans is essential if the case presented in the safety case is based on these improvements and the safety case is to achieve its objectives.



*Further guidance is available in the NOPSEMA guidance note:*

***“Control measures and Performance Standards”***

In ongoing operations, the SMS will need to function in such a way that maintenance of performance standards for risk controls is safeguarded. The detailed description of the SMS in the safety case will need to describe the key means by which the operator implements, monitors and reviews all of the defined performance standards (engineering, management, etc.)

The elements of an SMS should reflect the nature of the business and its risks. An SMS must also contain elements that address both occupational health and safety matters as well as major accident events.

There is no universal ideal model of an SMS and it is critical that the operator implements a system that is appropriate to their particular facility and the activities conducted at the facility.



*Further guidance is available in the NOPSEMA guidance note:*

***“Safety Management Systems”***

## 2.6. Development and implementation of a safety case

Figure 6 below addresses the scope of safety case development, implementation and revision, and puts operator nomination and validation into context in the timeline.

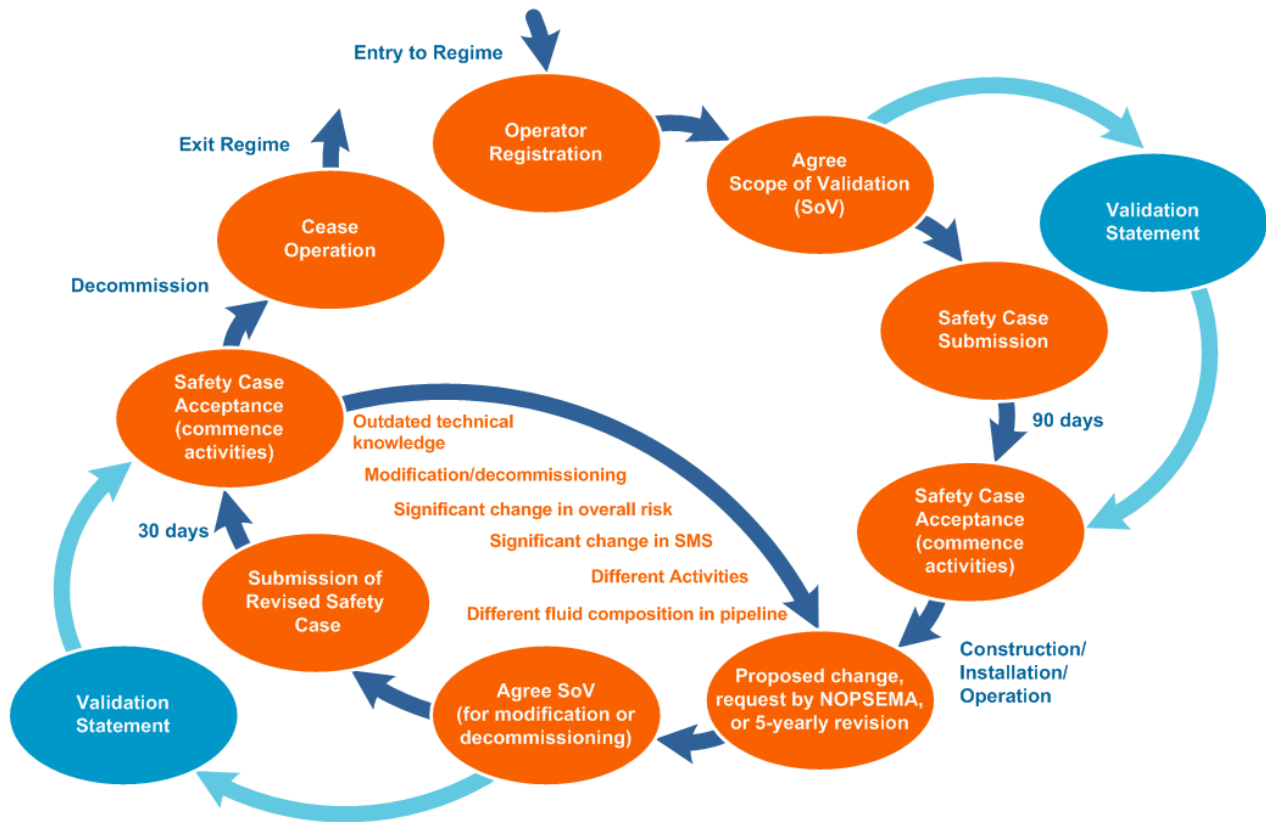


Figure 6: Safety case lifecycle

Responsibilities for the overall phases of development and implementation of a safety case are as follows:

- The operator has responsibility to develop the safety case for the facility with the involvement of the workforce. In some circumstances, the knowledge and expertise of specialist consultants may enhance the safety case process. If consultants are used, the operator should ensure they fully understand this input and 'drive' the process
- The operator must submit the safety case to NOPSEMA for assessment
- NOPSEMA assesses the safety case and decides to either accept or reject the safety case, based on requirements specified in the OPGGS(S) Regulations and the validation requirements, where appropriate
- Once the safety case has been accepted, the operator has a responsibility to operate the facility in accordance with its safety case and to review and revise the safety case as necessary, and in accordance with the safety case revision triggers described within the OPGGS(S) Regulations.



Further guidance is available in the NOPSEMA guidance note:

***"Safety case lifecycle management"***

## 2.7. The safety case and validation

It should be recognised that in accordance with OPGGS(S) regulation 2.40, validation may be requested by NOPSEMA for a proposed facility or for a proposed significant change to an existing facility.

The validation is a statement in writing by an independent 'validator' which must establish, to the level of assurance reasonably required by NOPSEMA, that the facility incorporates measures that will protect the health and safety of people at the facility. The safety case cannot be submitted before the scope of validation has been agreed by the operator and NOPSEMA.

The validation process is linked to the safety case decision process. It applies to plant and equipment including control systems; it does not apply to processes or procedures. The focus should be on plant and equipment, a failure of which would pose a high risk to personnel (e.g. result in an MAE). The stage in the life of the facility and the activities to be conducted will determine which equipment must be validated, however in circumstances where safety-critical equipment will be installed, but not used, during the relevant stage in the life of the facility, that safety-critical equipment must be validated prior to construction or installation on the facility.



*Further guidance is available in the NOPSEMA guideline:*

***"Validation"***



*Further guidance is available in the NOPSEMA guidance note:*

***"Safety case lifecycle management"***

## 3. Roles

### 3.1. Role of the operator

Under the OPGGS(S) Regulations, a facility must have a registered operator. The registered operator is the person who has day-to-day management and control of the facility.



*Further guidance is available in the NOPSEMA guideline:*

***"Criteria for Registration and Deregistration"***

The legislative framework for offshore petroleum occupational health and safety includes a general duties regime which is regulated by NOPSEMA using the safety case as an approval tool. Commitments made by the operator in the safety case for reducing risk at the facility must be complied with. The operator has a general duty to ensure the facility is safe and that all activities are carried out safely, and to agree on an occupational health and safety policy with the workforce.

The operator has the key role in the safety case regime and therefore has several fundamental responsibilities under the regime. The safety case for a facility must reflect how the operator has addressed these responsibilities. The OPGGS(S) Regulations specify how these requirements are to be addressed in the facility description, formal safety assessment description and safety management system description contained within the safety case.

The general and specific duties of the operator under Schedule 3 to the OPGGS Act are reproduced below.



### OPGGS Act Schedule 3 - Duties of operator – General duties

- Clause 9(1) The operator of a facility must take all reasonably practicable steps to ensure that:
- (a) the facility is safe and without risk to the health of any person at or near the facility; and
  - (b) all work and other activities carried out on the facility are carried out in a manner that is safe and without risk to the health of any person at or near the facility.

### OPGGS Act Schedule 3 - Duties of operator - Specific

- Clause 9(2) The operator of a facility is taken to be subject, under subclause (1), to each of the following requirements:
- (a) to take all reasonably practicable steps to provide and maintain a physical environment at the facility that is safe and without risk to health;
  - (b) to take all reasonably practicable steps to provide and maintain adequate facilities for the welfare of all members of the workforce at the facility;
  - (c) to take all reasonably practicable steps to ensure that any plant, equipment, materials and substances at the facility are safe and without risk to health;
  - (d) to take all reasonably practicable steps to implement and maintain systems of work at the facility that are safe and without risk to health;
  - (e) to take all reasonably practicable steps to implement and maintain appropriate procedures and equipment for the control of, and response to, emergencies at the facility.
  - (f) to take all reasonably practicable steps to provide all members of the workforce, in appropriate languages, with the information, instruction, training and supervision necessary for them to carry out their activities in a manner that does not adversely affect the health and safety of persons at the facility;
  - (g) to take all reasonably practicable steps to monitor the health and safety of all members of the workforce and keep records of that monitoring;
  - (h) to take all reasonably practicable steps to provide appropriate medical and first aid services at the facility;
  - (i) to take all reasonably practicable steps to develop, in consultation with:
    - (i) members of the workforce; and
    - (ii) if a member of the workforce at the facility has requested a workforce representative in relation to the member to be involved in those consultations—that workforce representative;
 a policy, relating to occupational health and safety, that:
    - (iii) will enable the operator and the members of the workforce to cooperate effectively in promoting and developing measures to ensure the occupational health and safety of persons at the facility; and
    - (iv) will provide adequate mechanisms for reviewing the effectiveness of the measures; and
    - (v) provides for the making of an agreement that complies with subclauses (5) and (6).
- Clause 9(3) Subclause (2) does not limit subclause (1).

Under the safety case regime the operator has essentially to address the following:

Issue to address –	How to address it –
What could go wrong?	Identify all MAEs which could occur at the facility
What could cause it to go wrong?	Identify all hazards which could cause or contribute to a MAE
What would be the consequences and how likely is it to happen? What is the nature of the risk?	Conduct a comprehensive and systematic formal safety assessment
What can you do to stop it going wrong? How appropriate are the controls to manage those risks?	Develop and implement effective control measures and performance standards
How can you ensure risks from newly introduced hazards and from changes to existing hazards will continue to be identified and controlled into the future?	Establish and implement a comprehensive and integrated safety management system to fully support all aspects of all control measures. The SMS will need to: <ul style="list-style-type: none"> <li>• monitor the validity of assumptions made in the hazard identification and risk assessment process.</li> <li>• continually monitor control effectiveness and the performance of the control measures</li> <li>• ensure that the control measures are not compromised.</li> </ul>
What do you do if it does go wrong?	Prepare an emergency plan addressing consequences.
Will they work properly when you need them to?	Review and demonstrate the effectiveness of control measures and performance standards
Does everyone understand their role in stopping it going wrong?	Consult and involve the workforce in the process
Can you take any additional practicable measures to further reduce the risk?	Identify further risk reduction options. Justify implementation (or not) of additional measures.
Can you demonstrate you are a safe operator?	Prepare and submit a safety case to the Safety Authority. Provide reasoned and supported arguments that risks are reduced to a level that is ALARP.

The operator's duties under Schedule 3 to the OPGGS Act include agreement on an occupational health and safety policy that will enable the operator and the workforce to develop measures to ensure health and safety at the facility. The policy includes providing adequate mechanisms for reviewing the effectiveness of measures to ensure health and safety. The policy must be available to the workforce and as the safety case is the primary safety document for the facility, operators may wish to include this policy within the safety case. However, there is no regulatory requirement to do so.



*Further guidance is available in the NOPSEMA guidance note:  
**"Workplace Arrangements"***

### 3.2. Role of the workforce

#### OPGGS(S) Regulations - Involvement of members of the workforce

- Reg 2.11(1) The operator of a facility must demonstrate to NOPSEMA, to the reasonable satisfaction of NOPSEMA, that:
- (a) in the development or revision of the safety case for the facility, there has been effective consultation with, and participation of, members of the workforce; and
  - (b) the safety case provides adequately for effective consultation with, and the effective participation of, the members of the workforce, so that they are able to arrive at informed opinions about the risks and hazards to which they may be exposed on the facility.
- (2) A demonstration for paragraph (1)(a) must be supported by adequate documentation.
- (3) In subregulation (1):
- members of the workforce* includes members of the workforce who are:
- (a) identifiable before the safety case is developed; and
  - (b) working, or likely to be working, on the relevant facility.

*Note Part 3 of Schedule 3 to the Act sets out the broad consultative provisions that apply, including provisions for the establishment of designated workgroups, the election of health and safety representatives and the establishment of OHS committees..*

*The arrangements under these consultative provisions should be used for consultation with members of the workforce about the development, preparation and revision of the safety case.*

Access to and understanding of the safety case by the workforce or its representative is important as this is the key health and safety document for a facility.

The OPGGS(S) Regulations recognise that the safety case and the safety management system need to correctly represent the actual facility, its hazards and the reality of how operations are, or will be, carried out. For this to be the case, it is necessary to take account of the knowledge and views of the workforce with regard to the facility, the nature of its hazards, the ways in which MAE incidents may arise, and the types of controls that may be effective. In addition, the workforce needs to be provided with information (such as the operating, safety and emergency procedures in place), so they understand what actions to take to support safe operations and minimise the effect on personnel health and safety in the event of an emergency.

Responsibility for safety improvement and preparation of the safety case will always remain with the operator, but involvement of employees in the specified activities supports key objectives:

- An understanding is developed of the hazards and risks, and informed decisions are made concerning the control measures and safety management systems implemented to control these risks
- Members of the workforce are fully informed about the risks to which they may be exposed, the control measures and safety management system which provide the means of eliminating or reducing those risks, and the safety case which presents the case for adequacy of the SMS and control measures.

Meeting the above objectives can expect to result in the following:

- Members of the workforce who have an active role in implementing the controls and safety management systems are also better aware of their own responsibilities
- A positive safety culture is promoted and/or encouraged, with a high level of workforce involvement in MAE identification and control, and awareness of other safety issues.

Schedule 3 to the OPGGS Act sets out the broad consultative provisions that apply, including provisions for the establishment of designated workgroups; health and safety representatives and their powers; and establishment of occupational health and safety committees. Where appropriate, the arrangements under these consultative provisions should be used for effective consultation with, and participation of, members of the workforce in the development, preparation and revision of the safety case as per OPGGS(S) subregulation 2.11(1)(b).

The consultation process would typically need to cover the following activities:

- Preparing or revising the safety case
- Identifying the hazards, including those that could lead to MAEs
- Conducting and/or reviewing safety assessments
- Identifying risk control measures and performance indicators for these measures, as well as setting performance standards
- Establishing and/or implementing the Safety Management System
- Developing the emergency response plan under the umbrella of the broader-based plan discussed under Emergency Response Preparedness.

The processes by which members of the workforce are consulted and participate in preparation or revision of the safety case do not need to be included in the safety case. However, as it is the key health and safety document for the facility, it may be the best place to document the demonstration required under OPGGS(S) Regulation 2.11(2). Additionally, it should be noted that the workforce involvement needs to be demonstrated to NOPSEMA's satisfaction.

If there are health and safety concerns at a facility, people on the facility should raise these concerns with their supervisors or health and safety representatives (HSRs) as appropriate. To clarify the health and safety requirements that may apply to a specific situation at a facility, reference can be made to the occupational health and safety laws and to the safety case for the facility, as all work at a facility must comply with the safety case. If in doubt, advice may be sought from a NOPSEMA inspector.



Further guidance is available in the NOPSEMA guidance note:

***"Involving the Workforce"***

### 3.3. Role of NOPSEMA

The role of NOPSEMA is to administer the occupational health and safety laws, including the OPGGS Act and associated regulations. NOPSEMA inspectors regularly conduct inspection and investigation activities to ensure that the operator's responsibilities are discharged, and provide independent assurance that health and safety risks are properly controlled. With respect to the safety case, NOPSEMA's role is to assess the documentation submitted by the operator and decide to either accept or reject the safety case based on:

- whether the safety case is appropriate to the facility and activities conducted at that facility
- whether the descriptions provided comply with the content requirements specified in the OPGGS(S) Regulations.

NOPSEMA inspectors have certain statutory powers to undertake inspections. These are used to verify the safety case implementation at the facility and that the operator is operating the facility in accordance with the accepted safety case.

NOPSEMA has a role as the regulator to oversee compliance with occupational health and safety regulations under Schedule 3 to the OPGGS Act, including the OPGGS(S) Regulations.

NOPSEMA also has a role to promote a legislative framework which encourages continuous improvement in the management of health and safety in the offshore petroleum industry.

### 3.4. Role of other parties

The offshore industry crosses many regulatory boundaries such as those for marine operations, aviation and onshore construction. The industry approach should be to endeavour to move towards an optimum risk solution for the total life cycle of the operation or installation, irrespective of the regulatory boundaries.

Other regulatory bodies may take some involvement in the facility emergency plans. The facility safety case must describe a response plan designed to address possible emergencies at the facility and this emergency plan must specify the performance standards that it applies. In this respect, the emergency plans should clearly take account of the knowledge of the emergency services and also the specific capabilities and resources that the emergency services possess in the area of the facility.

ISO 15544 "Petroleum and natural gas industries — Offshore production installations — Requirements and guidelines for emergency response" provides further guidance on emergency response for offshore production installations.



*Further guidance is available in the guidance note:*

***"Emergency planning"***

In the event of parallel operations involving more than one offshore facility simultaneously, the respective facility operators will operate under their own safety cases. Any joint operations will require the respective operators' safety cases to describe the limits of responsibility for joint matters with the potential to affect emergency arrangements or the health and safety of people involved in the activities.

Work on a facility must not be contrary to the safety case in accordance with OPGGS(S) regulation 2.45. This regulation applies to the safety case in force for the relevant stage in the life of the facility. In many instances, the operator may have arrangements with third party companies. For instance, there may be arrangements in place with contractors, catering services, labour hire agencies, etc. These arrangements must be covered in the operator's safety management system, and the onus is on the operator to ensure third party contractors fulfil the requirements of the operator's own health and safety policy and procedures as described in the SMS.

OPGGS(S) Regulation 2.45 stipulates that people must not engage in conduct (constructing, installing, operating, modifying, carrying out maintenance, decommissioning, or doing other work at a facility) contrary to the safety case in force.

In relation to occupational health and safety of the workforce at or near the facility, the requirements of OPGGS(S) regulation 2.45 can be linked to requirements under Schedule 3 of the OPGGS Act with respect to duties of:

- the operator (Clause 9)
- persons in control of parts of a facility or particular work (Clause 10)
- employers (Clause 11)
- manufacturers in relation to plant and substances (Clause 12)
- suppliers of facilities, plant and substances (Clause 13)
- petroleum titleholders in relation to wells (Clause 13A)
- greenhouse gas titleholders in relation to wells (Clause 13B)
- persons erecting facilities or installing plant (Clause 14)
- persons in relation to occupational health and safety (Clause 15).

#### **4. Critical success factors for safety case**

NOPSEMA will expect safety cases to address at least the following specific factors:

- Identification of the hazards at the facility which could cause a MAE and analysis of the associated risks, including the consequence and likelihood of identified MAEs.
- The basis for safe design and construction of the facility including, in particular, any engineered control measures for MAEs. For offshore production facilities, this may include consideration of relevant standards such as:
  - ISO 10418 Petroleum and natural gas industries — Offshore production installations — Process safety systems
  - ISO 13702 Petroleum and natural gas industries — Control and mitigation of fires and explosions on offshore production installations — Requirements and guidelines.
- The basis for operations and maintenance of the facility including, in particular, those parts of the safety management system that are control measures or support control measures
- The processes by which the workforce is consulted and participates in preparation or revision of the safety case. Note: this aspect does not need to be included in the safety case but it does need to be demonstrated to NOPSEMA's satisfaction
- The processes by which the safety case, and the procedures and assessments that it describes, are maintained current in response to changes in facility design and operation.

The manner in which all the above aspects are integrated into a comprehensive safety management system for ongoing identification of hazards and management of risks at the facility.

## 5. References and acknowledgements

### 5.1. Legislative references

- *Offshore Petroleum and Greenhouse Gas Storage Act 2006*
- Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009

Note: All regulatory references contained within this Guidance Note are from the Commonwealth Offshore Petroleum and Greenhouse Gas Storage Act 2006 and the associated Commonwealth regulations. For facilities located in designated coastal waters, please refer to the relevant State or Northern Territory legislation.

### 5.2. International Codes & Standards

- AS ISO 31000 Risk Management
- ISO 10418 Petroleum and natural gas industries — Offshore production installations — Process safety systems
- ISO 13702 Petroleum and natural gas industries — Control and mitigation of fires and explosions on offshore production installations — Requirements and guidelines
- ISO 15544 Petroleum and natural gas industries — Offshore production installations — Requirements and guidelines for emergency response
- ISO 17776 Petroleum and natural gas industries — Offshore production installations — Major accident hazard management during the design of new installations

### 5.3. NOPSEMA Guidance Documents

- N-04300-GN0087 - Safety Case Lifecycle Management
- N-04300-GN0106 - Safety Case Content and Level of Detail
- N-04300-GN0107 - Hazard Identification
- N-04300-GN0165 - Risk Assessment
- N-04300-GN0166 - ALARP
- N-04300-GN0271 - Control Measures and Performance Standards
- N-04300-GN1051 - Supporting Safety Studies
- N-04300-GN1052 - Safety Management Systems
- N-04300-GN1053 - Emergency Planning
- N-04300-GN1054 - Involving the Workforce
- N-04300-GN1733 - Vessel facilities subject to external hydrocarbon hazards
- N-04300-GN1818 - Operational Risk Assessment
- N-01000-GN0007 - Criteria for Registration and Deregistration

- N-04200-GL0063 – Validation
- N-09000-GN1783 - Workplace Arrangements