

SAFETY AND RESPONSIBILITY **UNDERSTANDING THE NORWEGIAN REGIME**

Who is responsible for safety?

How can you manage risk? What role do the companies play? What rights and duties do the employees have? What does the government do? What is Havtil? And what does trust, openness and collaboration actually have to do with safety?

Norway's model for managing safety in the petroleum sector has been developed over many years. The regime is robust, and is now being extended to new industrial operations on the Norwegian continental shelf, such as renewable energy production and carbon transport and storage.

Since the regime might seem a little complex, we have produced this little guide.

Our hope is that it contributes to insight and information – and to greater understanding of what's required to reach the goal of making Norway a world leader for offshore safety.

Welcome from the Havtil team

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Safety

What is the ambition for safety?

How can risk be managed?

What is security?

What is societal safety?



What is the ambition for safety?

The goal set by Norway's Storting (parliament) is that the national petroleum industry will be a world leader for health, safety and the environment (HSE). In force for many years, this ambition has been important to the work of developing the sector.

It also applies to new industrial activity at sea, such as renewable energy production, carbon transport and storage, and the recovery of seabed minerals.

How can the ambition be met?

Integrated management and continuous improvement are the two essential pre-conditions for success. These principles will form the basis for all safety work, and carry great weight when reaching decisions and implementing measures in the companies and by government.

What is continuous improvement?

Continuous improvement is a fundamental principle. The regulations require that the players constantly develop and improve their level of HSE. This means in part that the companies systematically assess and adopt available technology and new knowledge. Responsibility for continuous improvement rests with management at the companies.

Why is learning important?

Companies are expected to avoid repeating avoidable errors by learning from their own incidents and experience, or that of others. Applying lessons gained from undesirable incidents is necessary in accident prevention – and crucial for continuous improvement. The companies must systematically acquire information on relevant conditions, share knowledge with others, and ensure that such input is actually used in improvement and prevention work.

When is safety good enough?

It is inherent in the nature of the industry that you can never be completely satisfied. Acknowledging good results is important, but you must not relax and rest content. Complacency is dangerous, and could be a contributory factor in accidents.

Safety will always be a perishable commodity. Success so far in achieving improvements and attaining a high level of HSE is no guarantee for the future.

What does the safety concept embrace?

Havtil uses the term “safety” in a broad sense, as defined in the Petroleum Act. This concept embraces the safety of people, the environment and material/financial assets.



How can risk be managed?

All human activity involves risk. Managing this is a matter of making assessments, setting priorities and applying resources to the areas which yield the best safety gain. Identifying, understanding and managing risk are crucial for the work of preventing accidents and undesirable incidents.

What do the companies have to do?

The regulations require the companies to analyse their own operations in order to identify how hazardous conditions might arise and develop, and the possible consequences of the various scenarios. On that basis, they must establish barriers and performance requirements for these.

Risk analyses must be updated and further developed in the operating phase of the business – and continuously adapted to any changes made. Barriers must be monitored, measured and followed up to ensure that they remain fully functional at all times.

What is major accident risk?

Preventing major accidents ranks as the most significant of Havtil's important assignments as the supervisory authority. Such events are defined as an acute incident, like a major spill, a fire or an explosion, which immediately or subsequently causes a number of fatalities and/or serious personal injuries, serious harm to the environment and/or substantial loss of material assets.

Who is most exposed to risk?

"Groups most exposed to risk" is the designation of petroleum industry workers who are particularly vulnerable to occupational injury or illness. It is very important that the industry pays particular attention to these categories.

Ill-health and injury impose high costs not only on the people directly or indirectly concerned, but also on the companies and society as a whole.



What is security?

While safety is about preventing accidents and mishaps associated with your own legal activity, security involves countering undesirable intentional incidents/deliberate attacks.

Section 9-3 of Norway's Petroleum Act requires licensees to implement and maintain security measures to help frustrate deliberate attacks on facilities, and to have emergency plans in place at all times for responding to such assaults.

Havtil conducts system-oriented and risk-based supervision of security measures. This work also involves close contact with other relevant government agencies, the companies, and employer associations/unions in the industry.

What is the Security Act?

In addition to supervising security, Havtil has been named the regulatory authority for the petroleum sector pursuant to the Norwegian Security Act.

This statute is designed to protect national security interests. It contributes to preventing, exposing and countering security threats – in other words, intentional acts which could directly or indirectly harm Norway's security interests.

Pipeline transport of natural gas to Europe and control over petroleum production on the Norwegian continental shelf (NCS) have been identified as fundamental national functions (GFNs), and individual operator companies are subject to the Security Act.



What is societal safety?

Societal safety or civil protection concerns society's ability to protect itself against and deal with incidents which threaten its fundamental values and functions, and put life and health in danger. Such events could have natural causes or be the outcome of technical faults, human error or deliberate acts – including digital attacks.

Havtil has been given responsibility for societal safety within its area of authority. This includes contributing to situational awareness and the risk picture.

What is total defence?

Havtil is part of Norway's total defence, a collective term for the country's military dispositions and civil preparedness.

Total defence covers support and collaboration between the armed forces and civil society over prevention, emergency response planning and operational conditions.

Its object is to ensure that society is able, in every type of emergency, to keep a functioning national crisis management in being, deal with a large number of injured people, ensure food, water and energy supplies, and maintain communication and transport systems.





Who is responsible for safety?

Norway's safety regime for the petroleum industry and the other sectors regulated by Havtil builds on a clear allocation of responsibilities.

Its basic principle is that the companies themselves are responsible for maintaining safety and complying with the regulations. They also have a self-interest in preventing accidents and ensuring an acceptable working environment.

The government is responsible for establishing regulations and supervising

the sector, but each company has responsibility for the safety of its operations. That is because only the individual player has the necessary detailed knowledge, decision-making authority and – not least – resources required to ensure implementation of and compliance with the regulatory requirements.

Both the regulations and Havtil's follow-up of the companies are structured to back up the companies' appreciation of their responsibilities.



What responsibility rests with the regulator?

Havtil is responsible for establishing parameters for the industry and to follow up that company operations are pursued in a prudent manner. That includes developing the regulatory regime, supervising compliance with the requirements by the companies, and making appropriate use of enforcement powers (such as orders) in the event of breaches.

The government is responsible for taking an integrated approach to regulating operations, and Havtil wants regulatory developments to keep pace with general trends in the industry. Its responsibilities also include assessing whether the standards referenced by the regulations are appropriate.

Experience transfer and making the players accountable are important goals for the overall follow-up of HSE in the petroleum sector. Havtil also places great emphasis on communicating knowledge about risk.

How far does the regulatory responsibility extend?

The industry itself is responsible for ensuring that its activities are conducted prudently and in accordance with the regulatory requirements.

Whoever owns the risk also has the responsibility of managing it. It is neither possible nor desirable for the authorities to govern the business in detail, which could not least contribute to reducing the companies' awareness of their responsibilities.



What responsibility rests with the employees?

Employees play an important role in safety work, and this confers both rights and duties. The companies must make provision for genuine employee participation and ensure that statutory bodies such as the working environment committee and the industrial safety service are used in a positive and constructive manner.

What is the goal for employee participation?

Employee participation is a regulatory requirement in Norway. The principle is that those exposed to risk must be involved in decisions related to HSE. This aims in part to draw on the collective knowledge and experience of the workforce to ensure that issues are adequately illuminated before decisions are taken. Safety delegates and working environment committee members have an important role in this respect.

Why is employee participation important?

Norway's petroleum industry regulations are largely based on performance requirements which specify the level of safety to be attained, but not how this is to be achieved. The companies have great freedom to determine how to comply with these provisions, which means a number of solutions are decided at local level. That emphasises the importance of giving everyone involved a genuine opportunity to be heard.

How does participation help to strengthen safety?

In companies with a good climate of cooperation and genuine employee participation, collaboration can be seen to contribute positively to HSE work. The workforce helps management to lay a good basis for difficult decisions. Once these have then been taken, measure can be implemented faster.



What does trust mean for safety?

Trust between employers, employees and government is not only about a constructive climate of collaboration, but also a precondition for the Norwegian regulatory model.

Were trust between these parties to deteriorate, the basis for today's system would be significantly weakened. The consequences could be stronger detailed control and a regulatory regime characterised by more inspections and checks.

Trust does not emerge of itself. It is built up gradually through dialogue and collaboration between all the parties.

Why is openness so important?

Openness is a major factor in creating trust. Norway has a long tradition here, particularly in public administration. Its Freedom of Information Act specifies that all correspondence, administrative procedures and the like must be open to public scrutiny unless specific conditions dictate otherwise.

Havtil receives several thousand requests for access to documents every year. Only a small proportion of these – about three per cent on average – are wholly or partially denied with reference to exemptions in the Act.

However, the companies need to be confident that sensitive information will not fall into the wrong hands. So Havtil subjects every request for access to a careful assessment when deciding if a document can be made public.



What is tripartite collaboration?

Tripartite collaboration has long traditions in Norway's working life. Where the petroleum sector is concerned, this means that employers, unions and government collaborate constructively to seek improvements – including in safety and the working environment.

Broad agreement prevails that such collaboration represents a value worth preserving. Havtil is also very concerned with this form of interaction and devotes great resources to it.

What are the most important arenas for tripartite collaboration?

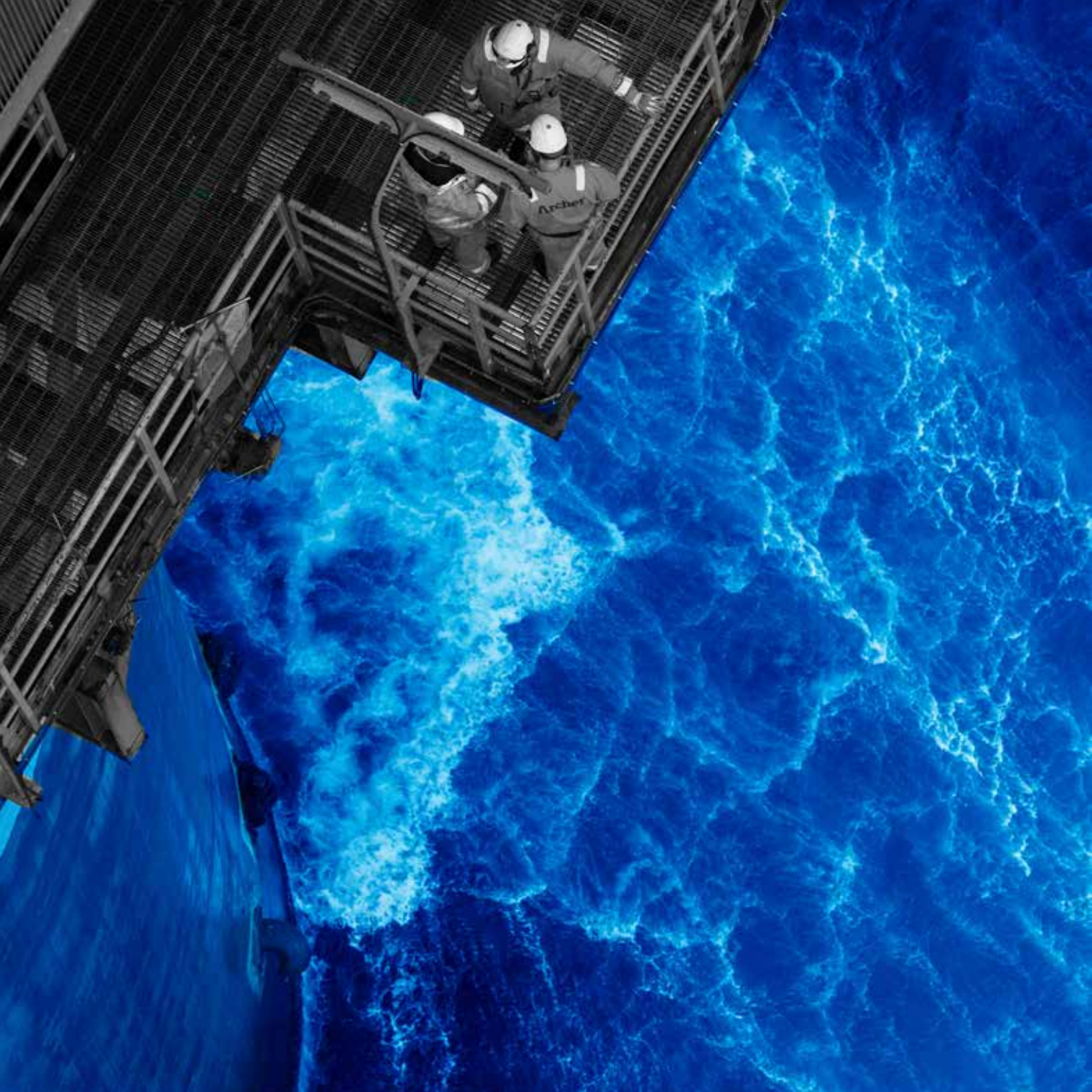
Several fora have been established for tripartite collaboration in the petroleum sector. Two of the most significant are the Regulatory Forum and the Safety Forum.

What is the Regulatory Forum?

An arena for information sharing, discussion and feedback is provided by the Regulatory Forum, where the goal is to develop and maintain documents which set parameters for the petroleum sector. The parties utilise it to address practical implementation and use of the regulations, exchanging views on applying their requirements as well as on the content of new and amended regulatory provisions.

What is the Safety Forum?

The Safety Forum is a tripartite arena which facilitates and encourages collaboration and debate on key HSE challenges in the petroleum industry, both offshore and on land as well as in other areas, such as renewable energy production at sea. Chaired by Havtil's director general, its members otherwise include HSE personnel, executives and key decisionmakers among the parties in the sector. The ministry has observer status.





What is Havtil?

The Norwegian Ocean Industry Authority (Havtil) is a government supervisory and administrative agency subordinate to the Ministry of Energy (ED).

Its responsibilities cover:

- petroleum operations on the NCS as well as at seven petroleum plants on land and associated pipeline systems

- activities associated with renewable energy production offshore
- activities associated with carbon transport to and storage on the NCS
- activities associated with recovering seabed minerals.

What are Havtil's duties?

Havtil exercises supervision of the working environment, safety, emergency preparedness and security (in the petroleum sector) and has also been appointed as the supervisory authority for the petroleum sector pursuant to the Security Act. Havtil is also a directorate, responsible for developing, administering and communicating knowledge.

Its most important duties are developing and establishing regulations, supervising the companies, administering and communicating knowledge, providing specialist advice to the ministry, and serving as a centre of expertise in its domain towards the industry, other government bodies and the public.

Havtil is staffed and organised to reflect the industries it is responsible for, and has highly qualified personnel with broad-based or leading-edge expertise in such key disciplines as:

- occupational health and safety
- drilling and well technology
- HSE, maintenance and project management
- structural integrity
- logistics and emergency preparedness
- process integrity
- security, cyber security and societal safety.



What tools does Havtil possess?

Havtil has a number of tools available to help meet its goals.

Key elements include:

- audits
- information and guidance
- regulations
- advice.

These tools are used both individually and jointly in order to achieve the best possible effect and to contribute to safety, the working environment, emergency preparedness and security in Havtil's areas of responsibility.

The starting point for Havtil's regulatory regime is the responsibility of the players to pursue prudent operations and to comply with the requirements of the HSE regulations. An important principle is that the companies themselves, through their own systems and the application of these, must be able to demonstrate that they exercise good follow-up and risk management.

Supervision by Havtil will be risk-based through tailoring its commitment and directing it at activities and conditions considered to present the highest risk of major accidents, injuries and occupational ill-health.



Regulations

What is Havtil's responsibility?

How are the regulations structured?



What is Havtil's responsibility?

Havtil develops and administers the regulations for safety and the working environment in the Norwegian petroleum industry and its other areas of responsibility, such as renewable energy production offshore, recovery of seabed minerals, and carbon transport and storage on the NCS.

This responsibility has been delegated from the ministry.

How are the regulations developed?

Regulatory development is pursued in close collaboration with the parties in the industry – the companies and the unions. The Regulatory Forum serves as a key arena in that work. A tripartite body chaired by Havtil, this forum brings together representatives for employees, employers and government several times a year. Changes to the regulations are often initiated there.

Since the industry constantly develops innovative ways of conducting its operations, the authorities must keep abreast and ensure that the regulations are adapted to such new solutions.

The regulations are updated annually to ensure they are tailored to relevant challenges at all times.

Where can you find the regulations?

Havtil's regulations are available in Norwegian and English at havtil.no.



How are the regulations structured?

Norway's oil and gas industry is subject to a number of statutes. The Petroleum Act provides the statutory framework for the overall safety requirements in the sector, while legal authority for the working environment provisions is conferred by the Working Environment Act. In addition come the Pollution Control Act, the Fire and Explosion Protection Act and a number of health-related statutes.

What are the most important regulations?

The key HSE provisions in the petroleum sector are found in the regulations, with the framework regulations specifying the base safety requirements for organising and conducting petroleum operations. Other provisions are found in the management, activities, facilities, and technical and operational regulations, in addition to six common working environment regulations.

Specific guidelines for each regulation show how its provisions may be met. A regulation and its guidelines must be viewed together to obtain the best possible understanding of how the requirements can be fulfilled.

How are standards used?

In certain areas, the guidelines refer to recommended solutions – such as industry standards – as a way of complying with the regulatory requirements. Opting for a recommended solution means the requirement can be regarded as met. Should an alternative be chosen, documentation must be provided to show that it meets the requirement at least as well as the recommended approach.

Who is responsible for standards?

The performance-based regulatory requirements often refer to standards developed and administered by the industry itself. Robust industry standards depend on the companies joining forces to identify the best solutions, which saves resources while highlighting the industry's own responsibility.

Havtil devotes close attention to work on standards, including the possession of observer status on a number of committees. It also assesses the suitability of the standards in relation to the desired level of safety.



What characterises the regulations?

Provisions in Norway's HSE regulations are primarily formulated as performance-based (or functional) requirements. These specify the level of safety to be achieved, but not how this is to be done. That gives the companies great freedom to reach specific decisions on how to meet the regulatory stipulations. Although most requirements are performance-based, the regulations also contain prescriptive demands where Havtil judges these to be necessary.

What are the advantages of performance-based regulations?

One important benefit of performance-based rather than specific requirements is that technological progress does not outstrip the regulations. The alternative might be regulations which need constant revision to keep pace with new technology and solutions. Performance-based requirements also emphasise the responsibility of the individual company for planning and executing its operations in a way which meets the safety goals.

What are guidelines?

Guidelines have been provided in order to avoid misunderstandings over what is required to comply with the regulatory requirements. These often refer to recognised Norwegian or international industry standards which specify requirements in such areas as structures, equipment or procedures.

A regulatory requirement is considered to be met if a recommended solution of this kind is adopted. While opting for a different approach is fully possible, documentation must then be provided to show that it meets the requirement at least as well as the recommended solution.





What is supervision?

Supervision embraces all activities which provide a basis for assessing whether, and following up that, the companies are pursuing their operations prudently and in accordance with the regulations.

Havtil's supervision is risk-based. This means its activities are planned on the basis of an overall assessment of where the risk is highest rather than on set intervals or principles about regular visits.

Supervision is one of Havtil's four key tools (see page 31), and covers many different activities.

Supervisory work includes:

- audits and verifications on facilities and at land plants and fabrication sites
- dialogue and meetings with the industry
- data acquisition about risk, accidents and incidents
- accident investigations
- use of enforcement powers
- consideration of applications for consent
- assessment of development plans
- acknowledgements of compliance (AoC) for mobile facilities
- player assessments and licence awards
- product control through market surveillance



How is supervision conducted?

A supervisory activity, such as an audit, is usually notified some time in advance. It normally begins well before the audit team goes into the field, usually through meetings with the relevant company where both management and employees are represented. When visits are planned to offshore facilities or land plants, separate meetings take place with the industrial safety service to ensure that employee views find clear expression.

Audits and verifications are primarily conducted through random sampling, and do not aim to investigate all conditions on a facility/at a plant.

Supervisory activities are summed up in separate reports, which form the basis for determining how nonconformities, improvement points and other findings are to be followed up. It could be appropriate, for example, to issue an order – a decision the company is legally bound to comply with.

Where can you find supervisory reports?

All audit and investigation reports, notices of orders/orders, identical letters, consents and AoCs are published at havtil.no.



What happens when regulations are breached?

If Havtil's supervisory activities identify a nonconformity with or breach of the regulations, the company concerned is always asked to explain how it intends to deal with the matter.

All nonconformities identified by Havtil are followed up, and it checks that the companies correct them. It is nevertheless important to emphasise that the companies themselves are responsible for operating safely. That means complying with the regulations.

The companies have a legal duty to correct regulatory breaches, whether they have discovered these for themselves or been alerted to them by the authorities.

What happens with serious breaches?

When Havtil uncovers serious breaches of the regulations, it can apply formal enforcement powers such as orders – a strong, legally-binding instrument directed at serious nonconformities.

Before issuing an order, Havtil usually serves the company concerned with notice that it intends to do so. In some cases, the order is imposed immediately.

What other reactions does Havtil have?

In more acute circumstances, such as hazards or accidents which threaten safety, Havtil has the authority to use even stronger powers. These include ordering the immediate halt of an activity.

It can also impose a coercive fine – to ensure compliance with an order, for example – and administrative fines for serious and repeated breaches of the working environment regulations.



What does Havtil do about serious incidents?

Undesirable incidents must be reported to Havtil, which receives 600-800 such notifications and reports every year.

Its emergency phone is staffed around the clock. Reports of undesirable incidents are logged by the duty officer, who assesses the seriousness of the event and the level of Havtil's follow-up.

In the event of serious incidents, the duty officer can mobilise Havtil's emergency organisation. This is then responsible for supervising ongoing developments from its response centre.

Which incidents are investigated?

Havtil may decide to initiate the formal investigation of a serious incident. This decision is taken after the acute circumstances have been clarified.

Several considerations may underlie a decision to investigate. While the seriousness of the incident is the most important criterion, others could also be influential.

Types of incidents investigated by Havtil include:

- major accidents and near-misses of such incidents
- fatalities related to a work accident
- serious personal injury with the potential to be fatal
- serious impairment or loss of safety functions and barriers which threaten the integrity of a facility.

What is the goal of Havtil's investigations?

Where Havtil as a supervisory authority is concerned, learning lessons and experience transfer are the main reasons for launching investigations. These aim first and foremost to clarify the course of events and underlying causes, so that both industry and government learn from the incident.

Investigations are an important instrument for acquiring knowledge about what can trigger serious incidents, and play an important role in supervising the industry.

Havtil's investigations are not intended to identify possible criminal actions. These are a matter for the police. If the police investigate an incident, Havtil will usually be asked to provide specialist support.



The petroleum sector

What is Havtil's role?

Who can conduct petroleum operations?

What is a licensee?

What is the see-to-it duty?

What do we know about the risk level in the petroleum sector?

What is a consent?

What is an acknowledgement of compliance (AoC)?



What is Havtil's role?

Petroleum operations rank as by far the largest Norwegian industry measured in terms of value creation, government revenues and export value.

The Storting's goal is that Norway's oil and gas sector will be a world leader for HSE. In force for many years, this ambition has provided important guidance for work on safety.

Havtil has regulatory responsibility for safety, the working environment, emergency preparedness and security in the petroleum industry. It develops the HSE regulations

and supervises the companies to ensure that they operate prudently.

Its supervision covers oil and gas operations offshore and at seven associated plants on land. The latter are closely related to activities on the NCS, both technologically and organisationally, and share the same regulatory regime.

Havtil's responsibility covers all phases of the industry from player assessment and licence awards to cessation and removal of facilities.

Who can conduct petroleum operations?

All companies pursuing activities on the NCS must be qualified as licensees or operators. They have to show that they can help to increase value creation and have HSE expertise which contributes to strengthening safety. New players are assessed by Havtil and the Norwegian Offshore Directorate on behalf of their parent ministry.

How are licences awarded?

Production licences are awarded in fixed licensing rounds and as annual awards in predefined areas (APA). Companies which secure licences must have geological understanding, technical expertise, financial strength and HSE competence. Awards are made by the Ministry of Energy based in part on advice from Havtil.



What is a licensee?

A licensee is a company holding a production licence awarded pursuant to the Petroleum Act. A licence usually has several licensees, but only one of these is appointed as the operator. All licensees undertake to contribute actively to the licence, in part by checking that the operator is exercising good control of its activities.

What is an operator?

The operator acts on behalf of all the licensees in providing day-to-day management of activities in a licence. It has the

overall responsibility for ensuring that operations are conducted in a prudent manner and in accordance with the regulations. The operator will see to it that everyone working for it complies with the HSE regulations.

What is a contractor?

Contractors deliver services in various areas, such as drilling, well service and maintenance. They are responsible for the safety of their own operations and are obliged to have a management system for HSE in their area of responsibility.

What is the see-to-it duty?

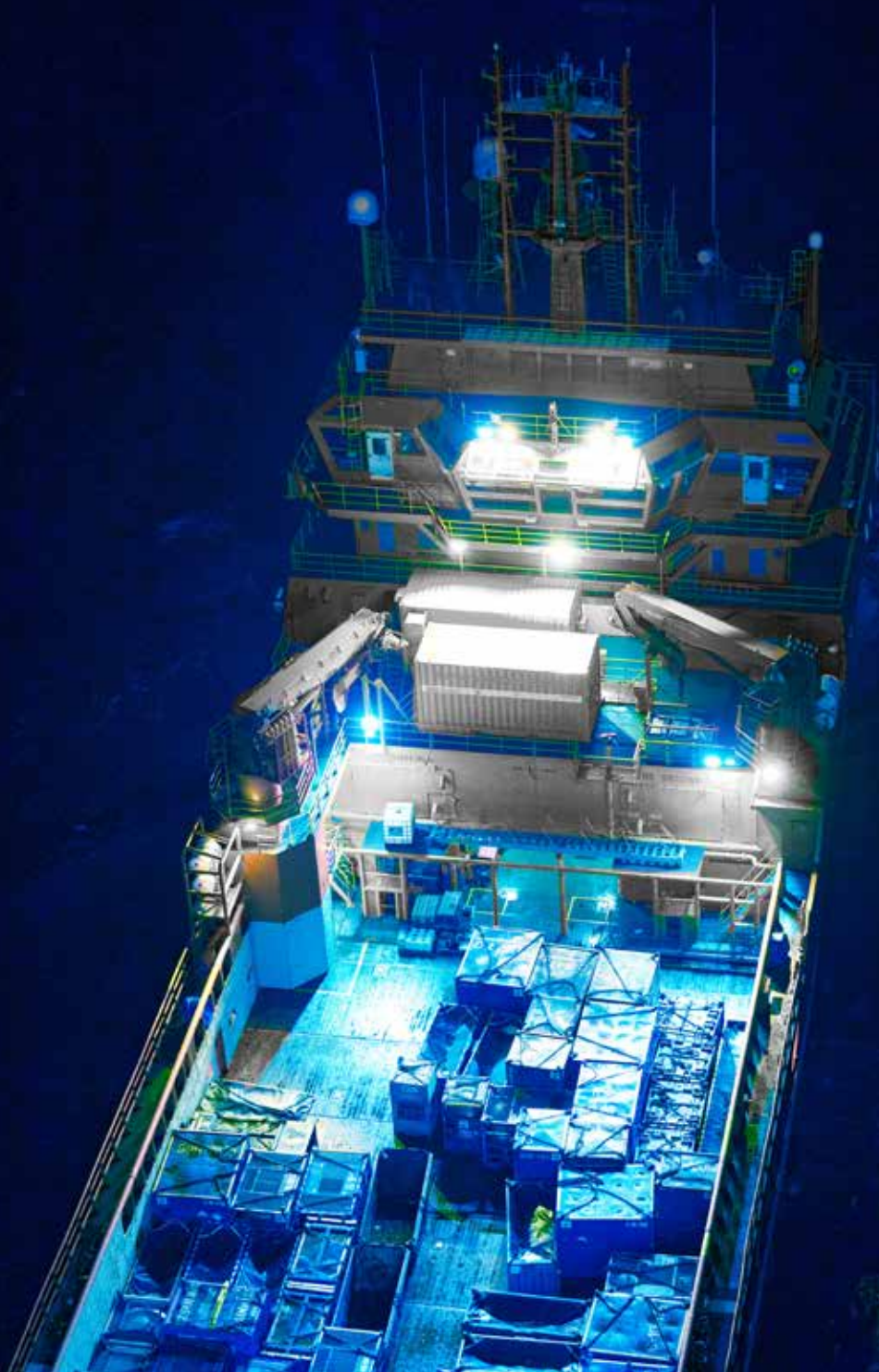
The operator has a particular responsibility for ensuring that activities are conducted overall in a prudent manner and in accordance with the regulations. This involves seeing to it that everyone complies with the requirements in the HSE regulations. The “see-to-it” duty is a general overarching obligation in addition to each company’s duty to comply with the regulations.

How the see-to-it duty is to be fulfilled must emerge from operator’s management system.

Do licensees also have a see-to-it duty?

Yes. Licensees must ensure the operator can fulfil its commitments and see to it that these are executed in accordance with the regulatory requirements.

A licensee is responsible for taking action if it identifies conditions which do not comply with the regulations.



What do we know about the risk level in the petroleum sector?

The trends in risk level in the petroleum activity (RNNP) is an annual survey led by Havtil, which monitors such aspects as major accident risk, working environment risk and the risk of acute spills.

This work contributes to a shared understanding of the level of risk among the parties in the industry. Where Havtil is concerned, data acquired through the RNNP also provide an important basis for planning supervisory activities and regulatory developments.

The survey is based on several methods intended to complement each other.

- Indicators identifying conditions which have arisen, including near-misses of defined situations of hazards and accidents (DHSAs) important for safety and the working environment.
- Indicators identifying conditions related to the robustness of safety-critical barriers and maintenance.
- Questionnaire-based surveys which measure employee experience of HSE work.
- In-depth studies of selected conditions related to trends in the level of safety.

What do the RNNP figures reveal about major accident risk?

Since risk always concerns the future, measuring it directly is very difficult. Indicators which reflect how successful the companies are at managing factors with an influence on risk – including major accident risk – are therefore used.

Viewed over time, the total indicator for major accident risk paints a picture of how successful the players are in managing conditions which affect risk. This information can be used to assess uncertainty related to future risk. That said, however, it is important to remember that historical knowledge provides no guarantee about what will happen in the future.

Where can you read the RNNP reports?

Results from the survey are presented in annual reports published and commented on at havtil.no



What is a consent?

To meet their need for predictability and to ensure that they are managing in a good way, the companies are required by the regulations to seek Havtil's consent at important milestones. Such consent is a precondition for all activity on the NCS.

When do operators require consent?

An operator must obtain Havtil's consent before

- carrying out investigations which involve drilling more than 200 metres beneath the seabed
- conducting exploration drilling
- executing manned subsea operations
- taking all or part of a facility into use
- designing major modifications or changes of use
- using a facility beyond its design life and its underlying assumptions
- disposing of/removing/relocating a facility
- removing or changing the use of a vessel with a significant safety function.

What does it mean when Havtil gives consent?

A consent provides formal expression that Havtil is confident the company can execute the planned activity in a prudent manner and in accordance with the regulations.

It has in principle no expiry date, but remains valid for the planned duration of the activity. Throughout this period, the company is responsible for assuring itself that the preconditions which the consent rests on are being maintained.

Should a company discover a nonconformity with the preconditions, it must take the necessary measures on its own initiative to correct or remove this so that safety is fully maintained.

A consent does not mean approval by Havtil of a facility, equipment, components, procedures, qualifications or the like.



What is an acknowledgement of compliance (AoC)?

All mobile facilities (drilling rigs, flotels and so forth) entered in a national ship register must obtain an acknowledgement of compliance (AoC) from Havtil before it can participate in petroleum operations on the NCS.

An AoC expresses Havtil's confidence that petroleum activities can be pursued by the facility within the regulatory parameters.

The decision to award an AoC is based on information supplied by the applicant in a specific application. This document must cover both technical conditions on the facility and the company's organisation and systems for managing safety.

Havtil uses random checks in selected areas to verify the information provided. This is done through auditing and/or questions put to the contractor.

What is the object of the scheme?

The object of the AoC scheme is to clarify responsibility, enhance the efficiency of the consent process and create greater predictability for players in the industry.

Does the AoC represent an approval?

Nothing in the Norwegian safety regime implies approval by Havtil of any facilities, equipment, components, procedures, qualifications or the like. This is a logical consequence of the principle that the companies are always responsible for their own operations. Approval by the authorities would involve a transfer of responsibility from the companies to the government.

However, the companies need a certain level of predictability in their activities. Possession of an AoC by a mobile facility simplifies the process when Havtil subsequently receives an application for consent to conduct operations with that rig/facility. The AoC document then forms part of the basis for Havtil's consideration of the consent application.





What is Havtil's role?

Havtil has regulatory responsibility for safety and the working environment with regard to renewable energy production on the NCS.

This responsibility embraces developing regulations for and supervising the construction and operation of offshore wind farms. The government's ambition is to have awarded acreage with a potential for generating 30 gigawatts of wind power from the NCS by 2040.

Utsira North and Southern North Sea II are the first areas of the NCS to be opened for offshore wind developments.

Utsira North is suitable for floating wind turbines, while Southern North Sea II can be developed with both fixed and floating facilities.

Water depths mean that the biggest potential for offshore wind in Norway lies with floating units.

How do fixed and floating offshore wind turbines differ?

Fixed turbines can be installed today in water depths down to 60 metres. They account for the bulk of offshore wind capacity currently developed or under development worldwide.

Many different design solutions exist for fixed turbines. The option chosen depends on water depth and seabed conditions at the relevant installation site.

Where water depths exceed 100 metres, floating support structures represent the only solution today. Various technologies are under development, but all need to provide enough stability to cope with high waves, strong currents and challenging wind conditions.



What similarities exist between offshore wind and petroleum operations?

Offshore wind and petroleum activities both involve industrial operations at sea. The former has many similarities with the latter in terms of technological and operational solutions, while their various phases are also the same – from design through construction, installation, operation and maintenance to removal.

How does risk compare?

Several parallels exist between offshore wind and petroleum activities with regard to risk conditions and safety challenges. Both sectors involve challenging activities,

such as lifting and marine operations, work in enclosed spaces, high voltages, dropped objects, hand tools and work at a height.

The biggest difference between the two is that the dominant risk associated with handling large quantities of oil and gas under pressure does not arise on offshore wind facilities.

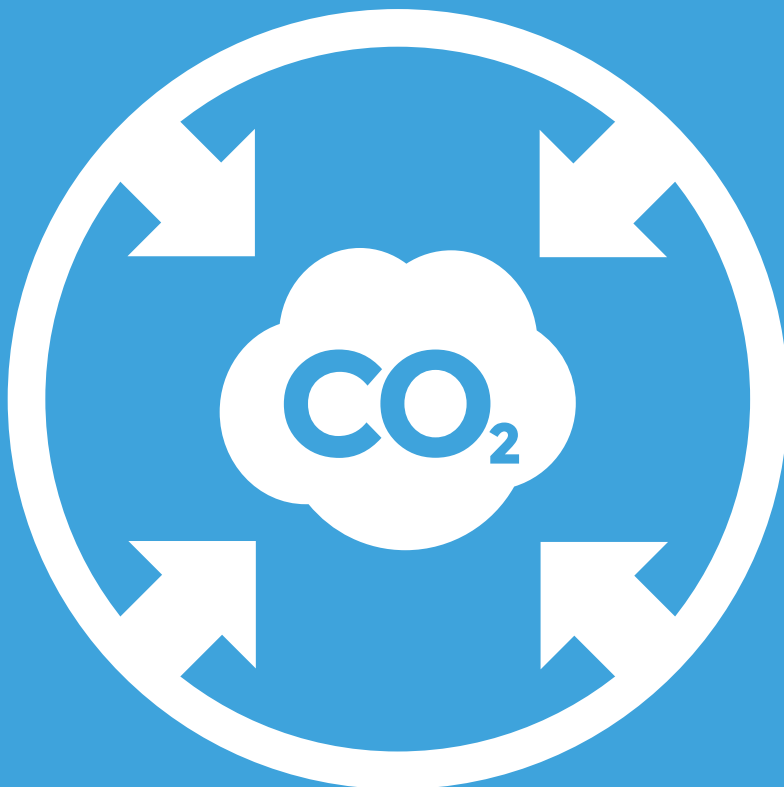
This means that the major accident risk is significantly smaller with the latter. But the sector nevertheless has a potential for major accidents and incidents involving multiple fatalities.



Carbon transport and storage

What is Havtil's role?

Why store CO₂ on the NCS?



What is Havtil's role?

Havtil has regulatory responsibility for safety and the working environment with regard to transport and storage of CO₂ on the NCS.

This covers developing regulations for and supervising the industry. Havtil's role includes giving consent for injection wells, following up facilities and interfaces with other regulatory authorities, and participating in licence awards, on project management bodies and in international collaboration between regulators.

The goal is to make provision for secure CO₂ management through regulations, guidelines and supervision in line with technological developments.

How is carbon capture and storage (CCS) conducted?

CCS involves capturing CO₂ emitted by industrial production/electricity generation and storing it permanently beneath the seabed to prevent its release to the air.

The process involves three stages.

- **Capture:** CO₂ is separated from other industrial emissions or natural gas.
- **Transport:** the CO₂ is liquefied by compression to simplify shipborne or pipeline transport.
- **Storage:** liquefied CO₂ is injected in a formation deep beneath the seabed for permanent secure retention. The formation is monitored to prevent leaks.

Norway has more than 25 years of experience with secure carbon storage on the Sleipner and Snøhvit fields. These are Europe's only operational CO₂ management projects, and experience from them will be valuable for future developments.



Why store CO₂ on the NCS?

Secure CO₂ management is an important means of reducing global greenhouse-gas emissions.

According to the UN and the International Energy Agency (IEA), CCS will be essential for reaching climate goals as cost-effectively as possible.

Norway is working to realise a cost-effective solution for full-scale CO₂ management through the Longship project.

This encompasses carbon capture from industrial operations in eastern Norway, shipment by sea to intermediate storage on land in Øygarden near Bergen, and pipeline transport to permanent storage 2 600 metres beneath the North Sea on the Utsira High.

What does Havtil give emphasis to?

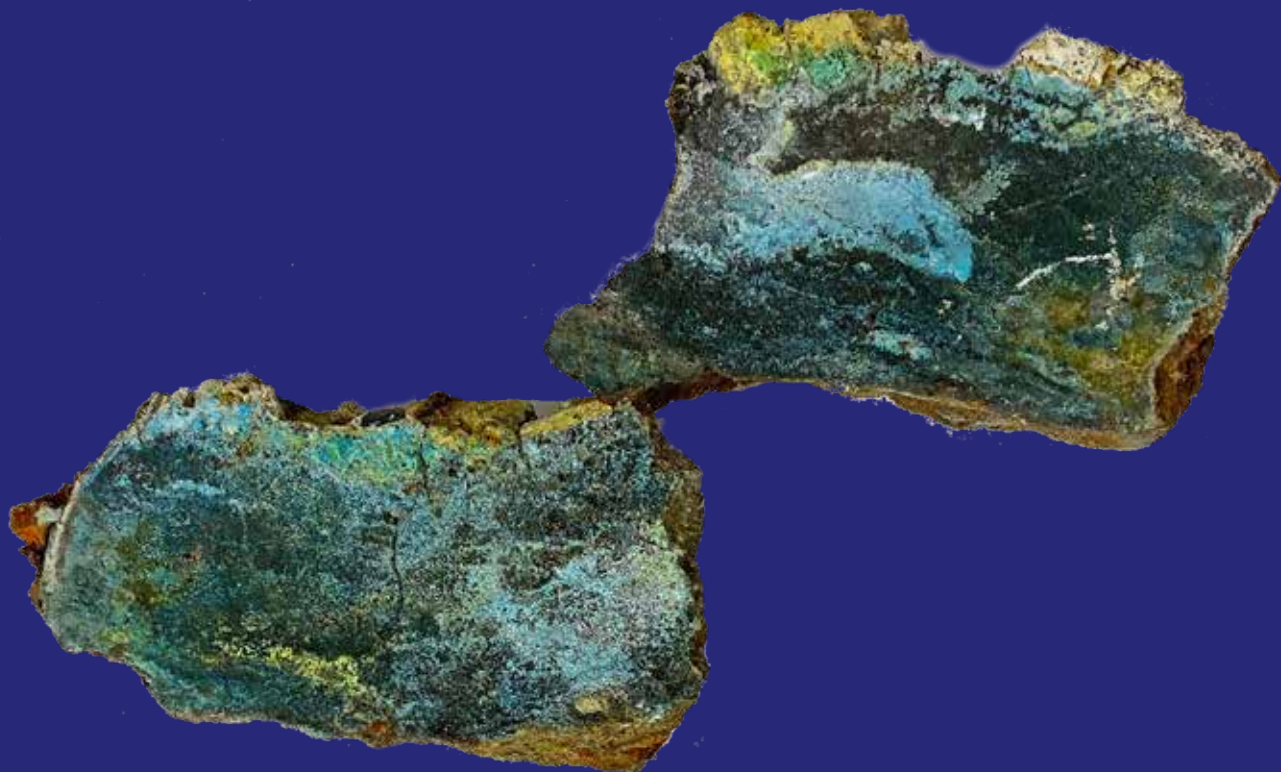
A number of companies have plans for CCS on the NCS, and several storage areas have been licensed. Such awards are made after a detailed assessment of safety and expertise.

Carbon transport and storage will be conducted safely in terms of protecting people, the environment and material assets. In its consideration of applications, Havtil emphasises such aspect as risk management of possible existing wells in the storage complex and whether the applicants meet such award criteria as operational experience.



Seabed minerals

What is Havtil's role?



What is Havtil's role?

Havtil has regulatory responsibility for safety and emergency preparedness with regard to recovering seabed minerals on the NCS.

This involves developing regulations for and supervising the industry.

What are seabed minerals?

Formed in the deepest parts of the ocean, seabed minerals comprise sulphides as well as manganese crusts and nodules. Deposits of sulphides and manganese crusts have been identified on the NCS.

They contain metals and minerals which are important for much modern technology, such as batteries, PCs and mobile phones.

These mineral deposits lie in deep waters, primarily between 1 500-1 600 metres down.

What is Havtil's assignment?

The Storting has resolved to permit mapping of and exploring for minerals on the NCS.

All mineral activities on the NCS must be conducted safely. Havtil has been given responsibility for developing regulations on safety and the working environment, and for supervising mineral activities on the NCS. Ambitious safety goals have been set for new offshore industrial activity and Havtil, as the specialist agency, will help to regulate mineral recovery operations in a safe and prudent manner.

Havtil will build on existing knowledge, and ensure that the regulations take account of the safety challenges faced by this type of activity.



Milestones

- 1962:** First approach to the Norwegian government for oil exploration rights on the NCS.
- 1965:** First licences for exploration and drilling. Safety requirements are incorporated in their terms.
- 1966:** First exploration well spudded.
- 1969:** Ekofisk field proven.
- 1971:** Storting adopts the “10 oil commandments” which ensure national management and control of the industry.
- 1972:** Storting approves the creation of the Norwegian Petroleum Directorate (NPD).
- 1977:** Bravo accident – an oil blowout from the 2/4 B platform on the Ekofisk field, prompting a detailed review and evaluation of the safety regime.
- 1977:** Working Environment Act extended to fixed facilities on the NCS.
- 1980:** *Alexander L Kielland* disaster, with 123 fatalities. Follow-up of this incident leads to extensive changes in the existing organisation of government responsibility related to HSE.
- 1985:** Storting approves the Petroleum Act, which gives sole responsibility to the NPD for preparing regulations on and conducting supervision of safety and the working environment in the petroleum sector (on both fixed and mobile facilities).
- 1992:** Working Environment Act extended to mobile facilities.
- 2000:** Safety Forum established.
- 2004:** Petroleum Safety Authority Norway (PSA) established by converting the NPD’s safety division into a separate agency. At the same time, it is given regulatory responsibility for all land plants related to the oil and gas sector.
- 2013:** PSA responsible for following up section 9-3 of the Petroleum Act on security.
- 2018:** PSA responsible for safety related to carbon transport and storage.
- 2020:** PSA responsible for safety related to renewable energy production offshore.
- 2022:** PSA responsible for safety related to recovering seabed minerals.
- 2023:** PSA given supervisory responsibility for the petroleum sector under the Security Act.
- 2024:** PSA becomes the Norwegian Ocean Industry Authority (Havtil).

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