



ADDING VALUE TO COMPLIANCE

Targeted services for the
EU Offshore Safety Directive 2013/30/EU

THE EU OFFSHORE SAFETY DIRECTIVE

In response to the loss of life and environmental damage caused by the Macondo blowout in the Gulf of Mexico in 2010, the European Commission issued Directive 2013/30/EU on the Safety of Offshore Oil and Gas Operations (the Directive) in June 2013. The Directive has been designed to mitigate the risk of major offshore oil and gas incidents by requiring owners and operators to identify and manage major accident hazards and to put in place effective response strategies should an incident occur. The Directive aims to implement best regulatory practices across all EU jurisdictions with the objective to strengthen EU's preparedness and response for offshore emergencies.

IMPLEMENTATION OF THE DIRECTIVE

- Member states of the European Union were required to develop a national implementation framework for the Directive by July 2015
- Owners and operators will need to comply with the requirements for new builds from 19 July 2016
- Existing assets must be brought into line with the new regulations by 19 July 2018.

The Directive requires national authorities to verify environmental protection measures and the emergency preparedness of rigs and platforms, in addition to improving and clarifying the EU liability and compensation provisions.

The new rules apply to owners, operators, licensees and competent authorities in the region, and cover all offshore operations and infrastructure, including fixed and floating assets. The requirements address all phases of the asset lifecycle, from concept design to abandonment and decommissioning.

Installations outside the EU

While the Directive applies only to the EU, it does also state that it expects responsible operators and owners to conduct their operations worldwide according to best practices and standards. This includes requiring operators registered in the EU to submit reports on major accidents that occur in other territories.

What do the regulations mean in practice?

The new Directive requires owners and operators to prevent and mitigate the impact of major accident hazards through the implementation of a systematic and effective approach to risk management. In particular:

- Before exploration or production begins, companies must prepare major hazard reports for offshore installations. These must contain a risk assessment and an emergency response plan.
- Independent verification of technical solutions which are critical for the safety of operators' installations must be conducted. This includes independent verification that the safety and environmentally critical elements (SECEs) identified in the risk assessment for the installations are suitable. This must be done prior to the installation being put into operation.
- A schedule of examination and testing for SECEs must be implemented, including independent verification that this schedule is suitable, up-to-date and operating as intended.
- National authorities must verify safety provisions, environmental protection measures, and the emergency preparedness of rigs and platforms.

DNV GL supports owners, operators, licensees and competent authorities in all areas impacted by the Directive.

TARGETED SERVICES FOR ACHIEVING COMPLIANCE

From guidance on identifying and closing gaps for fulfilling the Directive's extensive list of required documentation to third-party independent verification and assurance services, DNV GL enables oil and gas businesses to achieve and maintain compliance. While the new Directive could be perceived by owners and operators simply as an additional burden, we can help companies to approach it as an opportunity to re-evaluate risk management practices in order to achieve improved operational performance.

Drawing on more than 40 years of experience working towards improving safety on offshore installations, DNV GL is the right

partner to achieve compliance with the new requirements in the most cost-effective manner. Our targeted portfolio of Offshore Safety Directive services can be tailored to meet customer needs. We offer a systematic approach to achieving regulatory compliance, regardless of where a customer is in the compliance lifecycle.

Our starting point is always to understand the customers' needs and expectations. We tailor our portfolio of independent verification or advisory services to help companies to achieve compliance and further improve operational performance.



INDEPENDENT VERIFICATION SERVICES

As a leading provider of technical assurance services to the oil and gas industry, DNV GL offers high quality verification of asset integrity and performance designed to add value to compliance, supporting performance improvements as opposed to simply ‘ticking the boxes’.

The DNV GL approach

Our targeted verification services are designed to specifically address Directive requirements, enabling operators to achieve both compliance and improved operational performance. Choosing us as your independent verification partner means

gaining access to our full range of technical expertise, including insight into best practices, methodologies and technologies.

Throughout the verification process, our surveyors not only focus on verifying that requirements are met, but also contribute to solutions for safer, more reliable and cost-effective performance long-term.

Our approach ensures an easy-to-audit, timely and controllable verification process based on the highest technical standards, delivered by our global network of knowledgeable experts.

A targeted portfolio of services for meeting independent verification requirements

	Directive requirement	Independent verification services from DNV GL	Deliverables
Article 17 14 a	Give independent assurance that the SECEs identified in the risk assessment for the installation, as described in the report on major hazards, are suitable and that the schedule of examination and testing of the SECEs is suitable, up-to-date and operating as intended.	<ul style="list-style-type: none">■ Verification of suitability of SECEs and review of associated operational performance standards■ Verification of SECE performance in accordance with operational performance standards	<ul style="list-style-type: none">■ Verification report / letter of compliance to Article 17, 4 (annually and/or ad hoc, as required)■ Verification report/letter of compliance - one-off or 2 reports/year, as part of annual survey of topside facilities (ASTF)/annual survey of structures and risers (ASSR)
Article 17, Annex V sec. 3	In respect of notifications of well operations, to give independent assurance that the well design and well control measures are suitable for the anticipated well conditioning at all times.	<ul style="list-style-type: none">■ Verification of wells	<p>(Verification is partly covered through ASTF)</p> <ul style="list-style-type: none">■ Verification letter/report■ Offshore verification statement
Article 17 14 b	Material changes shall be referred to the independent verifier for further verification in accordance with the scheme for independent verification and the outcomes of such further verification shall be communicated to the competent authority, if requested.	<ul style="list-style-type: none">■ Verification of material changes (for changes impacting major accident hazards)	<ul style="list-style-type: none">■ Design verification letter■ Onshore verification statement■ Offshore verification statement

The verification process

Verification of SECEs

Document review

Our experts review the as-build documentation of assets to ensure it meets defined and asset-specific performance requirements, including identifying gaps between requirements, enabling operators to justify those gaps or implement modifications. DNV GL issues a verification statement or statement/letter of compliance conformity as relevant.

Survey and testing

We perform site-specific verification, such as witnessing a live process or physical object, to verify SECEs. This includes observing performance requirements and assurance activities, as set out by the company's verification scheme. Observations are recorded in survey reports, test reports, verification reports, verification comments and verification letters.

Verification of wells

The Directive requires operators to provide ‘independent assurance that well design and well control measures are suitable for anticipated well conditions at all times’. We enable operators to meet this requirement by verifying that a well is designed, constructed and maintained in order to manage the risk of unintentional spill, damage to assets and people.

We achieve this through advanced and cost-effective risk-based methods that provide the operator with full traceability throughout the verification process.

Compliance and continuous improvement in the long-term

During the in-service phase of an installation, DNV GL provides verification and independent assurance throughout an asset's lifecycle of operation. This ensures ongoing safety and performance in addition to, and beyond Directive compliance. DNV GL provides ongoing review of identified SECEs and performance requirements for independent suitability assurance, and undertakes periodical surveys, inspections and testing to ensure that the schedule of examination and testing of SECEs is suitable, up-to-date and operating as intended over time. Customers are issued a Certificate of Conformity including re-certification every five years, stating that the assets are in compliance with all relevant requirements.

Verification activities are conducted on-site as well as in the form of document reviews. We focus on maintenance procedures, maintenance status and assurance tasks as well as reporting status. All relevant documentation pertaining to our verification work for a customer is shared through a secure web portal.

Verification of material changes

The Directive sets specific requirements for the independent verification of material changes to an installation (repair, modification or replacement) that may impact the integrity and/or functionality of SECEs. We can verify material changes that impact SECEs, providing independent assurance that the SECEs are in compliance with the Directive. Our work can include:

- Design verification of procured equipment and interface design
- Onshore survey during fabrication
- Offshore survey during hook-up and commissioning process.

Customer web portal for status reporting and document sharing

Unique to DNV GL's in-service verification service and at no extra cost, we provide customers with a web-based portal that enables access to up-to-date and relevant verification data and documentation. This ensures full transparency and insight into the verification process from the start to finish. The portal is customizable, enabling operators to access information by individual asset, such as:

- Summary of current status
- Status of and access to applicable certificates, verification reports and recommendations for each asset
- Recent events (surveys, expiring certificates, etc).



ADVISORY SERVICES

DNV GL provides a complete portfolio of safety and environmental risk management services, helping customers not only to identify and manage major accident risks in line with the Directive, but also to improve the overall safety, reliability and cost-efficiency of operations.

Understanding risk is vital for sound and cost-effective decision-making and for establishing a technical risk picture for the entire asset lifecycle. DNV GL supports owners and operators in meeting requirements for risk assessments for both new installations and updates of existing assets. This also includes meeting new and robust requirements for mitigating environmental damage. Our recently published recommended

practice *DNVGL-RP-G104 Identification and management of environmental barriers* was developed specifically to guide owners and operators in identifying and managing major environmental incidents (MEIs) and SECEs for offshore installations in line with Directive requirements.

The Directive requires operators to document that all suitable measures are taken to prevent major accident in operations. As an industry leader in safety and environmental risk management, we help operators make risk-informed decisions when preparing for Directive compliance. This contributes to more cost-effective fulfilment of Directive requirements.

A full portfolio of risk-based advisory services targeting compliance

Operators are required to document that all suitable measures are taken to prevent major accidents.

DNV GL assists customers with:

- Identifying and analysing overall risk, and evaluating how procedures might be modified to satisfy requirements
- Identifying major accident hazards
- Identifying SECEs related to each major accident hazard
- Developing of performance standards for SECEs
- Developing of the verification scheme
- Managing SECEs
- Establishing criteria for major environmental incidents (MEIs)
- Planning material changes

A systematic approach to managing major accident risks

DNV GL can help customers to gain better control of major accident and operational risks by implementing a systematic approach to barrier management. Increased awareness of barriers can also improve a company's internal safety culture, as well as transparency towards stakeholders such as regulators and licence partners.

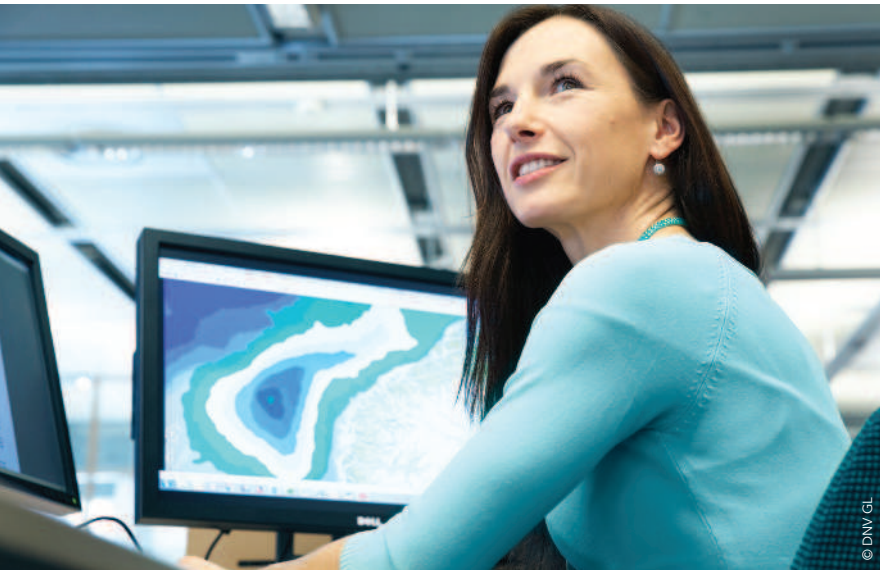
DNV GL's advisory specialists support customers in establishing a risk-based barrier management system. Our approach follows a common methodology and features work processes for the management of major accident hazards and SECEs. This includes capturing and analysing inspection, testing and incident investigation data in a user-friendly format to inform decision-making throughout the corporate hierarchy.

It also includes developing a corporate major accident prevention policy (CMAPP) and a safety and environmental management system (SEMS) for each asset. This enables customers to manage SECEs and MEIs through proven barrier management frameworks by:

- Introducing performance standards covering both safety and environmentally critical equipment, and incorporating human factors
- Developing knowledge and best practice within the organization through training and competence development
- Improving knowledge through leading incident investigations using the barrier approach.

DNV GL: AN INDUSTRY LEADER IN SAFETY AND ENVIRONMENTAL RISK MANAGEMENT

- We serve customers in every hydrocarbon-producing country in the world
- A thought leader in risk-based barrier management
- Proven expertise in quantitative risk management (QRA), demonstrated through our PHAST, Safeti and Safeti Offshore safety software
- Active contributor to development of incident investigation tools
- Developer of industry leading standards, guidelines and recommended practices, including *DNVGL-RP-G104 Identification and management of environmental barriers*, designed specifically to address Directive requirements.



WHY PARTNER WITH DNV GL?

DNV GL supports owners and operators not only to comply with the new Directive, but also to achieve safe, sustainable and cost-effective performance long-term.

150 years of risk management expertise

Drawing on more than 150 years of risk management expertise,

and more than 40 years of experience identifying risk and working to improve safety on offshore installations, DNV GL supports owners, operators, licensees and competent authorities in all areas impacted by the Directive. Our expertise and global reach covers the entire oil and gas value chain from project initiation to decommissioning.



The industry's go-to experts for Directive compliance

DNV GL is uniquely positioned to support the industry with targeted best practice and specialized expertise for Directive compliance:

- In the aftermath of Macondo, we were commissioned by the US Department of the Interior to provide a forensic examination of the blow-out preventer (BOP) recovered from the seafloor, and to deliver detailed recommendations on BOP design and operational issues.
- We have a long track record of working with the UK Offshore Safety Case regime, which inspired the requirements of the EU Directive.
- Combining our risk management methodology with lessons learned across the industry post-Macondo, we developed the recommended practice *DNVGL-RP-G104 Identification and management of environmental barriers* specifically to enable operators and owners to identify and manage MEIs and SECEs for offshore installations in line with Directive requirements.

With our portfolio of targeted and tailorable services, customers are able not only to achieve compliance with the Directive, but also to build on the process to achieve consistent and ongoing compliance. This includes assessing current safety and environmental performance and setting out the key steps that need to be taken to reduce risk exposure in line with regulatory and company-specific requirements.

Our specialists are able to draw on decades of experience to provide customers with a broader view on compliance, including sharing cost-efficient methods to improve the safety and reliability of operations in line with and beyond Directive requirements.

An innovation powerhouse




40 joint industry projects each year



5 Oil & Gas R&D centres in the Netherlands, Norway, Singapore, the UK and USA



17 suites of software solutions for the oil & gas industry



5% of annual revenue reinvested into R&D every year



170 industry standards and recommended practices



18 global laboratories and test sites on three continents

LOCAL EXPERTISE WITH A GLOBAL PRESENCE

DNV GL offers access to oil and gas industry technical experts around the world. We have offices in 37 countries and a presence in every hydrocarbon-producing country.



We have multiple offices in a range of key countries:

- | | | | |
|---------------------|---------------------|-------------------|---------------------------------|
| The Americas | Asia Pacific | Europe | Middle East & Africa |
| ■ Brazil | ■ Australia | ■ Belgium | ■ Algeria |
| ■ Canada | ■ Brunei | ■ Denmark | ■ Angola |
| ■ Mexico | ■ China | ■ France | ■ Egypt |
| ■ Trinidad & Tobago | ■ India | ■ Germany | ■ Kazakhstan |
| ■ United States | ■ Indonesia | ■ Italy | ■ Kuwait |
| | ■ Japan | ■ The Netherlands | ■ Libya |
| | ■ Korea | ■ Norway | ■ Nigeria |
| | ■ Malaysia | ■ Russia | ■ Oman |
| | ■ Singapore | ■ United Kingdom | ■ Qatar |
| | ■ Thailand | | ■ Saudi Arabia |
| | ■ Vietnam | | ■ South Africa |
| | | | ■ United Arab Emirates |



About DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. Operating in more than 100 countries, our professionals are dedicated to helping our customers in the maritime, oil and gas, energy and other industries to make the world safer, smarter and greener.

In the oil and gas industry, we enhance safety, increase reliability and manage risks in projects and operations. Our oil and gas experts offer local access to global best practice in every hydrocarbon-producing country. Driven by a curiosity for technical progress, we provide a neutral ground for collaboration; creating competence, sharing knowledge and setting industry standards.

Our independent advice enables companies to make the right choices. Together with our customers, we drive the industry forward towards a safe and sustainable future.