NOGEPA
NEDERLANDSE OLIE EN GAS EXPLORATIE EN PRODUCTIE ASSOCIATIE

INDUSTRY STANDARD NO. 83

RIGG
(Report on Major Hazards for production installations)

19 October 2023

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2	28-06-2023	Reviewed with HSECOM and their delegates in relation to the SodM submissions of the 5 yearly RiGG revision.	M. de Vos	HSECOM, respectively Chairs of Committee Connect	

This document will be controlled in accordance with the NOGEPA Industry Standard No. 80 on Standards and Document Control.

Abbreviations

ENVCOM	Environmental Committee of NOGEPA
EXCOM	Executive Committee of NOGEPA
HSCOM	Health and Safety Committee of NOGEPA
LEGCOM	Legal Committee of NOGEPA
NOGEPA	Currently trading under the name Element NL
OPCOM	Operations Committee of NOGEPA
RIGG RoMH	Rapport Inzake Grote Gevaren Report on Major Hazards
CMAPP	Corporate Major Accident Prevention Policy
SEMS	Safety and Environmental Management System
MAH	Major Accident Hazard
MBW	Mijnbouwwet
MBB	Mijnbouwbesluit
MBR	Mijnbouwregeling
MEAC	Ministerie van Economische Zaken en Klimaat (Ministry of Economic Affairs and Climate Policy)
RI&E	Risico Inventarisatie & Evaluatie (health risk assessment)
MER	Milieu Effect Rapport
OSD	Directive 2013//30/EU on the safety of offshore oil and gas operations
ALARP	As Low As Reasonably Praticable; for an explanation see paragraph 4.2.4

Definitions

Standard	A NOGEPA Industry Standard as approved in accordance with Standard 80.
Operator	The company or party that operates the asset.
Competent Authority	Any person or organization that has the legally delegated or invested authority, capacity, or power to perform a designated function.

Legal Requirements

OSD	Articles 11.1.e, 12, Annex 1.2
MBW	Articles 45a to 45q MBW
MBB	Articles 39 and 60 MBB

Related Standards

Standard 31	Emergency Response Plans
Standard 42	Well Examination
Standard 48	Independent Verification
Standard 90	Asset Integrity

Important Nomenclature used in this Standard

In the context of this Standard and when so used to describe a method or practice:	
'shall'	means that such method or practice reflects a mandatory provision of law (in Dutch: *dwingend recht*). Such method or practice is mandatory for those who are the addressees of such provision (mostly the operators). A Standard can describe or quote, but not amend, mandatory provisions. When an operator in exceptional cases for technical, operational or HSE reasons cannot comply, exceptions shall be documented and reported, and risks mitigated. Please note that this doesn't release the operator form the obligation to comply with the law. *
'should'	means that such method or practice reflects a Good Operating Practice. An operator is generally expected to apply such method or practice, but a specific situation may require a specific alternative. In other words: the operator complies or explains, and documents the explanation. *
'could'	means that such method or practice is of an advisory nature or mentioned by way of example. An operator is not obliged to comply and is not obliged to explain if he does not comply.
* Please refer to paragraph 2.3 of Standard 80 (Standards and Document Control), for further explanation on an exception of a 'shall' provision, or on a comply-or-explain of a 'should' provision.	

1. Executive Summary

The NOGEPA Industry Standards aim to provide guidance and clarity on a range of topics relevant for onshore and offshore oil and gas operations in the Netherlands and on the Netherlands continental shelf. The Standards cover a wide variety of topics, many of them related to health, safety and environment, and to operational matters.

This Standard aims to elaborate, specify and clarify the requirements and NOGEPA's interpretation of the Offshore Safety Directive and underlying national implementing regulations (Mijnbouwwet, -besluit en -regeling, and ARBO-wet, -besluit en -regeling). As such it describes the requirements for a VGM-RIGG (type, overall structure and elements) to demonstrate regulatory compliance.

The goal of this Standard is to achieve compliance with the Offshore Safety Directive and underlying national implementing regulations for RIGG/RoMH documents. It has a two tier setup, the first is a goal setting document describing the regulatory requirements for a RoMH and the second tier document is a template that could be used to draw up a compliant RIGG document. Furthermore it describes the use of NOGEPA standard methods in the formulation of the RIGG/RoMH documents, e.g., Bow-ties and Risk Register.

This Standard ties in to the Independent Verification, described in NOGEPA Standard 48 and to the Integrity Standard described in NOGEPA Standard 90 as set out by the Offshore Safety Directive.

Each Standard is owned by one of the committees of NOGEPA, in which all members of NOGEPA are represented and are actively participating. Through a process of drafting and reviewing, in liaison with external stakeholders where needed, each Standard will be assessed by all committees. All Standards require the endorsement of the committees and eventually the approval of the Executive Committee of NOGEPA. All approved Standards will be published on the NOGEPA website and subsequently maintained in accordance with Standard 80.

2. Purpose, scope and application

2.1 Purpose

The Rapport Inzake Grote Gevaren (RIGG) or Report on Major Hazards (RoMH) provides the demonstration that all the major hazards have been identified, their likelihood and consequences assessed, including any environmental, meteorological and seabed limitations on safe operations, and that their control measures including associated safety and environmental critical elements are suitable so as to reduce the risk of a major accident to an acceptable level; this demonstration shall include an assessment of oil spill response effectiveness.

This standard aims to elaborate, specify and clarify the requirements and NOGEPA's interpretation of the Offshore Safety Directive and the national implementing regulations (Mijnbouwwet , -besluit en -regeling , and ARBO-wet, -besluit en -regeling). As such it describes the requirements for a RIGG (type, overall structure and elements) and can also be used to demonstrate regulatory compliance.

This Standard defines where and when a RIGG is required and what levels of risk are to be addressed in the RIGG document. It also defines how the RIGG document is developed, maintained and used, and how it interfaces with operations and installation management systems.

2.2 Scope

This Standard consists of two parts. This document provides a goal setting approach to the development of a RIGG with regulatory and NOGEPA requirements, i.e., "shall" and "should".

2.3 Application

This standard is applicable for Notifications and RIGGs for production installations, onshore as well as offshore. The members of NOGEPA are the co-licensee appointed as operator under the exploration and / or production license.

Note 1: Please note that this Standard doesn't extend to non-production installations (such as drilling rigs, crew accommodation vessels etc.) as they will often be owned by the drilling contractor and his sub-contractors.

Note 2: in the event an operator also acts as an owner of a non-production installation in the terms of article 45f MBW, he has also the obligation to draft and submit a RIGG (for a non-production installation).

Note 3: In the case of a combined operation in terms of article 1 z MBW, the operator shall issue a notification of combined operations, jointly drafted with the owner of the non-production

installation, to the competent authority (article 45 p MBW). Additionally, the operator could also have a look at the RIGG for the production installation itself, if this RIGG is still up to date.

3. RIGG types, Notifications and legal context

3.1 Overview and legal context RIGG's and Notifications

This paragraph describes the legal context and the timing of the different documents.

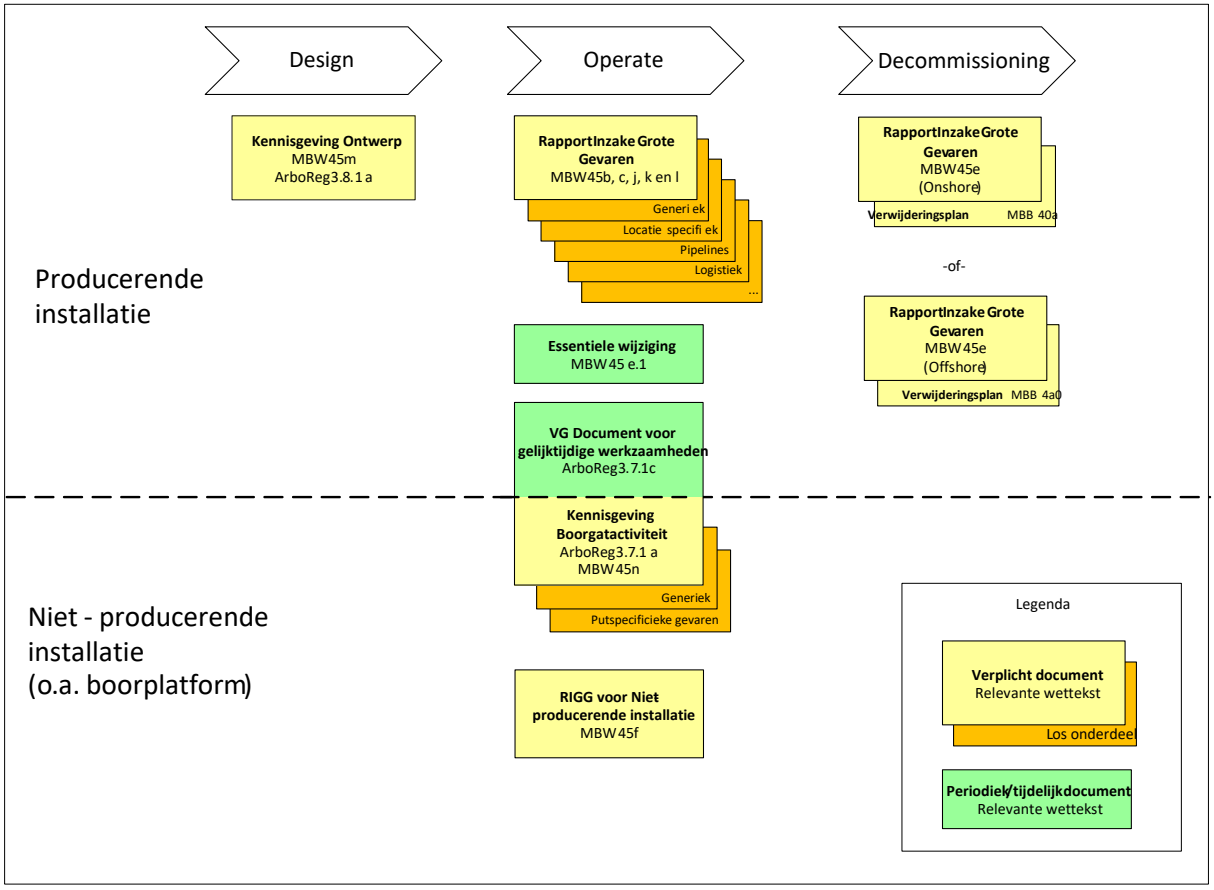

Figure 1 Overview of RIGG types

3.2 Design notification (Kennisgeving Ontwerp)

The Design Notification (Kennisgeving Ontwerp) reflects the alternatives and choices made in the design of the installation. It describes the Major Accident Hazards and their mitigations as well as the construction methods that are to be used. The Design Notification describes the justification that the selected option will present the lowest overall risks, or alternatively, show that the cost and effort to adopt the lowest risk option is grossly disproportionate to the benefit. The Design Notification should be issued to the competent authority no later than will be provided by a regulation based on article 45q MBW.

For the Design Notification no consent is needed from the competent authority.

3.3 Operations RIGG

The Operations RIGG is the document that describes the Major Accident Hazards and their management systems during operation of the Asset (for a production installation). The Operations RIGG has a five-yearly update cycle; this is described in paragraph 3.3.4.

The purpose of the Operations RIGG is to demonstrate how the Major Accident Hazards associated with the operation of the installation are managed to risk levels that are ALARP. It shall describe how the relevant management systems, i.e., CMAPP and SEMS, implement the requirements set out by this Standard.

The Operations RIGG shall consist at minimum of all connected infrastructure, and operations within the 500 meter safety zone for offshore installations. Connected infrastructure is considered to be any well and associated structures, supplementary units and connected devices, as well as connected pipelines up until the battery isolation valve of the next facility or up until the point of custody transfer. For instance, a sub-sea tie back is considered connected infrastructure, a monotower structure is considered an installation.

The RIGG shall include the major hazards from loss of containment events as well as the major hazards arising from activities to support (logistic) operations and external major hazards posed to the installation by third parties. Logistic operations within the 500m safety zone shall be included in the RIGG. (MBW 45 b,j,k,l)

For the Operations RIGG for an offshore installation consent from the competent authority is mandatory. This applies to the first issue of the document. For updates of a RIGG, see paragraph 3.3.4.

3.3.1 Generic Elements and Site Specific Elements

The Operations RIGG is to be logically structured to facilitate efficient and effective access to its contents. For an operator operating a single installation, the optimum layout/structure could be achieved by a single comprehensive document. For an operator operating multiple installations and having a more complex management system and organisation, the RIGG could be structured in multiple volumes.

The generic volume indicated in figure 1 can hold the Corporate Major Accident Prevention Policy and Safety and Environmental Management System, valid for multiple installations.

3.3.2 Pipelines

Connected pipeline infrastructures could be documented in a single volume. For operators utilising complex pipeline infrastructures, a separate Pipeline Volume of the RIGG provides a

more comprehensive and focussed insight on the management of pipeline risks thus supporting the case for safety.

3.3.3 Support Activities: Logistics and Well Services

The RIGG shall address logistics major hazards. In case an Operator has many locations utilising the same logistic process and route (air transport, land transport, sea transport) a separate volume on logistic hazards could be made. The logistics RIGG volume is used as a complimentary document for each installation supported.

Similarly, a well services RIGG Volume could be used to describe the Major Accident Hazards of well interventions (e.g., standard wire lining activities)

The optimum layout of the RIGG and number of volumes is thus dependent on the complexity of the installations, infrastructure, operations and the organisation structure to managing the risk.

3.3.4 Update of Operations RIGG

Five yearly update (Review of the RIGG)

An Operations RIGG shall be updated every 5 years, or sooner, in case of a Material Change. The latter is described below. The five yearly update shall contain the changes to the installation and the lessons learned during operation of the installation. Changes could be issued as an appendix to the existing RIGG. The five-yearly update shall be issued with the competent authority 8 weeks prior to the 5 year term. The results of the five-yearly review shall be issued to the competent authority. Consent for the five-yearly update is not mandatory for both onshore and offshore assets. (MBW 45d) as long as it is not considered a Material Change.

Material Change (Revision of the RIGG)

In case of a Material Change the Operations RIGG shall be updated or an addendum shall be supplied and issued to the competent authority no later than is provided by a regulation based on article 45e MBW, prior to the start of the hot commissioning, i.e., the first introduction of hydrocarbons.

A Material Change is defined in the Offshore Safety Directive as “a change to the basis on which the original RoMH was accepted including … physical modifications, availability of new knowledge or technology and operational management changes.” In the MBW (MBW 1af) including the explanatory memorandum, the definition of material change is implemented. A change to the basis on which the original RoMH was accepted is prompted by an introduction of new major hazards or changes in the residual risk.

Examples of a Material Change include, but are not limited to, the installation of a depletion compressor, a major organisational change to the asset, change of ownership of the asset, or a change in the way the installation is operated, e.g., de-manning an offshore installation.

Examples of changes that are not a Material Change include the replacement of an obsolete fire and gas detection system, and the hook-up of a new well when the original design of the installation takes this into account, e.g., an offshore installation with unused slots.

In the case that it is decided to stop production on a production-installation but the decision to dismantle the installation isn't yet made, the RIGG shall be revised ('Mothballing' or 'Light House Mode'). Cessation of the 'Mothballing' or 'Light House Mode' and going back into production, shall require a revision of the RIGG. Going from the 'Mothball' phase or 'Light House Mode' into the dismantling of the production-installation, shall also require a decommissioning RIGG, see paragraph 3.4. In case of an offshore installation consent from the competent authority is mandatory, for onshore consent is not mandatory. (MBW 45e.1).

3.4 Decommissioning RIGG/Decommissioning RoMH

A Decommissioning RIGG shall be drawn up when a facility is to be dismantled and the location restored. This document is an amendment to the Operational RIGG, and could be supplied as a standalone document to the competent authority.

3.4.1

3.4.2

3.5 Notification of Well Operations (Kennisgeving Boorgatactiviteit)

Before drilling a well the Operator shall issue a Well Activity Notification to the competent authority no later than in accordance with article 45n MBW prior to start of the work. (ArboReg 3.7.1a-b, 3.12.1, MBW 45n, MBB 74).

This document shall contain specific information on the identification and management of the well-location, subsurface/geological and well program and drilling risks.

3.6 Notification of Combined Operations (Kennisgeving van gecombineerde activiteiten)

A Notification of Combined Operations in the context of the OSD, and similarly in the MBW 1z, is defined as "an operation carried out from an installation with another installation or installations for purposes related to the other installation(s) which thereby materially affect the risks to the safety of persons or the protection of the environment on any or all of the installations".

Furthermore the installations need to be permanently connected by means of bridges or equipment used for oil- and gas operations, e.g., wells. A temporary connected bridge for transferring personnel and a supply vessel should thus not be defined as a combined operation. A bridge linked accommodation unit connected to the production installation, or a drilling rig drilling a well at the site or installation shall be considered combined operations. A heavy lift vessel performing lifting activities on an installation could be considered combined operations.

The Notification of Combined Operations could be combined with the Notification of Well Operations. In that case a separate Well Notification is not needed.

(MBW 45p)

3.7 Non-producing installation RIGG

A non-producing installation is an installation that is not designed to produce hydrocarbons. Examples of non-producing installations are, drilling rigs when in stationary mode, jack-up vessels when in stationary mode, and accommodation platforms. The scope of this Standard does not extend to this type of installations; however, if activities with Major Accident Hazards that require a RIGG are managed by a contractor, (e.g. drilling operations), the contractor shall develop and maintain its own RIGG.

The Operator should conduct a review of the contractor's RIGG (if applicable) against the relevant requirements, taking into account that it may be prepared in accordance with regulatory or industry (e.g. IADC) guidelines.

Furthermore the Operator should sign for review the contractor's RIGG (if applicable) prior to start of operations. The Operator should also ensure that interfaces between the contracted operation and the Operations RIGG are described in the Notification of Combined Operations, if applicable.

3.8 Moving Notification (Kennisgeving van verplaatsen)

Production installations capable of being moved fall under the Operations RIGG during normal operations. However, moving the production installation constitutes a Material Change and shall be described as such. A notification of the intended move shall be issued to the competent authority no later than 12 weeks prior to moving the installation. This document shall contain, among others, a description of the installation, the risks and their mitigations, and a

demonstration the installation is fit for production activities at the proposed new location. (MBW 45o).

4. Lifecycle assessment for production installations

A RIGG provides demonstration that all the major hazards have been identified, their likelihood and consequences assessed, including any environmental, meteorological and seabed limitations on safe operations, and that their control measures including associated safety and environmental critical elements are suitable so as to reduce the risk of a major accident to a level that is acceptable if ALARP; this demonstration shall include an assessment of oil spill response effectiveness. A RIGG for a production installation is built up in three phases, Design Notification, Operations RIGG, and Decommissioning RIGG. The scope of this chapter is restricted to the RIGG of a production installation.

4.1 Design Notification (Kennisgeving Ontwerp)

The Design Notification is a description that the selected concept during design and construction is acceptable if ALARP. The suggested structure of the Design Notification and its content are described in Table 1. For a more detailed list of requirements refer to Annex II Abstract requirements Design Notification.

Table 1 Design Notification content

Introduction	Facility and Operation	People and SEMS	Major Accident Hazards	Action Plan
• Summary • Change control • Document control	• Geographical and metocean data • Asset or activity description • Conceptual design • Methods of construction • Maintenance and operation philosophy	• Description of SEMS • CMAPP	• Hazard Register • Summary of studies and results • Risk reduction philosophies • Initial barrier and SECE assessment • Initial ALARP demonstration[1]	• Remedial Actions
With reference to:				
	• Design process	• SEMS	• MAH studies • Independent Verification Scheme • Initial SECE performance standards	• Action tracking

[1] The ALARP demonstration is further described in paragraph **Fout! Verwijzingsbron niet gevonden.** {komt k ennelijk niet goed door in de pdf conversie}

In case a non-production installation is to be converted for use as a production installation a design notification is to be provided.

Similarly a design notification is to be provided for the relocation of an existing production installation within the Netherlands.

4.2 Operations RIGG

The purpose of the Operations RIGG is to demonstrate the Major Accident Hazards have been identified and managed to an acceptable level, if ALARP

To demonstrate ALARP the RIGG shall contain at least the elements as described in Annex III Abstract requirements Operations RIGG.

The suggested structure of the Operations RIGG and its content are described in Table 2. For a more detailed list of requirements refer to Annex III Abstract requirements Operations RIGG.

Table 2 Operations RIGG content

Introduction	Facility and Operation	People and SEMS	Major Accident Hazards	Action Plan
• Summary • Change control • Document control • Statement of fitness	• RIGG Scope • Asset or activity description • Connected infrastructure • Temporary Refuge/POB (if applicable)	• Asset or activity organisation • Manning levels • HSE Critical Tasks • Workforce Involvement) • Audit and review • Description of SEMS • CMAPP	• Hazard Register • Summary of studies and results • Barriers and SECE assessment • Risk reduction philosophies • ALARP demonstration • Internal Emergency Response Plan description	• Five yearly review results • Remedial Action
With reference to:				
• Company Document Management system	• Design Notification (if applicable) • Operating Procedures • Permit to Work system • Maintenance System • SECE performance standards	• Competency and training records • Resourcing plans	• Design Notification • MAH studies • Independent Verification Scheme • External Emergency Response Plan • Impaired barrier management	• Action tracking

4.2.1 Risk assessment

A structured risk assessment methodology shall be applied. The assessment supports the identification and selection of Safety and Environmental Critical Elements (SECEs) and forms an important element in the demonstration of ALARP.

The risk assessment tools and techniques available include: Hazard identification (HAZID), Hazard and Operability studies (HAZOP), Safety Integrity Level (SIL) assessment, Fire and Explosion analysis, Quantitative Risk Assessment (QRA), Escape, Evacuation and Rescue Assessment, Environmental Impact studies. Proper application of the risk assessment tools (timing, scope) support decision making in selecting and specifying the required barriers to control the major Hazard or mitigate its consequences.

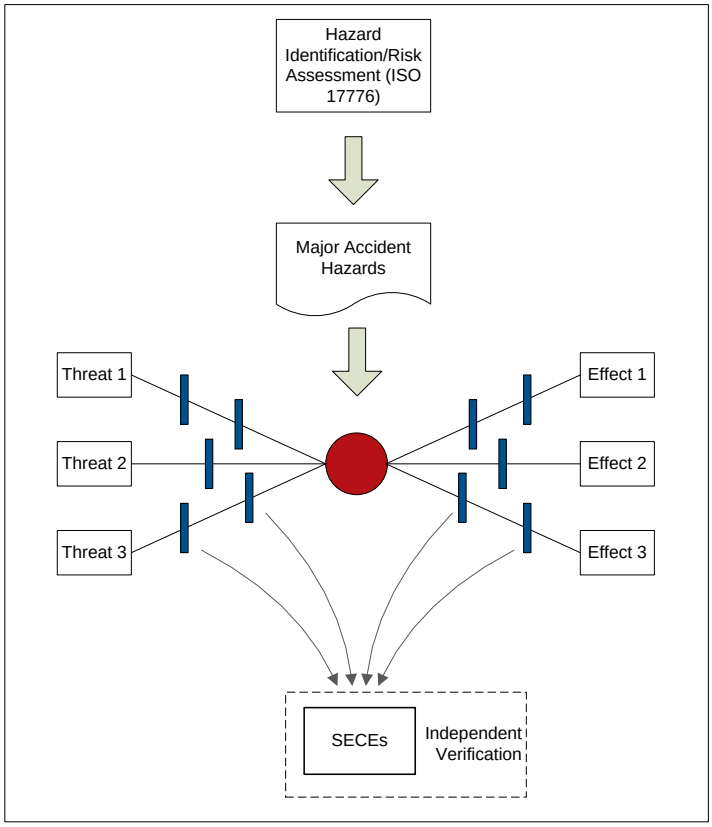

Figure 2 Risk Assessment process

The HAZID could be done in accordance with the international ISO 17776:2000 standard [2] or equivalent. Practical guidance could be found in DNV Recommended Practice 104 [3] From the HAZID the Major Accident Hazards are selected. Any Hazard not identified as a Major Accident Hazard, and therefore not addressed by the RIGG, shall be addressed in the management

system(s) for the facility. Health and occupational risks shall be further assessed by a health risk assessment (RI&E) in accordance with the Arbowet (Dutch OSHA). Environmental risks shall be further assessed in an Environmental Risk Assessment (MER), if applicable.

Major Accident Hazards identified for offshore installations typically include:

- Blowout (loss of well control);
- Loss of process (topsides) containment ;
- Loss of process containment pipeline and risers (within 500 m);
- Dropped Objects ;
- Structural Failure (primary structure and cranes);
- Ship collision;
- Helicopter crash.

A structured overview of the barriers selected could be visualised in e.g. a Bow-Tie diagram or fault- and event trees. From the Major Accident Hazard Bow Tie diagram the Safety and Environmental Critical Elements (SECE's) can be determined. The SECE functionality, performance and reliability are described in the form of performance standards. The SECE shall be maintained in accordance with the performance standard. SECE management shall be independently verified as laid down in the Verification Scheme described in Standard 48.

4.2.2 Safety and Environmental Critical Elements (SECEs)

Major accidents as defined in article 1v MBW can result in (potential) fatalities or serious injury as well as consequences to the environment (e.g. pollution). This is particularly valid for all loss of containment events. As such the barriers required for risk management are in many cases safety (SCE) as well as environmental critical (ECE).

In the OSD (2.33) a safety and environmental critical elements are defined as:

'*Safety and environmental critical elements' means parts of an installation, including computer programmes, the purpose of which is to prevent or limit the consequences of a major accident, or the failure of which could cause or contribute substantially to a major accident.*

The barriers (ECE) required to control the risks of incidents with only a major environmental effect (e.g. prolonged exceedance of the environmental permit conditions) are not subject to the purpose of the OSD. A visual representation of this can be found in Figure 3.

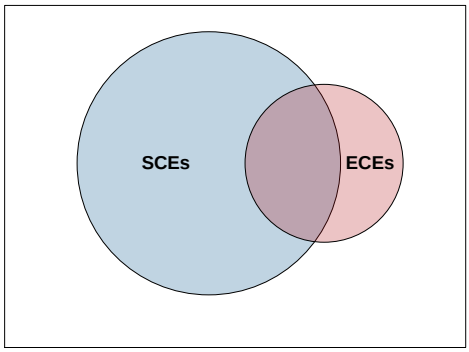

Figure 3 SECEs

4.2.3 Independent Verification

The Operator is responsible for the safe and correct functioning of the equipment, including systems, classified as SECEs. An independent verification scheme shall be developed to give independent verification that the safety and environmental critical elements identified in the risk assessment for the installation, as described in the RIGG, are suitable and that the schedule of examination and testing of the safety and environmental critical elements is suitable, up-to-date and operating as intended.

The requirements for the Independent Verification Scheme of the SECE's are described in NOGEPA Standard 48 [4].

4.2.4 Acceptable and ALARP

In the OSD (2.8) acceptable is defined as:

'acceptable', in relation to a risk, means a level of risk for which the time, cost or effort of further reducing it would be grossly disproportionate to the benefits of such reduction. In assessing whether the time, cost or effort would be grossly disproportionate to the benefits of further reducing the risk, regard shall be had to best practice risk levels compatible with the undertaking.

ALARP stands for As Low As Reasonably Practicable. Risks of Major Accidents always have to be reduced to a level that is tolerable, and then to ALARP. A documented demonstration of this is required; this demonstration is part of the RIGG. ALARP is demonstrated by showing that further risk reductions are impracticable and/or the costs are grossly disproportionate to the improvements gained. This means the next lower risk option has to demonstrated as "unreasonable."

Tolerability refers to the compliance to either the legislative requirement or company guidelines, whichever is more stringent. Tolerability sometimes is ALARP when further risk reductions prove to be impracticable and/or the costs are grossly disproportionate to the improvements. To tolerate a risk means it is not regarded as negligible or something ignorable, but rather as something to keep under review and reduce further if possible. A visual representation of an ALARP decision is shown in Figure 4.

Legislative requirements precede the ALARP decision. Only after checking against such minimum acceptance criteria should the discussion about ALARP take place.

Because the industry standard for disproportionality with regards to risk reduction is ALARP, in this standard 'acceptable' shall be referred to as 'ALARP' or as 'acceptable, if ALARP'.

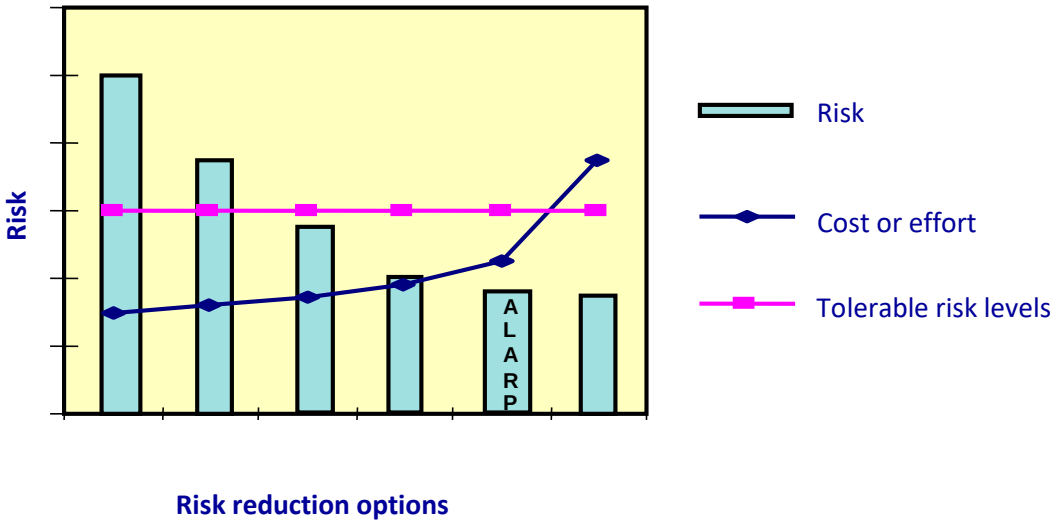

Figure 4 Visual representation of an ALARP decision

4.2.5 Emergency Response

The RIGG for the production installation shall contain a summary of the company's emergency response plan (ERP). The ERP shall take into account the major accident risk assessment of the RIGG and shall include a summary of the analysis of the oil spill response effectiveness. This is further described in NOGEPA Standard 31.

In the case of non-producing installations, the Operator needs to ensure that the owners' internal emergency response plans for the installation are amended as necessary to be applicable to the specific location and well operation hazards. In case of amendments with regards to well operations these should be included in the Notification Well Activities

4.3 Decommissioning RIGG

The Decommissioning RIGG (45e MBW) is an Operations RIGG supplemented with the specific Major Accident Hazards associated with decommissioning and removing an installation with an addendum of either the Sluitingsplan for the decommissioning of an onshore location, or the Verwijderplan when decommissioning and removing an offshore installation.

Table 3 Decommissioning RIGG content (if applicable)

Introduction	Facility and Operation	People and SEMS	Major Accident Hazards	Action Plan
• Summary • Change control • Document control	• RIGG Scope • Asset or activity description • Connected infrastructure • Temporary Refuge/POB (if applicable) • Procedures • Methods of deconstruction	• Asset or activity organisation • Manning levels • HSE Critical Tasks • Workforce Involvement • Bridging interfaces • Audit and review • Description of SEMS • CMAPP	• Hazard Register • Summary of studies and results • Barriers and SECE assessment • Risk reduction philosophies • ALARP demonstration • Internal Emergency Response Plan	• Remedial Action
With reference to:				
• Company Document Management system	• Permit to Work system • Maintenance System • SECE performance standards	• Competency and training records • Resourcing plans	• MAH studies • Independent Verification Scheme • External Emergency Response Plan	• Action tracking

4.3.1

4.4 Well Activity Notification (Kennisgeving Boorgatactiviteit)

For activities in a well, including drilling activities, a Well Activity Notification is to be issued to the competent authority (45n MBW).

Table 4 Well Activity Notification content

Introduction	Facility and Operation	People and SEMS	Major Accident Hazards	Action Plan
• Summary • Change control • Document control	• Scope of the Notification • Asset or activity description • Well description • Connected infrastructure • Environmental, Metocean and Seabed conditions at intended location • Well history and condition (if applicable)	• Bridging interfaces • Audit and review	• Summary of MAH studies (inc. subsurface hazards) • Barrier and SECE assessment • Summary of Well Examiner Findings • Internal Emergency Response (if not described in RIGG)	• Remedial Action

	• Well work programme • Description of intended end state of well			
With reference to:				
• Company Document Management system	• Contractor RIGG of the (drilling) installation	• Notification of Combined Operations (if applicable) • RIGG (if applicable)	• MAH studies (inc. subsurface hazards) • Well Examiner Report • External Emergency Response Plan	• Action tracking

5. Operationalise the RIGG

The Operator shall ensure that facilities and operations are in accordance with the Operations RIGG and the procedures stated in the SEMS.

Technical integrity and maintenance programmes for SECEs shall be implemented and monitored, and attainment of Performance Standards shall be assured and recorded. The assurance programmes are subject to the independent verification scheme set out in NOGEPA Standard 48 [4] and NOGEPA Standard 90 [5].

Personnel working on the site shall be informed in a summarised, understandable fashion of the relevant content of the RIGG and the Major Accident Hazards.

During development or revision of the RIGG representatives of the workforce shall be consulted and involved in the development of the document.

Competent personnel as referenced to in article 2.42n of the Arbobesluit shall be involved in the development and maintenance of the RIGG.

The RIGG document shall be up to date and available to personnel on site. It shall be maintained in the document control scheme of the Operator.

A review of the RIGG shall be prompted in case of; a major incident involving the facility or operation, or from lateral learning from other major incidents, enhancement of knowledge or technology that changes the basic assumptions on which the RIGG is based.

Actions arising from and during the development of the RIGG shall be registered in a tracking system and follow-up shall be tracked and auditable closed out. The quality of the follow-up and close out of the RIGG remedial action plan should be monitored. Any update or revision of the RIGG should describe the follow up to the actions.

6. References

[1] NOGEPA, Standard 80 - Standards and Document Control, 2016.

[2] International Organization for Standardization (ISO), 17776:2000 Petroleum and natural gas industries -- Offshore production installations -- Guidelines on tools and techniques for hazard identification and risk assessment, Geneva, Switzerland, 2010.

[3] DNV GL AS, "DNVGL-RP-G104 Identification and management of environmental barriers," August 2015. [Online]. Available: https://www.dnvgl.com/oilgas/offshore-safety-directive/recommended-practice-dnvgl-rp-g104.html.

[4] NOGEPA, Standard 48 - Independent Verification, 2016.

[5] NOGEPA, Standard 90 - Asset Integrity, 2016.

[6] "Mijnbouwwet," [Online]. Available: http://wetten.overheid.nl/BWBR0014394.

Annex I Abstract requirements Design Notification

The Design Notification shall include (see respective annex 1 section 1 in DIRECTIVE 2013/30/EU):

1. the name and address of the operator of the installation;
2. a description of the design process for the production operations and systems, from an initial concept to the submitted design or selection of an existing installation, the relevant standards used, and the design concepts included in the process;
3. a description of the selected design concept in relation to the major hazard scenarios for the particular installation and its location, and the primary risk control features;
4. a demonstration that the concept contributes to reducing major hazard risks to an acceptable level;
5. a description of the installation and the conditions at its intended location;
6. a description of any environmental, meteorological and seabed limitations on safe operations, and the arrangements for identifying risks from seabed and marine hazards such as pipelines and the moorings of adjacent installations;
7. a description of the types of major hazard operations to be carried out;
8. a general description of the safety and environmental management system by which the intended major accident risk control measures are to be maintained in good effect;
9. a description of the independent verification schemes and an initial list of safety and environmental critical elements and their required performance;
10. where an existing production installation is to be moved to a new location to serve a different production operation, a demonstration that the installation is suitable for the proposed production operation;
11. where a non-production installation is to be converted for use as a production installation, a justification demonstrating that the installation is suitable for such conversion.

Annex II Abstract requirements Operations RIGG

The HSE content of the Operations RIGG shall include (see respective annex 1 - section 2 in DIRECTIVE 2013/30/EU):

1. a description of the account taken of the competent authority's response to the design notification;
2. the name and address of the operator of the installation;
3. a summary of any worker involvement in the preparation of the report on major hazards;
4. a description of the installation and any association with other installations or connected infrastructure, including wells;
5. demonstration that all the major hazards have been identified, their likelihood and consequences assessed, including any environmental, meteorological and seabed limitations on safe operations, and that their control measures including associated safety and environmental critical elements are suitable so as to reduce the risk of a major accident to an acceptable level; this demonstration shall include an assessment of oil spill response effectiveness; L 178/90 Official Journal of the European Union 28.6.2013 EN
6. a description of the types of operations with major hazard potential to be carried out, and the maximum number of persons that can be on the installation at any time;
7. a description of equipment and arrangements to ensure well control, process safety, containment of hazardous substances, prevention of fire and explosion, protection of the workers from hazardous substances, and protection of the environment from an incipient major accident;
8. a description of the arrangements to protect persons on the installation from major hazards, and to ensure their safe escape, evacuation and rescue, and arrangements for the maintenance of control systems to prevent damage to the installation and the environment in the event that all personnel are evacuated;
9. relevant codes, standards and guidance used in the construction and commissioning of the installation;
10. information, regarding the operator's safety and environmental management system, that is relevant to the production installation;
11. an internal emergency response plan or an adequate description thereof;
12. a description of the independent verification scheme;

13. any other relevant details, for example where two or more installations operate in combination in a way which affects the major hazard potential of either or all installations;

14. the information relevant to other requirements under this Directive obtained pursuant to the major accident prevention requirements of Directive 92/91/EEC;

15. in respect of operations to be conducted from the installation, any information relating to the prevention of major accidents resulting in significant or serious damage to the environment relevant to other requirements under this Directive, obtained pursuant to Directive 2011/92/EU;

16. an assessment of the identified potential environmental effects resulting from the loss of containment of pollutants arising from a major accident, and a description of the technical and non-technical measures envisaged to prevent, reduce or offset them, including monitoring.

Annex III Abstract requirements Decommissioning RIGG

A decommissioning RIGG shall contain at least the following information (see respective annex 1 – section 6 in DIRECTIVE 2013/30/EU):

1. the name and address of the operator or the owner

2. a summary of any worker involvement in the preparation of the revised report on major hazards

3. sufficient details to fully update the earlier report on major hazards and associated internal emergency response plan for the installation and to demonstrate major hazard risks are reduced to an acceptable level

4. in the case of taking a fixed production installation out of use:

   (a) means of isolating all hazardous substances and in the case of wells connected to the installation, the permanent sealing of the wells from the installation and the environment;

   (b) a description of major hazard risks associated with the decommissioning of the installation to workers and the environment, the total exposed population, and the risk control measures;

   (c) emergency response arrangements to secure safe evacuation and rescue of personnel and to maintain control systems for preventing a major accident to the environment.

Annex IV Abstract requirements Well Notification Activity

Notifications of well operations to be prepared in accordance with Article 15 and submitted pursuant to point (h) of Article 11 (see respective annex 1 – section 4 in DIRECTIVE 2013/30/EU)

Shall contain at least the following information:

1. the name and address of the operator of the well;
2. the name of the installation to be used and the name and address of the owner or, in the case of a production installation, the contractor undertaking drilling activities;
3. details that identify the well and any association with installations and connected infrastructure;
4. information on the well work programme, including the period of its operation, details and verification of barriers against loss of well control (equipment, drilling fluids and cement etc.), directional control of the well path, and limitations on safe operations in keeping with the risk management;
5. in the case of an existing well, information regarding its history and condition;
6. any details concerning safety equipment to be deployed that are not described in the current report on major hazards for the installation;
7. a risk assessment incorporating a description of:
   (a) the particular hazards associated with the well operation including any environmental, meteorological and seabed limitations on safe operations;
   (b) the subsurface hazards;
   (c) any surface or subsea operations which introduce simultaneous major hazard potential;
   (d) suitable control measures; L 178/92 Official Journal of the European Union 28.6.2013 EN
8. a description of the well configuration at the end of operations – i.e. permanently or temporarily abandoned; and whether production equipment has been placed into the well for future use;
9. in the case of a modification to a previously submitted notification of well operations, sufficient details to fully update the notification;
10. where a well is to be constructed, modified or maintained by means of a non-production installation, additional information as follows:

(a) a description of any environmental, meteorological and seabed limitations on safe operations, and arrangements for identifying risks from seabed and marine hazards such as pipelines and the moorings of adjacent installations;

(b) a description of environmental conditions that have been taken into account within the internal emergency response plan for the installation;

(c) a description of emergency response arrangements including arrangements for responding in cases of environmental incidents that are not described in the report on major hazards; and

(d) a description of how the management systems of the operator of the well and the owner are to be coordinated to ensure effective control of major hazards at all times;

11. a report with findings of the independent well examination, including a statement by the operator of the well that, after considering the report and findings of independent well examination by the independent verifier, the risk management relating to well design and its barriers to loss of control are suitable for all anticipated conditions and circumstances;

12. the information relevant to this Directive obtained pursuant to the major accident prevention requirements of Directive 92/91/EEC;

13. in respect of the well operations to be conducted, any information relevant to other requirements under this Directive obtained pursuant to Directive 2011/92/EU re