

Offshore Cranes and Lifting Appliances

**International & European Maritime Legislation
and Standardisation with special emphasis on the
Norwegian petroleum activities sector**

3rd Edition

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Austrian Marine Equipment Manufacturers
Marketing Forum der österreichischen Marineausstatter

www.amem.at

Table of content

1. General

Norwegian Petroleum Act, Storting (Parliament), Ministry of Petroleum and Energy

2. Regulators

2a. Norway

Ministry of Petroleum and Energy (MPE)

- Oil and Gas Department
- Norwegian Petroleum Directorate (NPD)
- Petroleum Activities Act
- Health, Safety and Environment
- Petroleum Safety Authority (PSA)
- Standard Norway (SN) NORSOK
- Directorate of Mining (DMF)
- Geological Survey of Norway (NGU)
- Norwegian Society of Lifting Technology (NSLT)
- Kranteknisk Forening (KTF)
- Offshore Mechanical Handling Equipment Committee (OMHEC)
- North Sea Offshore Authorities Forum (NSOAF)

2b. International Labour Organisation (ILO)

- ILO Convention C 152
- ILO Recommendation R 160

2c. International Maritime Organisation (IMO)

- ISM
- MARPOL
- MODU
- SOLAS

2d. Europe

- European Commission DG Enterprise & Industry
- Machinery Directive 2006/42/EC
- European Committee for Standardization Comité Européen de Normalisation (CEN) Europäisches Komitee für Normung
- European Standards EN 13852-1:2004

2e. United States

- American Petroleum Institute (API)
- Bureau of Ocean Management, Regulation, and Enforcement (BOEMRE)
- United States Coast Guard (USCG)
- Occupational Safety and Health Administration (OSHA)

3. Recognised Organisations

- Classification Societies
- International Association of Classification Societies (IACS)
- Det Norske Veritas (DNV)

4. Norwegian Offshore Industry

- Norwegian Oil Industry Association (OLF)
- Statoil
- BP Norge (BPN)
- Norwegian Rederiforbund (NR)

5. Maritime Authorities

Norwegian Maritime Authority (NMA)

6. Accident and casualty investigation boards

Accident and Investigation Board Norway (AIBN)

7. International Standards

- American Petroleum Institute (API)
- DIN
- EN
- ILO
- ISO
- VDI

8. Abbreviations and Acronyms

1. General

In 2008, Norway was ranked as the sixth largest oil exporter and the eleventh largest oil producer in the world. Norway was the second largest gas exporter to Europe. The country accounts for 30 percent of all gas production in the world, and is the fifth largest producer of gas. The total recoverable resources at the shelf amount approximately to 13.4 billion standard cubic meters oil equivalents. After 40 years of production, nearly sixty percent of the expected resources remain to be produced. Eight percent of the labour force is directly or indirectly employed by the country's petroleum industry.

The petroleum sector is driven by technological innovation and the goal of maximising the values (profits) of the NCS Norwegian Continental Shelf.

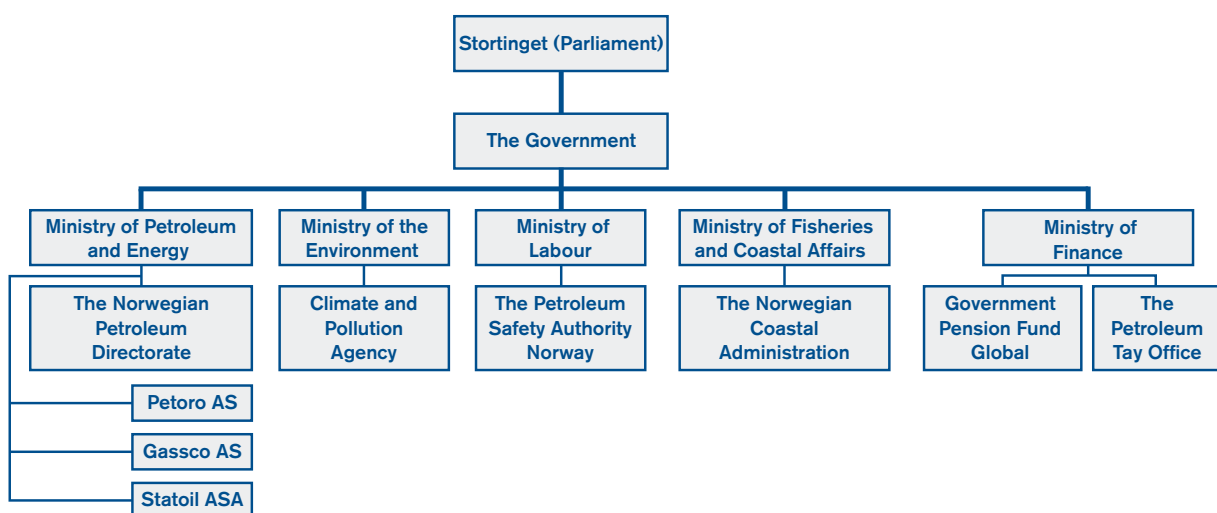
The **Storting** (Norwegian Parliament) has been establishing the framework for the Norwegian petroleum activities as described in several Storting White Papers. The Storting supervises the Government and the public administration. The Government holds the executive power over the petroleum policy and is responsible vis-a-vis the Parliament. In applying the policy, the Government is supported by the Ministries and their subordinate directorates and agencies.

The principal Norwegian legislation governing the petroleum activities in Norway consists of the

- **Norwegian Petroleum Act** and the
- Norwegian Petroleum Taxation Act

Under the Norwegian Petroleum Act, the **Ministry of Petroleum and Energy (MPE)** is responsible for resource management and for administering petroleum activities on the Norwegian Continental Shelf.

According to the new Health, Safety and Environment (HSE) regulations entered into force on 1 January 2011, the new term for "continental shelf" or "the shelf" is "offshore".



State organisation of the petroleum activities (Source: Ministry of Petroleum and Energy)

2. Regulators

2a. Norway



MINISTRY OF
PETROLEUM AND ENERGY

Ministry of Petroleum and Energy (MPE)

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The principal responsibility of the Ministry of Petroleum & Energy is to achieve a coordinated and integrated energy policy. The MPE is responsible for resource management and for the sector as a whole. The Ministry has four departments. The most important department, of a total of four, is:

Oil and Gas Department (OG)

Telephone + 47 22 24 62 09

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The department consists of five sections:

- **Exploration (LS)**
Opening of new areas on the NCS Norwegian Continental Shelf for petroleum activities
- **Development and Production (UDR)**
Monitoring of development, production and decommissioning of oil and gas fields on the NCS Norwegian Continental Shelf
- **Gas and Infrastructure (GI)**
Monitoring of the gas chain.
Transport infrastructure.
- **Analysis and Markets (AM)**
Economical analysis of petroleum activities
- **Petroleum Law and Legal Affairs (PJS)**
Juridical questions related to petroleum activities.
Treaties and contracts, laws, regulations and frameworks for petroleum activities.



The Norwegian Petroleum Directorate (NPD) Oljedirektoratet

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The NPD is administratively subordinate to the MPE and plays a key role in the petroleum resource management. It is an advisory body for the MPE. The NPD exercises authority in connection with the exploration and production of petroleum deposits on the NCS, including statutory powers and to make decisions based on the rules and regulations governing the petroleum activities (Petroleum Activities Act) The regulations come as Acts, Royal Decrees ("the King") and NPD Regulations.

Remark:

The NPD does not have any role within HSE management! For HSE see **PSA**

Petroleum Activities Act

Act 29 November 1996 No. 72 relating to petroleum activities.

Last amended by Act 19 June 2009 No 104/1996

The Norwegian petroleum resource management regime is characterised by the use of principle-based legislation, as reflected in the Petroleum Activities Act 1996 (Norway). This law sets out framework conditions to guide the formulation of acceptable commercial incentives in concession contracts granted to private businesses for undertaking exploration and extraction.

Petroleum operations in Norway are subject to extensive regulation with regard to health, safety and the environment.

The Facilities Regulations 2005

Health, Safety and Environment in the petroleum activities (HSE)

Under the Petroleum Act, which is administered by the Ministry of Petroleum and Energy, petroleum operations must be conducted in compliance with a reasonable standard of care, taking into consideration the safety of employees, the environment and the economic values represented by installations and vessels. The Petroleum Act specifically requires that petroleum operations be carried out in such a manner that a high level of safety is developed and maintained in accordance with the latest technological developments.

Operating companies on the NCS are permanently obliged to maintain a plan to deal with emergency situations.



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Ministry of Labour

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The Ministry of Labour has the overall responsibility for the working environment and for the safety and emergency preparedness in connection with petroleum activities. It is further responsible for the labour market policy, for pensions and the welfare policy. The Government has specified that the PSA will be one out of three powerful coordinators for HSE regulation covering industry and society in Norway. The two other organisations are:

- Norwegian Pollution Control Authority
- Norwegian Social and Health Directorate



PETROLEUMSTILSYNET

Petroleum Safety Authority Norway (PSA) Petroleumstilsynet

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The Petroleum Safety Authority Norway was established as an independent government regulator on 1 January 2004. PSA is located in Stavanger and has a staff of more than 150 employees. PSA is subordinate to the Ministry of Labour.

The PSA has identified priority areas where action will have the biggest impact, and where special attention is needed if Norway is to fulfil its ambitions of being the world leader in petroleum-related HSE regulation

The PSA's regulatory authority

The PSA has regulatory responsibility for technical and operational safety, emergency preparedness and the working environment for all petroleum-related activities. It covers all phases of the industry's work, planning, design, construction, operation and possible later removal of the structures and the equipment. This responsibility was taken over from the Norwegian Petroleum Directorate (NPD) when the PSA was created in 2004.

The PSA's area of responsibility includes supervision of safety, emergency preparedness and the working environment for both offshore and onshore facilities.



“Safety” covers a broad range in the PSA's terminology and embraces three categories of loss

- human life, health and welfare
- natural environment
- financial investment and operational regularity

Authority has been delegated to the PSA by the Ministry to issue more detailed regulations for safety and the working environment in the industry, and to take specific decisions in the form of permits and consents, orders, enforcement fines, halting operations, prohibitions, dispensations and so forth.

The PSA's duties

The Government has authorized the PSA to conduct audits on its own and in cooperation with other regulatory authorities in the HSE area. Audits should be a supplement to and not a replacement for internal control by the industry. PSA has to ensure that all petroleum activities are supervised and monitored in a unified manner.

The PSA is obliged to provide information and advice to the players in the industry, establish collaboration with other HSE regulators nationally and internationally. PSA must find a compromise between its role as a high-risk/technology regulator and a labour inspection authority.

All that sounds very promising and exemplary but even in Norway theory combined with wishful thinking deviates quite often from reality. For those locals and government officials holding up Norway as a model the rest of the world should aspire to emulate, one might wonder if they have ever heard about the near miss accident (major gas explosion) on Statoil's Gullfaks C platform. The regulatory watchdog in the petroleum industry – PSA – obviously has been put under massive pressure by the highly influential and extremely rich oil companies (“money buys everything”) to measure with two different scales – inches and millimetres.

PSA's competence and liability to effectively monitor the petroleum and gas exploration and production

industry is limited. It is in fact an industry where accidents of a magnitude of the *Deepwater Horizon* oil spill in the Gulf of Mexico by all means are possible, with extensive damage to workers, marine and wildlife habitats and the fishing and tourism industry. The organisation seems to be tempted to compensate for its lack of power in this big money making “laissez faire – laissez passer” mentality driven industry when protecting a single crane driver with a tsunami of discriminating overregulation hampering the crane industry and accredited certifiers & regulators likewise.

New HSE Health, Safety and Environment regulations adopted!

On 29 April 2010,

- the Norwegian Directorate for Health, the Climate and Pollution Agency,
- the Norwegian Food Safety Authority and
- the Petroleum Safety Authority Norway

stipulated the new regulations relating to health, safety and the environment in the petroleum activities on offshore and onshore facilities that are subject to the Petroleum Safety Authority.

PSA's regulations

The Petroleum Safety Authority Norway (PSA) is responsible for developing and enforcing regulations which govern safety and working environment in the petroleum activities on the Norwegian continental shelf and associated land facilities.

PSA Regulations before 1 January 2011

Guidelines to the Facilities Regulations – 1 January 2002

Re Section 70

Lifting appliances and lifting gear

The Machinery Regulations apply to design, manufacture and sale of lifting appliances and lifting gear for use on permanently placed facilities.

The machinery regulations are expanded on in harmonised standards, including the EN 13852-1 for offshore cranes. The standard EN 13852-1 should also be used on mobile facilities that are registered in a national ship's register. With regard to evaluation of the technical condition of cranes on existing mobile facilities that will be put into service on the Norwegian continental shelf, reference is made to the Norwegian Shipowners' Association's Guidelines for implementation of EN 13852-1 on existing offshore cranes on mobile offshore units.

The requirement as mentioned in the first paragraph second sentence, continues the current law in the regulations under the Petroleum Act and applies only to the safety aspects, not the health and environment aspects.

In order to fulfil the requirement to remote operation as mentioned in the third paragraph, the NORSOK D-001 standard Chapter 5.4 and OLF/NR guideline No. 081 revision 2 should be used, with the following addition:

lifting equipment should have independent safety assemblies and be hung off and stored in such a way that the equipment is secure in the event of heeling, and that the danger of falling objects is limited.

Snubbing units as mentioned in the last paragraph, means mobile units that are installed so that forces are transferred directly to the wellhead. For snubbing units, the requirement will be made applicable to the extent that equipment to be used with such units, has been developed and tested.

For lifting appliances and lifting gear on the drill floor of mobile facilities that are registered in a national ship's register, the ISO 13535 standard and relevant parts of the DNV OS-E101 standard may be used as an alternative to the standard NORSOK D-001.

For remote operation of pipes and work strings on mobile facilities that are registered in a national ship's register, the DNV OS-E101 chapter 2, section 5, F 100-400 may be used as an alternative to the standard NORSOK D-001 chapter 5.4.

PSA Regulations after 1 January 2011 **Re Section 69** **Lifting appliances and lifting gear**

The Machinery Regulations apply to construction, manufacture and sale of lifting appliances and lifting gear for use on permanently placed facilities.

The Machinery Regulations are expanded on in harmonised standards, including the EN 13852-1 standard for offshore cranes. The EN 13852-1 standard should also be used on mobile facilities that are registered in a national ships' register.

With regard to evaluation of the technical condition of cranes on existing mobile facilities that will be put into service on the Norwegian continental shelf, reference is made to the Norwegian Shipowners' Association's Guidelines for implementation of EN 13852-1 on existing offshore cranes on mobile offshore units.

The requirement as mentioned in the first subsection second sentence, continues the current law in the regulations under the Petroleum Act and applies only to the safety aspects, not the health and environment aspects. In order to fulfil the requirement regarding remote operation as mentioned in the third subsection, the NORSOK D-001 standard Chapter 5.4 and OLF/NR

Guideline No. 081 Revision 2 should be used, with the following addition:

lifting equipment should have independent safety features and be suspended and stored in such a way that the equipment is secure in the event of heeling, and that the danger of falling objects is limited.

Snubbing units as mentioned in the last subsection, means mobile units that are installed so that forces are transferred directly to the wellhead. For snubbing units, the requirement will be made applicable to the extent that equipment to be used with such units, has been developed and tested.

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ships' register, the ISO 13535 standard and relevant parts of the DNV OS-E101 standard may be used as an alternative to the NORSOK D-001 standard. For remote operation of pipes and work strings on mobile facilities that are registered in a national ships' register, DNV OS-E101 Chapter 2, Section 5, F 100-400 may be used as an alternative to the NORSOK Standard D.001 Chapter 5.4.



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Standard Norway (SN) is a private and independent member organisation. The organisation was established in 2003 with roots dating back to 1923. It is the international member of the International Organization for Standardization (ISO) and the European Committee for Standardization (CEN). Standard Norway holds a seat on the boards of these organisations.

The NORSOK Standards are developed by the Norwegian petroleum industry to ensure adequate safety, value adding and cost effectiveness for petroleum industry developments and operations. Furthermore, NORSOK standards are, as far as possible, intended to replace oil company specifications and serve as references in the authorities' regulations. The NORSOK standards are normally based on recognised international standards, adding the provisions deemed necessary to fill the broad needs for the Norwegian petroleum industry.

The NORSOK standards are prepared and published with support by The Norwegian Oil Industry (OLF) and Federation of Norwegian Manufacturing Industries (TBL) – now Norsk Industri.

NORSOK standards are administered and published by Standard Norway.

Most of the international standardisation activities are organized in ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries"

NORSOK (Norsk Søkkel Konkurranseseposisjon) STANDARDS

- A-Administration
- C-Architect
- D-Drilling
- E-Electrical
- G-Geotechnology
- H-HVAC
- I-Instrumentation
- I-Metering
- I-SCD-Syst Control Diagram
- J-Marine Operation
- L-Piping / Layout
- M-Material
- N-Structural
- O-Operation
- P-Process
- R-Lifting Equipment
- R-Mechanical
- S-Safety (SHE)
- T-Telecommunication
- U-Subsea
- U-Underwater Operation
- WF-Well fluids
- Y-Pipelines
- Z-E&I Installation
- Z-MC and Preservation
- Z-Reliability engineering and technology
- Z-Risk analysis
- Z-Stand. Cost Coding
- Z-Technical Info.
- Z-Temporary

Materials

M-001	Materials selection (Rev. 4, August 2004)
M-101	Structural steel fabrication (Rev. 4, Dec. 2000)
M-120	Material data sheets for structural steel (Edition 5, November 2008)
M-121	Aluminium structural material (Rev. 1, Sept. 1997)
M-122	Cast structural steel (Rev. 1, June 2003)
M-123	Forged structural steel (Rev. 1, June 2003)
M-501	Surface preparation and protective coating (Rev. 5, June 2004)
M-503	Cathodic protection (Edition 3, May 2007)
M-506	CO ₂ corrosion rate calculation model (Rev. 2, June 2005)
M-601	Welding and inspection of piping (Edition 5, April 2008)
M-622	Fabrication and installation of GRP piping systems (Rev 1 April 2005)
M-630	Material data sheets and element data sheets for piping (Rev. 5, September 2010)
M-650	Qualification of manufacturers of special materials (Rev. 3, April 2004)
M-710	Qualification of non-metallic sealing materials and manufactures (Rev. 2, Oct. 2001)

Electrical

E-001	Electrical System
E-002	Adjustable speed AC motor drives
Z-010	Electrical, Instrumentation and Tele-communication Installation

Safety

S-001	Technical Safety (Edition 4, February 2008)
S-002	Working Environment (Rev. 4, August 2004)
S-003	Environmental Care (Rev. 3, December 2005)
S-005	Machinery- working environment analyses and documentation (Rev.1, March 1999)
S-006	HSE evaluation of contractors (Rev. 2, December 2003)
S-011	Safety Equipment Data Sheets (Rev 2, Aug. 1999)
S-012	Health, Safety and Environment (HSE) in construction-related activities (Rev. 2, Aug. 2002)

**Petroleum
R-Lifting Equipment
NORSOK Standards**

R-002	Lifting equipment (preliminary Edition 2, April 2010 revised Standard will be published 1st quarter 2011)
R-003	Safe use of lifting equipment (Rev. 2, July 2004)
R-005	Safe use of lifting and transport equipment in onshore petroleum plants (Edition 1, November 2008)
R-CR-002	Lifting equipment (Rev.1, January 1995)

Risk analysis

Z-013	Risk and emergency preparedness analysis
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**DIRECTORATE OF MINING (DMF)
WITH COMMISSIONER OF MINES AT SVALBARD**

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Bergvesenet med Bergmesteren for Svalbard (DMF) is a Norwegian government agency responsible for administrating the extraction of mineral resources within the kingdom. The directorate is subordinate to the Ministry of Trade and Industry and co-located with the Norwegian Geological Survey (NGU) in Trondheim, with a separate office in Longyearbyen (Svalbard).

DMF and NGU closely work together and provide information on mining resources onshore and on the continental shelf especially on the deeper parts of the shelf in the Norwegian sea, as well as in the shallower Barents Sea.

Mining legislation in Norway is based on the Minerals Act of June 2009 No. 101. The Act applies on Norwegian territory, with the exception of Svalbard. At sea, the Act does not apply outside the boundaries of private property.



**Geological Survey of Norway
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NGU is participating actively – in close cooperation with DMF - in the research directed towards the oil and gas industry with special emphasis on the deeper parts of the continental shelf. In integrating the various geophysical methods NGU has been providing the petroleum industry with the necessary information for assisting in targeting the most favourable parts of the shelf for potential new discoveries of oil and gas deposits.



Norwegian Society of Lifting Technology (NSLT)

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O · M · H · E · C

Offshore Mechanical Handling Equipment Committee (OMHEC)

URL www.omhec.org

The following regulatory authorities of the United Kingdom, Norway, Denmark and the Netherlands are members of the OMHEC:

- Danish Energy Agency
- Netherlands State Supervision of Mines
- Petroleum Safety Authority, Norway
- UK Health and Safety Executive

and includes also industry organisations, independent verifications bodies, classification societies and other relevant organisations.

OMHEC is an advisor to the North Sea Offshore Authorities Forum (NSOAF) in matters related to the safety of lifting equipment and lifting operations offshore. In this respect the exchange of information about accidents and incidents plays an important role in the work of OMHEC. OMHEC's guidance can be accepted by the regulatory authorities as good industry practice.



North Sea Offshore Authorities Forum (NSOAF)

The NSOAF forum was formed in 1989 by the representatives from all the North Sea countries' governmental authorities in charge of supervision of offshore petroleum activities. The goal of NSOAF is to ensure continuous improvement in health, safety and the environment. Active members are:

- Petroleum Safety Authority, Norway
- Danish Energy Agency, Denmark
- Ministry of Petroleum, Faroe Islands
- Landesamt für Bergbau, Energie und Geologie, Germany
- Dept. of Communications, Marine and Natural Sources, Ireland
- State Supervision of Mines, The Netherlands
- Svenska Geologiska Undersökning, Sweden
- Health and safety Executive, United Kingdom

2b. ILO International Labour Organisation

General

The International Labour Organisation is a specialised agency of the United Nations that deals with labour issues to international labour standards in general (**Maritime Labour Convention MLC**) and seafarers' safety and occupational health on board ships and offshore platforms in particular. ILO is the only tripartite U.N. agency with government (183 Member States), employer, and worker representatives.

One of the principal functions of ILO is setting international labour standards through the adoption of conventions and recommendations covering a broad spectrum of labour-related subjects and which, together, are sometimes referred to as the International Labour Code.

- Occupational Safety and Health (Dock Work) Convention No. C 152 "REGISTER OF LIFTING and ITEMS OF LOOSE GEAR" Article 25 (2) Standard international form as recommended by ILO
- Occupational Safety and Health (Dock Work) Recommendation No. R 160

2c. IMO International Maritime Organisation



The result of IMO's work is a comprehensive body of international conventions, supported by hundreds of recommendations governing every facet of shipping.

The global importance of this specialised United Nations agency can not be underestimated, typical and well known IMO documents are:

- IMO ISM International Safety Management Code
- IMO MARPOL The International Convention for the Prevention of Pollution from Ships
- IMO MODU Code for the construction and equipment of mobile offshore drilling units
- IMO SOLAS (Safety of Life at Sea)

2d. Europe

European Commission

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Machinery Directive 2006/42/EC

General

The machinery sector is an important part of the industry in Europe, and the Machinery Directive provides the regulatory basis for the harmonisation of essential health and safety requirements for machinery at European Union level. Being a "New Legal Framework" Directive, it promotes harmonisation through a combination of mandatory health and safety requirements and (voluntary) standards. The Directive applies to all machinery placed on the market for the first time in the European Union.

Essentially performing a dual function, the Directive not only promotes the free movement of machinery within the Single Market, but also sets out essential health and safety requirements that are supported by harmonised standards. It should be noted that the Directive contains only minimum requirements.

The Directive opens up the option of self-certification for the manufacturer without the involvement of a test laboratory (notified body).

Scope of the Directive

The Machinery Directive 2006/42/EC also regulates the exceptions which relate to machinery which is actually machinery within the meaning of the



Directive but is excluded from the scope of this by legal classification systems.

So, for example machinery on deep-sea ships and mobile offshore installations does not fall under the Machinery Directive.

Excluded from the scope are:

The Directive indicates that seagoing vessels and mobile offshore units^{*)} together with the equipment on board such vessels or units are **excluded** from the scope, as these are covered by relevant IMO conventions addressing safety requirements.

For floating offshore production vessels the question is to decide if they are permanent (in which case the Directive on Machinery will apply) or not. Since the units, when in operation, may be considered as permanently positioned.

^{*)} Mobile Offshore Unit - Definition

A mobile offshore unit is a floating platform that is not intended to be located on the oilfield permanently or for the long term, but is designed to be moved from location to location, whether or not it has a means of propulsion or of lowering legs to the seafloor.

Within the scope fall:

IMO codes do not cover drilling and production equipment. Products solely provided for drilling and production operations, which do not serve any function in relation to normal shipboard activities, are **included** in the scope of the Machinery Directive.

Floating units intended for production, such as, for example FPSOs Floating Production, Storage and Offloading installations – usually based on tanker designs – and FPPs Floating Production Platforms – based on semi-submersible vessels – and the machinery intended to be installed on fixed offshore platforms, oil production rigs, and machinery which may be used on both fixed and mobile offshore units is also subject to the Directive on Machinery.

2nd Edition of the Guide to Application of the Machinery Directive 2006/42/EC

General Editor Ian Fraser

http://ec.europa.eu/enterprise/sectors/mechanical/files/machinery/guide-appl-2006-42-ec-2nd-201006_en.pdf



European Committee for Standardization
Comité Européen de Normalisation
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European Committee for Standardization Comité Européen de Normalisation Europäisches Komitee für Normung

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General

The European Committee for Standardisation (CEN) is a provider of European standards and technical specifications with a very strong political mandate in all areas of economic activity with the exception of electrotechnology (CENELEC) and telecommunications (ETSI). CEN considers itself as a driver for a new world governance contributing to Europe's economic, environmental, societal and technological leadership. CEN's 31 National Members work together to develop voluntary European Standards (ENs).

There is a clear separation between the EU Legislation and European Standardisation under the regime of the "New Approach to Harmonisation and Standardisation", Council Resolution (85/C136/01).

The European standards bodies have the task of drawing up the corresponding technical specifications meeting the essential requirements of directives, compliance with which will provide a presumption of conformity with the essential requirements. Such specifications are referred to as "harmonised standards".

European Standards

EN 13852-1:2004

Offshore cranes – Part 1: General-purpose offshore cranes

Corrigendum 2004

Corrigendum 2007

(prEN 13852-1:2011)



General

The offshore crane standard prEN 13852 sets out the minimum criteria for structural, electrical and mechanical design. The standard was prepared by representatives from Norway, the UK, Austria, Germany and the Netherlands representing crane manufacturers, classification societies, national standardisation institutes and crane owners. The EN standard was intended to support the Machinery Directive but is in some kind of a “project” phase. The harmonisation of the Machinery Directive therefore is somewhat in a grey area.

The prEN 13852 is split into two parts – one for general-purpose cranes and one for floating cranes. Both are still provisional, hence the abbreviation “pr”. A review of EN 13852 is also under discussion at the moment in the wake of the Deepwater Horizon Disaster. So it might be quite well possible that an entirely new standard will be supporting the Machinery Directive in the near future.

Part I

General Purpose Offshore Cranes prEN 13852-1

This standard is mandatory for slewing cranes – mounted on fixed offshore platforms, whose duties include handling to and from supply vessels, barges or semi – submersibles. The first attempt to adapt EN 13852-1 for the revised Machinery Directive 2006/42/EC was abandoned according to CEN. A new draft has been sent for enquiry to the Member States and the National Standards Bodies (NSBs). Dead line for comments 10.08.2011. The revised standard should be available in May 2013. Lessons learned from the Deepwater Horizon disaster obviously will be taken into account.

It would be advisable for manufacturers of offshore cranes to follow the development of the new version very closely!

For the purpose of this standard the boundary between a general purpose offshore crane and its support is assumed to be as follows: When welding a pedestal to the structure, the boundary is the first horizontal weld following the flange in a downward direction, normally not less than 1,5x the pedestal diameter from the flange.

Additional requirements and details to NS-EN 13852-1 are described in Technical and Professional Requirements **TR 1727** elaborated by Statoil and valid from 2005-05-09. The objective of this Technical Requirement TR is to standardise new and also existing offshore cranes in Statoil.

see also page 5

PSA Regulations after 1 January 2011

Re Section 69

Lifting appliances and lifting gear

Part II

Floating Cranes EN 13852-2

Cranes mounted on a vessel or barge primarily intended for construction and deconstruction operations in a marine environment. The floating crane part has not advanced so far.

Normative References

EN 12077-2, Cranes safety – Requirements for health and safety

Part 2: Limiting and indicating devices

EN 12644-1, Cranes – Information for use and testing

Part 1: Instructions

EN 12644-2, Cranes – Information for use and testing

Part 2: Marking

EN 13135-1, Cranes – Safety-Design-Requirements for equipment

Part 1: Electrotechnical equipment

EN 13135-2, Cranes – Equipment

Part 2: Non-electrotechnical equipment

EN 13557, Cranes – Controls and control stations

EN 13586, Cranes – Access

prEN 14502-1:2002, Cranes – Equipment for the lifting of persons

Part 1: Suspended baskets

2e. United States

Experience has shown that the US have been expanding their influence in the wake of disasters like 9/11 or the sinking of *Deepwater Horizon* not only in worldwide safety and security related legislation but also in global oil and gas exploration and production. API and BOEMRE will for sure enforce their leadership position versus regulators and legislators in the European (Norwegian) offshore industry.



American Petroleum Institute (API)

1220 L Street, NW
Washington, DC 20005-4070
USA

Telephone + 1 202 682 8000
Telefax + 1 202 682 8426
E-Mail info@api.org
URL www.api.org

The American Petroleum Institute (API) is the only national trade association that represents all aspects of America's oil and natural gas industry. More than 400 members come from the largest major oil company to the smallest of independents, and all segments of the industry. They are producers, refiners, suppliers, pipeline operators and marine transporters, as well as service and supply companies that support all segments of the industry.

Although API's focus was primarily domestic, in recent years API's work has expanded to include a growing international dimension, and today API is recognised around the world for its broad range of programs. It can be expected that API's influence even on the Norwegian Offshore Shelf will increase in the future – at least via ISO.

Standards

API has been leading the development of petroleum and petrochemical equipment and operating standards. API maintains more than 500 standards and recommended practices. Many have been incorporated into state and federal regulations; they are also increasingly adopted by the International Organization for Standardisation (ISO).

Certification

Designed for manufacturers of production, drilling and refinery equipment, the **API Monogram Program** verifies that manufacturers are operating in compliance with industry standards. API also provides quality, environmental, and occupational health and safety management systems certification through **APIQR**.



Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE)

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1849 C Street, NW
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USA

Telephone + 1 202 208 3985
Telefax + 1 202 208 3968
E-Mail boemrepublicaffairs@boemre.gov
URL www.boemre.gov

In response to the *Deepwater Horizon* explosion in the Gulf of Mexico in April 2010 causing the largest offshore oil spill in the United States history, the Obama administration claimed to have launched the most aggressive and comprehensive reforms to offshore oil and gas regulation and oversight in U.S. history.

The problem was not the lack of reforms, but the lack of enforcement. All ended up in the renaming of an existing agency which was assigned to the task of managing oil and gas on the federal Outer Continental Shelf (OCS) – **Minerals Management Services (MMS)** also known as **Bureau of Ocean Energy (BOE)**. MMS simply was an agency "rubber-stamping" the oil industry's actions in a "laissez faire – laissez passer" mood as a consequence of massive corruption and lobbying of the oil companies. In other words – MMS was too cosy with the industry! The MMS had suffered from a systematic revolving door problem between the Department of Interior (DOI) and the oil and gas industry.

On June 21, 2010, the Minerals Management Service was renamed the Bureau of Ocean Energy,

Management, Regulation and Enforcement (BOEMRE) and reorganised.

Regulation **and** enforcement – what a conflict of interests!

BOEMRE standards for gas/oil exploration and extraction on the continental shelf of the U.S.

The MMS Legacy

BOEMRE standards continue to be known as the IHS MMS Collection of Referenced Standards and are used by engineers, compliance personnel and regulatory management working in the fields of petroleum and companies engaged in the operation of offshore exploration and production equipment.

The MMS Referenced Standards Collections include among others standards listed in (30CFR 250 through 30 CFR 282).

Topics include among others

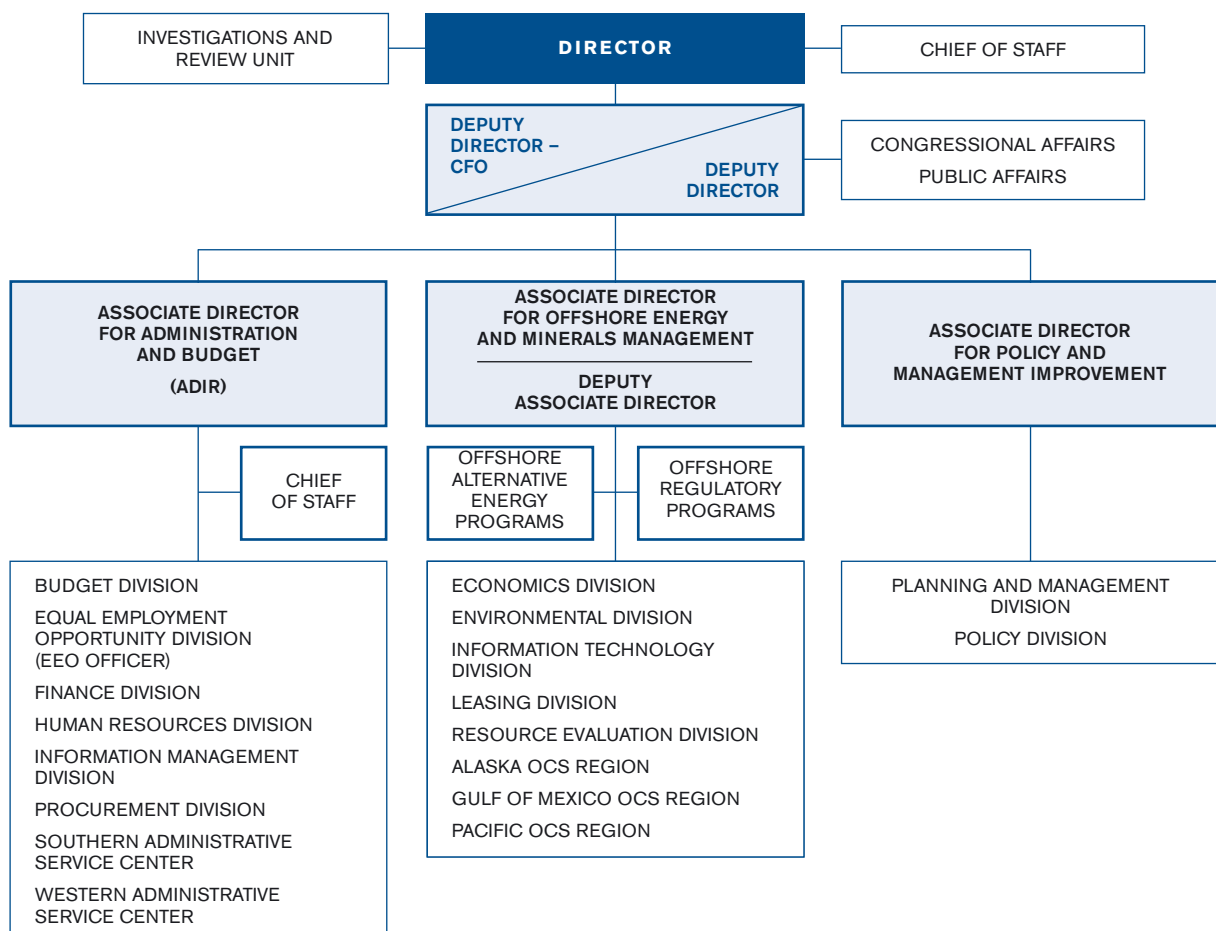
- Offshore structure design and construction
- Fixed platforms
- Floating production systems (FPSs) and structures
- Tension-leg platforms (TLPs)

BOEMRE and USCG

Regulations

Under the 1989 MMS /USCG Memorandum of Understanding (MOU), BOEMRE and USCG both enforce policies that were set forth in the American Petroleum Institute's (API) Recommended Practice for the Operation and Maintenance of Offshore Cranes. These regulations provide guidance for the safe operation and maintenance of offshore cranes.

BUREAU OF OCEAN ENERGY MANAGEMENT, REGULATION AND ENFORCEMENT



The Bureau regulates cranes by requiring lessees and operators to comply with American Petroleum Institute's API RP 2D, Third Edition, June 1, 1995. The Bureau incorporates this document by reference in the regulations found at 30CFR 250.120(c), safe and workmanlike operations.

API RP 2D only addresses pedestal-mounted cranes, the Bureau does not have specific regulations that address the operation of other cranes, booms, or other materials-handling equipment. API RP 2D also outlines the necessary qualifications and minimum training requirements for crane operators.

Requirements

All offshore cranes must be designed in accordance with the API, and installed according to a plan that is approved by the USCG or BOEMRE.

Inspections

An offshore crane must be inspected and load tested by the U.S. Coast Guard or an approved third party. This inspection must occur when the crane is first installed and every four years thereafter. It must also be inspected after any repairs or alterations.

Responsibilities

BOEMRE – the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) is charged with regulating the use of cranes and other material-moving equipment on fixed platforms at sea.

USCG – the United States Coast Guard is responsible for regulating cranes and other material-moving equipment on mobile drilling units and floating production systems referring to API's Recommended Practice RP 2D (46 CFR 109.521).

The USCG further requires that cranes installed on mobile drilling units and floating production systems to be:

- designed in accordance to API Specification for Offshore Cranes (API 2C)
- installed according to an approved crane plane, and
- inspected and load tested by USCG or an approved third party when the crane is installed, every 48 months, and following repairs or alterations to any structural component of the crane.

On June 21, 2010, the Minerals Management Service was renamed the Bureau of Ocean Energy, Management, Regulation and Enforcement (BOEMRE) and reorganised. Regulation **and** enforcement – what a conflict of interests!

BOEMRE standards for gas/oil exploration and extraction on the continental shelf of the U.S.

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The MMS Referenced Standards Collections include among others standards listed in (30CFR 250 through 30 CFR 282).

Topics include among others

- Offshore structure design and construction
- Fixed platforms
- Floating production systems (FPSs) and structures
- Tension-leg platforms (TLPs)

Reorganisation of The Bureau of Ocean Energy Management, Regulation and Enforcement

On Oct. 1, 2011, the Department of the Interior (DOI) has formally established two new, independent bureaus

- the **Bureau of Safety and Environmental Enforcement (BSEE)**

and

- the **Bureau of Ocean Energy Management (BOEM)**

to carry out the offshore energy management and safety and environmental oversight missions which were under the jurisdiction of the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE). The establishment of BOEM and BSEE marks the completion of an effort to reorganize the former Minerals Management Service (MMS).

This important milestone comes as part of a series of fundamental changes made by the Obama administration to reform the government's regulation of offshore energy development and the agency responsible for it – while ensuring that responsible oil and gas drilling and production continues on the U.S. Outer Continental Shelf – under the leadership of Secretary of the Interior Ken Salazar and BOEMRE Director Michael R. Bromwich.

The Deepwater Horizon blowout and resulting oil spill shed light on weaknesses in the federal offshore energy regulatory system, including the overly broad mandate and inherently conflicted missions of MMS. Legislation and law enforcement in one organisation are posing still an inherent problem.



Bureau of Ocean Energy Management (BOEM)

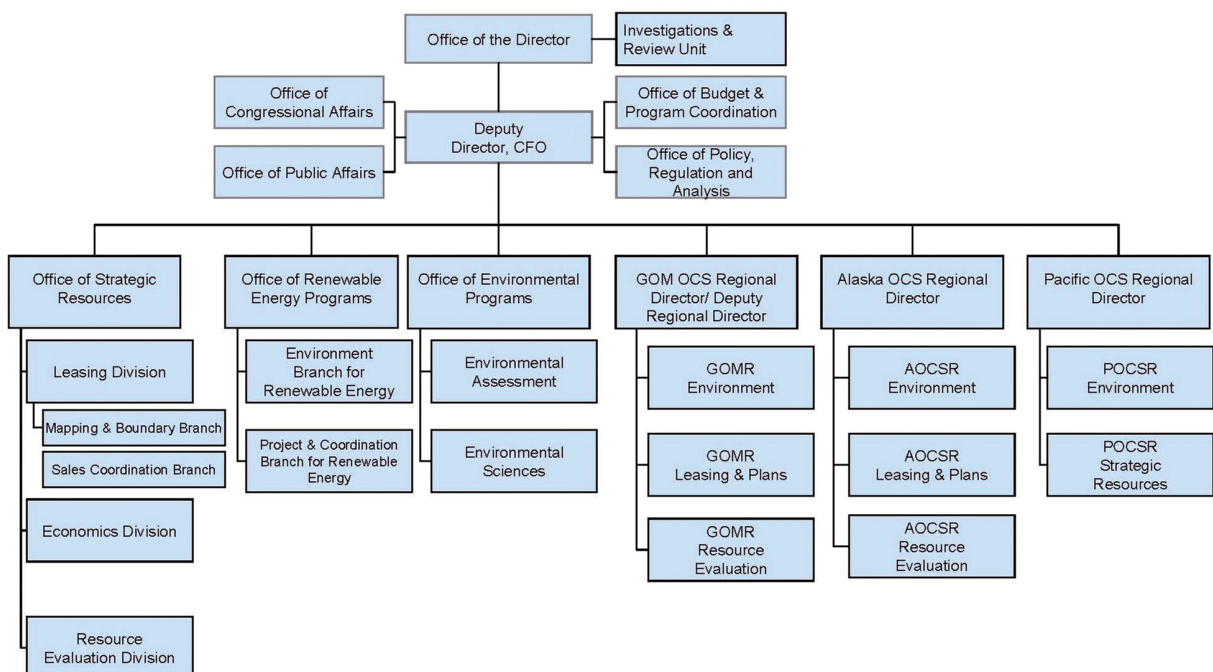
Headquarters
1849 C Street, NW
Washington, D.C. 20240
USA

Telephone + 1 202 208 3985
Telefax + 1 202 208 3968
E-Mail
URL www.boem.gov

General

BOEM is led by Director Tommy Beaudreau and is responsible for managing an environmentally and economically responsible development of the US offshore resources. Its functions will include offshore leasing, resource evaluation, review and administration of oil and gas exploration and development plans, renewable energy development,

BOEM Organizational Chart



National Environmental Policy Act (NEPA) analysis and environmental studies.

Regional Offices

Gulf of Mexico OCS Region & Atlantic Activities

1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394
Telephone + 1 800 200 4853

Pacific OCS Region

770 Paseo Camarillo
Camarillo, CA 93010
Telephone + 1 800 672 2627

Alaska OCS Region

3801 Centerpoint Drive
Suite 500
Anchorage, AK 99503
Telephone + 1 907 334 5208



Bureau of Safety and Environmental Enforcement (BSEE)

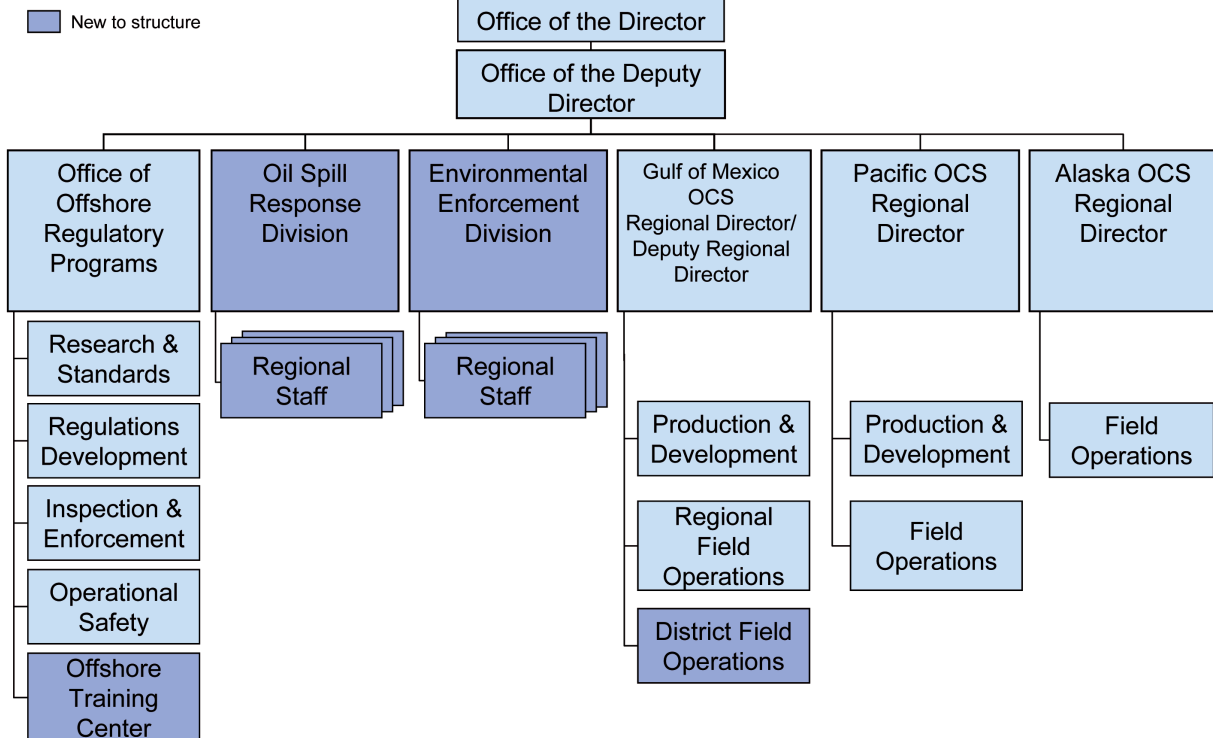
Headquarters
1849 C Street, NW
Washington, D.C. 20240
USA

Telephone + 1 202 208 3985
Telefax + 1 202 208
E-Mail
URL www.bsee.gov

General

BSEE was led by Director Michael R. Bromwich, who had served as the BOEMRE director since its creation in June 2010 and was serving as the BSEE director until an ongoing national search for a permanent director had been completed.

BSEE Organizational Chart



Secretary of the Interior Ken Salazar named Rear Admiral James A. Watson as the Director of the Bureau of Safety and Environmental Enforcement (BSEE) on November 15, 2010.

James A. Watson succeeds Michael R. Bromwich who will leave the Department of Interior at the end of December 2011.



Admiral James A. Watson

BSEE will be responsible for safety and environmental oversight of offshore oil and gas operations, including permitting and inspections, of offshore oil and gas operations. Its functions include the development and enforcement of safety and environmental regulations, permitting offshore exploration, development and production, inspections, offshore regulatory programs, oil spill response and newly formed training and environmental compliance programs. BSEE will be involved in the approval of oil and gas plans, facilities, and operations. The process includes reviews where there is much emphasis on design, operations, and maintenance.



U.S. Department of Labour Occupational Safety and Health Administration (OSHA) Directorate of Standards

200 Constitution Avenue, N.W.
Washington, D.C. 20210
USA

URL www.osha.gov

Offshore heavy lift crane operators hoist equipment or materials – including food, drilling fluids, casings, cables, equipment and other supplies – aboard platforms. The crane operator may also bring personnel onto the work platform. Offshore crane operators usually spend several years gaining experience working with different lifts and cranes on land before moving to offshore rigs. Some accumulate the knowledge, skill and experience working on docks by lifting loads from barges.

The American Petroleum Institute, some states and employers determine qualifications for offshore heavy lift crane operators.

State laws may require offshore heavy lift crane operators to qualify for a state licence. The requirement pertains to rigs operated within the 12 miles offshore.

The National Commission for the Certification of Crane Operators (NCCCO) is the recognized certification body for crane operators.

Offshore training and certification is called API RD 2D. NCCCO operators in addition meet OSHA requirements and American National Standard ASME B30. Many oil companies have their conditions that operators must meet e.g. British Petroleum.

OSHA Standards

Longshoring (29CFR 1918)

- 1918 Subpart F, Vessel's cargo handling gear
 - + 1918.51, General requirements
 - + 1918.55, Cranes (see also 1918.11)

3. Recognised Organisations

Statutory Certification of ships and floating structures

SOLAS and the other International Conventions permit the Flag State Administration to delegate the inspection and survey of ships to a Recognised Organisation (RO). This is in recognition of the fact that many Flag State Administrations do not have the adequate technical experience, manpower or global coverage to undertake all the necessary statutory inspections and surveys using their own staff. IMO Resolution **A.739(18)** lays down mandatory minimum requirements for ROs.

Classification Societies

Classification Societies are recognised organizations that establish and apply technical standards in relation to the design, construction and survey of marine related facilities including ships and floating offshore structures. The vast majority of ships are built and surveyed to the standards laid down by classification societies. These standards are issued by the Classification Society as published rules. A vessel that has been designed and built to the appropriate rules of a Society may apply for a certificate of classification from that Society. The Society issues this certificate upon completion of relevant classification surveys.

Such a certificate is only an attestation that the vessel is in compliance with the Rules that have been developed and published by the Society issuing the classification certificate. A certificate does not imply any warranty of safety, fitness for purpose or seaworthiness of the ship!

As independent, self-regulating, externally audited bodies, Classification Societies claim to have no commercial interests related to ship design, ship building, ship ownership, ship operation, ship management, ship maintenance or repairs, insurance, or chartering. In addition to that it should be noted in this context that Classification Societies are organisations which must not be controlled by ship owners, shipbuilders or others engaged commercially in the manufacture, equipping, repair or operation of ships. A look into the organisational structures of Classification Societies gives the proof that there is

a strong direct and indirect influence of ship owners, shipbuilders, insurance companies and the like, both in the commercial shipbuilding and the offshore arena. In establishing its rules, **each classification society may draw upon the advice and review of members of the industry who are considered experts in their field.** Classification Societies more and more abandon this principle by establishing their own research and engineering divisions offering consultancy services world wide.

Class Notations

Each of the classification societies has developed a series of notations that may be granted to a vessel to indicate that it is in compliance with some additional criteria / requirements that may be either specific to that vessel type or that are in excess of the standard classification requirements. All ships being assigned class with a Society are given a class notation consisting of a construction symbol, a main character of class, service area restriction notations and main ship type notations, as applicable.

Classification notations assigned to a ship are indicated on the certificate of classification as well as the Register of Ships published by the Society. These notations can be generalised by the following types which may be used in combination:

- main class symbol
- construction marks
- service notations with additional service features
- navigation notations
- geographic notations
- additional class notations

Mandatory and optional ship type class notations are listed and categorised in the rules of the classification societies.



INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES LTD.

International Association of Classification Societies (IACS)

IACS Limited

Permanent Secretariat
6th Floor, 36 Broadway
London SW1H 0BH
United Kingdom

Telephone +44 20 7976 0660
Telefax +44 20 7808 1100
URL www.iacs.org.uk

General

More than 50 organizations worldwide define their activities as providing some form of marine classification services. Those that meet the definition given in Appendix 1 (classification rules, compliance verification, register of class ships, authorisation by Flag State Administrations, no commercial interests from the shipping and shipbuilding industry) form IACS. It is estimated that the members of IACS collectively class over 90 percent of all commercial tonnage involved in international trade worldwide.

IACS Requirements concerning MOBILE OFFSHORE DRILLING UNITS

The purpose of these Requirements is to provide a common basis for the Classification of Mobile Offshore Drilling Units and Other Similar Units, by specifying minimum standards for their design, equipment and construction, to be incorporated in the Rules of the individual Member Societies of the IACS.



DNV MANAGING RISK

Det Norske Veritas (DNV)

Headquarters

Veritasveien 1
N – 1322 Høvik
Norway

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Telefax + 47 67 57 99 11
URL www.dnv.com

Services, Maritime

The organisation's history goes back to 1864, when the Foundation was established in Norway to inspect and evaluate the technical condition of Norwegian merchant vessels. Together with ABS and Lloyd's Register, DNV is one of the three major companies in the worldwide Classification Society business. DNV is headquartered in Høvik close to Oslo, Norway.

The certification of new cranes and lifting appliances on board ships requires:

- DNV design approval
- DNV manufacturing survey
- DNV survey of the installation on board
- DNV monitoring of functional tests / load tests

Where DNV certification of the cranes and lifting appliances is requested by the ship owner, this should be stated in the contract with the crane manufacturer. Such information is important in order to ascertain that the necessary drawings and calculations are submitted to DNV for design approval before the manufacturing of the crane is started, as well as to enable DNV to survey the manufacturing process from the very beginning.

DNV has launched its present *Standard for the Certification No. 2.22 Lifting Appliances* – in November 2008, replacing the *Rules for Certification of Lifting Appliances*, 1994.

The DNV product certificate for crane certification is



based on the DNV CG2 Certificate of Test and Thorough Examination of Lifting Appliances which complies with **ILO Convention No. 152**.

Services, Energy

All activities towards the oil, gas process and power industries are organised in DNV Services Energy, which comprises the former DNV Technology Services and parts of DNV Consulting. DNV considers itself as a provider of solutions that integrate business risk management and technical expertise. The main business segments for DNV Services Energy are upstream and downstream, pipeline transport, utilities, and cleaner and renewable energies. Offices dealing with fixed offshore structures are located in Høvik, Bergen and Stavanger.

DNV was retained by the United States to investigate the cause of the Deepwater Horizon oil spill in cooperation with **BOEMRE**.

DNV has been publishing standards – Offshore Service Specifications OSS, Offshore Standards OS and Recommended Practices RP – for the offshore industry which evolve continuously from experience gained in the past and ongoing joint industry projects. DNV offshore standards give criteria for design, construction and maintenance of offshore assets.

• Offshore Service Specifications (OSS)

DNV-OSS-101
Rules for Classification of Offshore Drilling and Support Units, April 2011

DNV-OSS-102
Rules for Classification of Floating Production, Storage and Loading Units, April 2011

DNV-OSS-103
Rules for Classification of LNG/LPG Floating Production and Storage Units or Installations, October 2009

DNV-OSS-308
Verification of Lifting Appliances for the Oil and Gas Industry, October 2010

• Offshore Standards (OS)

DNV-OS-C401
Fabrication and Testing of Offshore Structures, October 2010

The standard contains requirements for:

- welding procedures
- fabrication and tolerances
- testing
- corrosion protection systems

DNV-OS-D101
Marine and Machinery Systems and Equipment, October 2010

• Recommended Practices

DNV Class Notations

DNV's CG2, crane product certificate, is recognised throughout the world as documentation of the highest crane quality. DNV may also, upon request, check and document that other regulations and requirements specified by the customer are complied with. The following steps have to be carried out:

- Design approval of the entire ship with crane
- Site and manufacturing survey
- Load and functional testing

DNV equipment class notation **"CRANE"** applies for vessels with one or more certified cranes permanently installed onboard. In addition to the certification of the crane, the following is covered:

- supporting structure for the crane (strengthening of deck structure, pedestal etc.)
- devices for locking crane in parked position (unit at sea)

4. Offshore Industry

Federation of Norwegian Industries Norsk Industri

former
Federation of Norwegian Manufacturing
Teknologibedriftenes Landsforening (TBL)



Maritim Industri

Naeringslivets Hus
Middelthuns gate 27
Oslo

Postal address:
Postboks 7072 Majorstuen
0306 Oslo
Norway

Telephone + 47 23 08 88 00
Telefax + 47
E-Mail info@norskindustri.no
URL www.norskindustri.no
Contacts Egil Holland
+ 47 23 08 88 54
+ 47 91 70 39 38 (mobile)
egil.holland@norskindustri.no
Tor S. Andersen
+ 47 90 01 13 03 (mobile)
tsa@norskindustri.no

The Federation of Norwegian Industries' history goes back to 1889 and the establishment of the Mechanical Industry Association. In 2005 – the Federation of Norwegian Manufacturing Industries (TBL) and the Federation of Norwegian Process Industries (PIL) merged under the umbrella of the Confederation of the Norwegian Enterprise (NHO). The maritime industry division is composed of the former Norwegian Maritime Consultants, TBL Shipbuilding and TBL Marine Equipment Industry.



Norwegian Oil Industry Association (OLF) Oljeindustriens Landsforening

Vassbotnen 1
4113 Sandnes
Norway

Postal address:
Postboks 8065
4068 Stavanger
Norway

Telephone + 47 51 84 65 00
Telefax + 47 51 84 65 01
E-Mail firmapost@olf.no
URL www.olf.no
Contact Per Terje Vold, Director General

The Norwegian Oil Association (OLF) is a professional body and employer's association for oil and supplier companies engaged in the field of exploration and production of oil and gas on the Norwegian Continental Shelf. The main objective of OLF is to solve common challenges for the members and to strengthen the competitiveness of the Shelf.

Over 100 companies associated with the oil and gas activities on the shelf are members of the association, which in itself is a member of the Confederation of Norwegian Enterprise (NHO).

OLF Standard OLF/NR-081 Recommended guidelines for remote pipe handling operations

**Statoil ASA**

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Norway

Telephone + 47 51 99 00 00
Telefax + 47 51 99 00 50
E-Mail kundeservice@statoil.com
URL www.statoil.com

The heritage of Statoil derives from the three major Norwegian petroleum companies Statoil, Norsk Hydro and Saga Petroleum. In September 2006 the merger of these three companies was accomplished. The Government of Norway became the largest shareholder in Statoil with 67 percent of the shares. The ownership interest is managed by the MPE. In 2010 Statoil announced finding oil and gas reserves in the Fossekall prospect. The proved recoverable oil resources were estimated at between 37 and 63 million barrels, while the volume of associated free gas was estimated at between 1 to 3 billion standard cubic metres.

Offshore Cranes, additional requirements to NS-EN 13852-1

Technical and Professional Requirements TR 1727

**BP Norge AS**

Godesetalen 8
4033 Forus
Norway

Telephone + 47 52 01 30 00
Telefax + 47 52 01 30 01
E-Mail bpnorge@bp.com
URL www.bp.com
Contact: Anne Myhrvold, HSE Manager

BP stands exemplary for offshore exploration and production companies like Chevron Norge, Conoco Phillips, Norske Shell or Statoil Hydro which all have additional requirements to rules, regulations and standards.

BP HSE Directive 4 Lifting Operations



Norges Rederiforbund (NR) Norwegian Shipowners' Association

Postboks 1452, Vika
0116 Oslo
Norway

Telephone + 47 22 40 15 00
Telefax + 47 22 40 15 15
E-Mail post@rederi.no
URL www.rederi.no

The offshore segment of the Norwegian Shipowners' Association constitutes 55 percent of the organisation's membership, and it is broken down into three groups:

- Offshore Service Vessels (GOS)
- Offshore Contracting Companies (GOE)
- Subsea Contractors (GUE)

5. Maritime Authorities



NIS//NOR

Norwegian Maritime Authority (NMA)

Smedasundet 50 A
N-5528 Haugesund
Norway

Telephone + 47 52 74 50 00
Telefax + 47 52 74 50 01
E-Mail postmottak@sjofartsdi.no
URL www.sjofartsdir.no

The Norwegian Maritime Authority is a Government body subordinated to the Ministry of Trade and Industry and the Ministry of Environment. The Authority has jurisdiction over ships registered in Norway and foreign ships arriving in Norwegian ports. The Authority's main goals are to prevent accidents and to achieve a high level of safety for lives, vessels and the environment.

Reporting of marine casualties and occupational injuries

New requirements regarding notification and reporting of casualties came into force in 2008. Master or owner shall without delay notify the authorities of any marine casualty occurring in connection with the operation of a ship (and floating or fixed offshore structure).

NMA Regulation 4th July 2007 No. 854 concerning deck cranes, etc. on mobile offshore units

The purpose of this regulation is to make sure that the design, equipment, maintenance and operation of deck cranes on mobile offshore units preserve the working environment, safety and health of those who work on board. The regulation applies to all deck cranes with appurtenant loose gear for use on mobile offshore units which are or will be registered in a Norwegian ship register.

This regulation is not applicable to cranes and lifting appliances forming part of the drilling installations

and equipment which are subject to control pursuant to § 22 of Regulation No. 856 concerning construction of mobile offshore units. Lifting appliances, work winches, crane accessories and similar gear shall be certified in accordance with the Regulation concerning cargo-handling appliances in ships. Reference is also made to Regulation No. 859 concerning protective, environmental, and safety measures on mobile offshore units.

6. Accident and casualty investigation boards



AIBN

Accident Investigation Board Norway

Sophie Radichs vei 17
2003 Lillestroem
Norway

Telephone + 47 63 89 63 50 (Marine)
Telefax + 47 63 89 63 01
E-Mail post@aibn.no
URL www.aibn.no

Contact Grete Myhre
gmy@aibn.no
+ 47 63 89 63 02
+ 47 957 98 099 (mobile)

The Accident Investigation Board Norway is a public committee of inquiry. The purpose of AIBN's investigations is to clarify the sequence of events and factors which are assumed to be of importance for the prevention of transport accidents. The AIBN shall not apportion blame or liability.

7. International Standards (Cranes)

American Petroleum Institute (API)

- API Specification Q1
Quality System
- API RP 2C
Specification for Offshore Pedestal Mounted Cranes
- API RP 2D
Recommended Practice for Operation and Maintenance for Offshore Cranes
- API RP 8B
Inspection, Maintenance, Repair, and Remanufacture of Hoisting Equipment

Deutsche Industrie Norm (DIN)

- DIN 287 – 1
Schweißerprüfung
- DIN EN ISO 4063
Schweißprozesse
- DIN 4132
Kranbahnen
- DIN EN 729
Schweißtechnische Qualitätsanforderungen
- DIN EN 982
Sicherheit von Maschinen
Sicherheitstechnische Anforderungen an fluidtechnische Anlagen und deren Bauteile – Hydraulik
- DIN EN 13135-2/A1
Krane – Ausrüstungen
Teil 2: Nicht-elektrotechnische Ausrüstungen
- DIN 15018
Krane, Stahltragwerke
- DIN 15019
Standicherheit
- DIN 15020 H2/B3
Hebezeuge
- DIN 18800 – Teil 1
Stahlbauten; Bemessung und Konstruktion
- DIN 18800 – Teil 7
Stahlbauten; Ausführung und Herstellerqualifikation; Großer Eignungsnachweis
- DIN 19704
Stahlwasserbauten

International Labour Organisation

- C 152 Occupational Safety and Health (Dock Work) Convention, 1979

International Standards Organisation (ISO)

- ISO 4308-1; Cranes and lifting appliances – Selection of wire ropes – Part 1: General
- ISO 4310 Cranes – Test code and procedures
- ISO 4413 : 2010 Hydraulic fluid power – General rules and safety requirements for systems and their components (also DIN EN ISO 4413)
- ISO 8434 – 1 Metallic tube connections
- ISO 8501 – 1 Preparation of steel surfaces
- ISO 8566-1, Cranes – Cabins – Part 1: General
- ISO 9001 : 2008 Quality Management System
- ISO 9712 Non destructive testing (NDT)
- ISO 9927-1, Cranes – Inspections – Part 1: General
- ISO 12478-1, Cranes – Maintenance manual – Part 1: General
- ISO 12480-1:1997, Cranes – Safe use – Part 1: General
- ISO 12482-1, Cranes – Condition monitoring – Part 1: General
- ISO 14001 Environmental Management System

Verband Deutscher Ingenieure (VDI)

- VDI 2194
Auswahl und Ausbildung von Kranführern
- VDI 2381
Abnahmeprüfung
- VDI 3303
Dienstweisung
- VDI 3304
Dienstweisung
- VDI 3571
Herstellertoleranzen
- VDI 3576
Schienen für Krananlagen
- VDI 3653 E
Automatisierte Kransysteme
- VDI 4412
Kabellose Steuerung von Kranen

9. Abbreviations and Acronyms

AIBN	Accident and Investigation Board Norway	MMS	Minerals Management Services
AM	Analysis and Markets (MPE)	MODU	Mobile Offshore Drilling Units Code
API	American Petroleum Institute	MPE	Ministry of Petroleum and Energy
APIQR	American Petroleum Institute Quality Registrar	NCCCO	National Commission for the Certificate of Crane Operators
ASME	American Society of Mechanical Engineers	NCS	Norwegian Continental Shelf
BOE	Bureau of Ocean Energy	NGU	Norges geologiske undersøkelse Geological Survey of Norway
BOEMRE	Bureau of Ocean Energy Management, Regulation and Enforcement	NHO	Næringslivets Hovedorganisasjon The Confederation of Norwegian Enterprise
BPB	British Petroleum Norway	NMA	Norwegian Maritime Authority
CEN	Committee Européenne de la Nomenclature	NORSOK	Norsk Søkkel Konkursansepisjjon
CENELEC	Comité Européen de Normalisation Électrotechnique	NPD	Norwegian Petroleum Directorate
DIN	Deutsche Industrie Norm	NR	Norwegian Rederiforbund
DMF	Directorate of Mining	NSOAF	North Sea Offshore Authorities Forum
DNV	Det Norske Veritas	OCS	Outer Continental Shelf
DOI	Department of the Interior	OG	Oil and Gas Department (MPE)
EC	European Commission	OLF	Norwegian Oil Industry Association (Oljeindustriens Landsforening)
EN	European Norm	OMHEC	Offshore Mechanical Handling Equipment
ETSI	European Telecommunications Standards Institute	OSHA	Occupational Safety and Health Organisation
EU	European Union	OS	Offshore Standards
FPS	Floating Production System	OSS	Offshore Service Specifications
GI	Gas and Infrastructure (MPE)	PIL	Norwegian Process Industries
GOE	Offshore Contracting Companies	PJS	Petroleum Law and Legal Affairs (MPE)
GOS	Offshore Service Vessels	PSA	Petroleum Safety Authority
GUE	Subsea Contractors	RO	Recognised Organisation
HSE	Health, Safety and Environment	RP	Recommended Practice
IACS	International Association of Classification Societies	SN	Standard Norway
ILO	International Labour Organisation	SOLAS	Safety Of Life At Sea
IMO	International Maritime Organisation	TC	n. a.
ISM	International Safety Management Code	TBL	Federation of Norwegian Manufacturing Industries (Teknologibedriftenes Landsforening)
ISO	International Standards Organisation	TLP	Tension Leg Platforms
KTF	Kranteknisk Forening Norwegian Society of Lifting Technology	TR	Technical Requirement
LNG	Liquified Natural Gas	UDR	Development and Production (MPE)
LPG	Liquified Petroleum Gas	UK	United Kingdom
LS	Exploration (MPE)	USCG	United States Coast Guard
MARPOL	Marine Pollution (MARPOL 73/78)	VDI	Verband Deutscher Ingenieure
MLC	Maritime Labour Convention		