

ANNUAL REPORT 2010



PETROLEUM SAFETY AUTHORITY
NORWAY

FOREWORD

This publication is the facts section of the annual report from the Petroleum Safety Authority Norway (PSA) for 2010. It should be read in conjunction with our publication entitled Safety – status and signals 2010-2011, which summarises issues of particular concern to us last year and looks ahead to the biggest challenges we foresee in the future.

The following pages provide factual information on conditions which affected our operations in 2010. That includes the priorities we set for our supervisory activities and other work.

Our annual report on Trends in risk level in the petroleum activity (RNNP), which is published both in a complete form and in a summary version, contains an extensive overview of incidents, accidents and injuries in 2010. It provides a comprehensive review of the risk picture in this sector and its development. The summary version is available in English.

We hope that these publications will collectively provide a good overall picture of the safety challenges faced by the petroleum industry in Norway, the responsibilities of the participants in this activity, and how we as the regulatory authority supervise industry observance of these responsibilities.

1. SUPERVISION OF SAFETY IN THE PETROLEUM ACTIVITY

The concept of "supervision" embraces all the activities we pursue in order to

- form a picture of the safety status at one or more of the players in the petroleum business
- influence the players with a view to improving the level of safety
- ensure that all the players conduct their activities in accordance with regulatory and/or in-house requirements
- consider applications for consents, acknowledgements of compliance (AoCs) and plans for development and operation/ installation and operation (PDO/PIO)
- assess whether compensatory measures adopted are adequate for operating acceptably
- investigate conditions relating to serious undesirable incidents
- conduct supervision pursuant to the Act on Pay Agreement Application (non-refundable activity).

Our annual activity plans are based on a number of factors which reflect the reality in which we exercise our regulatory role, and the requirements and expectations set for us through the Ministry of Labour.

To achieve the best possible application of our resources in meeting the established targets, we set a number of main priorities every year which form the basis for our supervisory activities. Our main priorities for 2010 related to:

- technical and operational barriers
- management and major accident risk
- prevention of acute discharge and safe pollution reduction
- groups particularly exposed to risk

These are areas we prioritise ahead of others. This means that the plans laid for supervision in these areas have by and large been fulfilled. The four main priorities are of equal importance, so that the order in which they are listed is not intended to reflect any relative significance.

Work on our main priorities is supplemented by certain other activities of significance for safety. These may be restricted to a specific company, a particular type of activity or the like. We seek to

coordinate such tasks with other supervision which falls within the priority areas in order to make the best use of our resources.

A summary is provided below of the challenges we have faced, the activities we have pursued and what we have achieved within our various main supervisory priorities.

1.1 Overall assessment of results in 2010

We by and large implemented the 2010 plans, which were based in part on our main priorities and commissions from the ministry.

However, incidents again occurred in 2010 which meant that we had to depart from or amend our plans to some extent. The biggest single event was the accident in the Gulf of Mexico. This is an incident we will learn from in terms of assessing improvements to the regulations, the use of supervisory methods and so forth.

Making the players more conscious of their responsibilities is the guiding principle for all our efforts to help ensure that the industry develops and maintains a high level of safety. We ask questions about – and thereby contribute to improvements in – that part of the management system in the companies which aims to ensure that they are capable of establishing on their own account that their operations are acceptable and comply with the regulations at all times.

No known quantitative methods are available for determining the impact of our overall exercise of regulatory authority. Nevertheless, a number of indicators suggest that this supervision has a positive effect. Internationally, incidents such as the Macondo accident have prompted a number of official investigation teams to point to the North Sea nations and Norway as pioneers in terms both of the level of safety and of models for government regulation of the industry. Recommendations from these investigations so far underline the relevance and appropriateness of our main supervisory priorities for 2010, which will be maintained with minor adjustments in 2011.

The level of safety in the Norwegian petroleum industry is basically high. But it is not the case that this level, once achieved, will be self-sustaining. A continuous commitment is required to prevent it from decaying over time. Accordingly, the fact that the risk level in 2010 showed no improvement from

the previous year, as measured during work on the annual RNNP report, does not conflict with our assessment of our performance in reaching our goals. Companies again reported back in 2010 that they found our audits constructive and that these have contributed to the achievement of their own goals in the safety area.

After weaknesses were discovered in freefall lifeboats during 2005, the industry has made a substantial effort to develop solutions which can cope with the loads involved and which provide the best possible safety for personnel in an evacuation. Such a development process takes many years, however, since prototypes must be developed, tested, fabricated and installed before they can be taken into use.

The new knowledge acquired has primarily been taken into account by Statoil, which has launched a project to improve evacuation systems in line with the new industry standards which have now been developed. We will be following up other operators and drilling contractors in the future to see that they make a similar commitment to satisfying requirements for safe evacuation – in terms not only of lifeboats but also of the whole evacuation system.

We again devoted resources in 2010 to developing and operating of our website in an active and up-to-date manner. We see that openness in the form of publishing audit reports, decisions and so forth, and the volume of information which is thereby made available, contribute to the understanding of risk conditions and challenges in the industry.

It is also our view that the international collaboration in which we participate contributes to good safety results, particularly in a long-term perspective. The mechanism here is that the various national regulators, through exchanging experience and discussing regulatory requirements and methods for exercising their official duties, behave in the most harmonised possible way towards an industry which is international by nature. Such harmonisation also provides the industry with greater predictability in satisfying government requirements. Important arenas for international collaboration in 2010 remained the International Regulators' Forum (IRF) and the North Sea Offshore Authorities Forum (NSOAF). International collaboration is described in greater detail in chapter 2.

1.2 Developments for accidents and injuries

No fatal accidents occurred during 2010 within our area of responsibility offshore and on land. Five

people have died in occupational accidents over the past 10 years. Preventing fatal accidents in the petroleum industry is a mandatory goal.

Figures from the RNNP process for 2010 show that the overall risk for loss of life is fairly stable. It has flattened out over the past five years at a level lower than in the previous five-year period.

1.2.1 Risk picture for offshore facilities

The number of serious personal injuries in the offshore industry declined from 32 in 2009 to 28. Since the total number of hours worked was insignificantly lower than the year before, the serious personal injury frequency was also reduced by virtually the same degree to 0.68 per million working hours. This means that the positive trend of the past few years was maintained. However, the reduction occurred on mobile units. The frequency was more or less unchanged on production installations.

No incidents occurred which caused serious environmental harm. However, several events took place in relation to well control which, under slightly different circumstances, could have resulted in serious accidents. We are following up these incidents closely, particularly to identify underlying causes related to management and control, experience transfer, learning from similar events and safety culture.

The number of hydrocarbon leaks has been very stable over the past three years, at roughly 15 per annum. This is higher than in preceding years, when the number was sharply reduced through a purposeful commitment by the industry. One of the leaks in 2010 was more than 10 kilograms per second – in other words, it had a substantial accident potential. Relatively large differences persist between operators in the frequency of such incidents. The goal set for the 2008-10 period was not reached, since the trend failed to show a continuous improvement. More purposeful and not least continuous efforts are required to reverse this development.

The contribution of drilling and well activities to risk appears to have increased in 2010, while incidents related to vessel collisions and damage to pipelines and other facilities declined. Helicopter transport still makes the largest single contribution to accident risk for employees on the Norwegian continental shelf (NCS).

Well control incidents also displayed a positive trend up to 2008, but have subsequently increased again from 11 in 2008 to 28 in 2010. That also represents a

rise in the frequency of such incidents when related to the level of activity – in other words, the number of wells drilled.

However, ships on a collision course continued to show a positive trend. The level in 2010 was significantly below the mean figure for 2002-2009.

The RNNP process was expanded in 2010 to include selected conditions related to the risk of acute discharges to the sea. Data for 2010 have not been finalised, but a reduction occurred on the NCS from 2001 to 2009 viewed as a whole. No clear trend can be discerned for the quantity of acute discharges, since this value is dominated by a few large incidents.

A marked increase in reported hearing damage boosted the number of minor personal injuries recorded in 2010. Such a change for a single year is thought to relate to campaign-like activities on one or more installations or at certain companies. Given the commitment to combating hearing damage by both the industry and the authorities, there is no reason to believe that the actual amount of such damage is rising. Of other reported personal injuries, musculo-skeletal disorders showed a reduction. Once again, however, such figures need to be assessed over a longer period to determine whether they reflect a significant trend.

1.2.2 Risk picture at land-based plants

Data gathering from the plants on land has been under way for five years, and builds on the same methodological approach which has functioned well in the offshore petroleum activity. Reporting is conducted at a realistic level, with the main emphasis on recording, analysing and assessing data for defined hazards and accidents, and for barrier performance.

Factors influencing risk at the land-based plants have clear similarities with corresponding factors offshore, but may also differ. Efforts have been made in the RNNP process to adapt indicators so that they reflect the risk picture at the land-based plants as closely as possible.

One factor special to the land-based plants is the possibility that third parties – in other words, people who live or are present in the vicinity – could be exposed to accidents.

Nine injuries which fulfilled the criteria for serious personal injuries were reported in 2010, compared with 11 the year before. Since hours worked declined by about 15 per cent, however, the serious personal injury frequency was virtually stable. This figure for

the land-based plants was 0.73 per million working hours, roughly the same as the 0.68 recorded for the offshore facilities in 2010.

Eight hydrocarbon leaks occurred in 2010, unchanged from the year before. However, this figure is significantly lower than the 21 incidents recorded in 2008. While the reduction is positive, the database is not broad enough for the change to be statistically significant. None of the 2010 leaks ignited.

Three cases of toxic emissions were also reported, along with 31 incidents involving dropped objects and four accidents with vehicles or other means of transport.

The indicator for exposure to noise shows that a number of worker categories involved in process and maintenance activities experience exposures which exceed the limit value of 85 dBA. Nevertheless, exposure to noise is lower than for comparable worker categories on offshore facilities.

With indicators for ergonomic factors being reported for the second year in 2010, the companies reported data for 80 per cent of the jobs for each of the relevant worker categories. This helps to ensure that the indicators eventually provide a more accurate picture of the total burden on each group. For all worker categories, 10-15 per cent of jobs are estimated to involve a high risk of strain injuries. Working posture gives the highest score for all categories. Surface treatment personnel and scaffolders have the highest scores.

1.3 Main priorities in 2010 – experience and results

1.3.1 Technical and operational barriers

The technical equipment on installations and at plants is extensive and complex. It must handle large amounts of energy in the form of oil and gas, partly under high pressure. Incidents which cause a loss of control over these energy volumes present a major accident potential.

Our work related to this main priority is directed to a great extent at challenges associated with extending the producing life of installations. Audits related to the “management and major accident risk” main priority are also relevant for establishing and maintaining technical and operational barriers. See chapter 1.2 in this report.

During 2010, the Norwegian Oil Industry Association (OLF) completed the project it had established in response to our request in 2006 that it draw up

BARRIERS

In this context, barriers mean systems of functions which can prevent or reduce harm in the event of an undesirable incident.

They can be divided into physical and non-physical. The latter embrace operational or organisation barriers. A barrier will often involve at least one physical element, such as a valve. Associated elements could, for instance, include a valve activator and its operational systems and components.

Barriers are built into designs and procedures in accordance with regulations and standards, with the aim of reducing the risk for people, the environment and material assets.

standards or guidelines for safe producing life extensions.

This work has resulted in new standards and guidelines for installations, subsea systems, pipelines and process systems.

We have developed an internal guideline for treating applications for consent to extend producing life. In addition, we have initiated work to assess possible requirements for updating the regulations with regard to aging. Our experts continued to collaborate in 2010 with their counterparts at the British and Dutch regulators to exchange information and to harmonise their approach to regulation, since these countries to some extent face similar challenges in this area.

A multi-year development project with Sintef to strengthen our expertise in the area was completed in 2010. This work has involved gathering and systematising information about aging and producing life extension as the basis for implementing processes for such extensions on offshore installations. In that context, an earlier project report has been updated and expanded to include a broader human-technology-organisation (HTO) perspective on aging and producing life extension. A final report from the project was presented to the industry at a meeting in our premises during April 2010.

We have also contributed to strengthening the industry's expertise in this area. An important arena is provided by meetings with operators who are in the process of preparing consent applications for producing life extensions. We have participated in selected technical arenas in order to pass on our knowledge and expectations. Our specialists have also contributed by tutoring students majoring in/writing a dissertation on aging and extended producing life. In addition, we have had a dialogue with universities and similar institutions in Norway and abroad to generate interest in establishing courses and educational modules in this area.

Our supervisory activities have also helped to identify the consequences of aging and extended producing life for maintenance management by providing us with knowledge about developments in the area. As part of our audits, we assess the maintenance philosophy and strategy for aging installations at the companies, including the way maintenance is to be managed given that a certain proportion of the installation's producing life has been used up. We have given priority to auditing those companies which face the biggest aging challenges.

We issued two consents for producing life extensions in 2010. A substantial commitment was made to considering these applications in order to address the special safety challenges facing the companies with regard to extending the producing life of installations, including sufficient expertise and capacity to ensure acceptable operations.

1.3.2 Management and major accident risk

Experience from and knowledge of major accidents and incidents which could have developed into such accidents indicate that their causes relate to only a limited extent to the actual technology and much more to the human ability to control it. Our priority in supervising how the industry prevents major accidents, including incidents with a potential for causing environmental harm, reflects this recognition, and is therefore directed primarily at management and control of major accident risk at the companies. Managing risk at the management level involves ensuring that managers know what the risk comprises, and that the risk aspect is taken into account in all decision-making process which might be significant in any way for operational safety.

Our supervision in 2010 accordingly followed up how management at every level works in a consistent way to reduce major accident risks. We have given weight to

- a clear division of responsibility for preventing major accidents at and between various management levels and at various levels in the chain of players
- knowledge of and attention paid to major

- accident risk in the company's operations, including the major accident risk associated with change processes
- capacity and expertise in the organisation which is tailored to handling the risk of major accidents learning from serious incidents
- self-assessment of overall work to reduce the risk of major accidents.

By auditing the way the companies manage major accident risk from an enterprise management perspective, we have succeeded in securing self-assessments from company managements of their role, information base and actions when managing major accident risk – and how such management is related to strategies, goals, plans and decisions. This activity has also secured individual and collective self-assessments from licensees and licence partnerships on these issues.

Activity in 2010 focused on Statoil as operator, Exxon-Mobil Norge and Petoro as licensees, and the licence partnerships for Grane, Åsgard and Gullfaks.

An important part of this work has been to identify how the companies relate to important operating parameters which apply to them, which they influence or which they create for contractors and other parties involved – such as oil prices, contractor relations, capacity and expertise.

The result of these efforts has been that the licensees collectively, and the operator in particular, have described and assessed aspects of work in the production licence and the company seen as significant in reducing major accident risk. Companies and licence partnerships have thereby taken a closer look at themselves, and have welcomed the benefits of doing so.

In cooperation with the OLF and the University of Stavanger (UiS), we conducted a seminar in August 2010 on management and major accident risk. The goal was to provide an insight into research on and practice related to management and major accident risk in order to focus attention on this subject, which touches on leadership and organisational issues. The aim was to increase awareness of the significance of these aspects in order to secure new knowledge which could help to promote the learning of lessons from incidents in the petroleum industry.

Based on risk assessments, we gave priority in 2010 to following work in selected production licences in order to form a picture of how companies in these licences follow up and set parameters for the health, safety and environmental (HSE) commitment by the operator. The licences prioritised in 2010 included Goliat, Ekofisk, Yme, Snorre and Gullfaks.

1.3.3 Preventing acute discharges and safe pollution reduction

Given our role in accident prevention, we contribute to minimising the risk of acute emissions/discharges through our overall commitment to maintaining a high level of safety in petroleum operations. This commitment covers the whole range of our activity, from continued development of the regulations, through supervising compliance with these, to monitoring risk trends over time and collaborating with the parties on important improvement processes.

We also follow up how new environmental requirements affect safety and the working environment as a consequence of innovative technology, novel working methods and new modes of organisation. We check that the companies, through good management and control, ensure that these changes do not have a negative impact – and preferably have a positive effect – on safety and the working environment. That in turn lays an important foundation for safe operation which minimises the threat of acute emissions/discharges.

In part through work related to development solutions and award criteria, we have contributed to ensuring that accident prevention is tailored to the risk potential – including in areas where the consequences of an accident for the natural environment would be more serious than usual. This means that preventive measures must relate to the possible consequences for the natural environment.

By developing well-adapted regulations and by basing our supervision on these, we help to lay the basis for an important measure related to the climate issue. Our role with regard to carbon capture, transport and storage is to check that this approach is pursued in an acceptable manner with regard to safety and the working environment. We have initiated a review of relevant regulations to ensure that these are further developed so that they will also be appropriate for activities related to carbon capture, transport and storage. We have helped to improve the knowledge base and have involved ourselves with these issues in the context of both research and development and the setting of operating parameters.

We are also making contributions to the technical aspects of work on management plans for the sea areas. Through our participation, we seek to ensure that accident-prevention measures receive the necessary attention in the planning process.

Our role where prevention of harm to the natural environment is concerned relates to the accident prevention aspect. It is a challenge that attention in the media and among the general public focuses particularly on the emergency response aspects of an oil discharge – in other words, measures to limit the consequences of a

spill. Despite the importance of good emergency preparedness, a one-sided concentration of such measures may reduce understanding of the key consideration that preventing accidents which cause discharges is the primary way to avoid damage from an acute oil spill. We were again concerned in 2010 to convey this message in as many contexts as possible.

Viewed overall, we believe that we have helped to enhance the attention paid to the safety and working environment consequences of climate- and environment-related measures. We also take the view that more people than before have acquired a clearer perception that we play an important role in achieving national environmental and climate goals through our work on safety and the working environment in the petroleum activity.

1.3.4 Groups particularly exposed to risk

Supervisory activities directed at worker categories particularly exposed to risk have been conducted partly as special measures aimed at these groups. However, they are also incorporated to a great extent into supervision of working environment risk in general. The presentation below accordingly includes topics which are not specific for the risk-exposed groups.

Our work on groups particularly exposed to risk during 2010 represented an approach aimed at enhancing awareness in the companies about the overall risk facing individual worker categories and the importance of operating parameters. We have been careful not to “stigmatise” specific groups, partly because big variations often exist within a category. A total of 16 different groups have been assessed through this approach since 2007. For some categories, a high exposure to a number of risk factors coincides with inadequate operating parameters. We accordingly devoted particular attention in 2010 to the insulation, scaffolding and surface treatment (ISS) trades, industrial cleaning and worker categories with a high exposure to noise.

Goals for our work in this area during 2010 were to

- follow up that the companies are continuing to develop an integrated picture of the risk of illness and injury faced by groups of employees, and are making active use of new knowledge in a risk-based approach where efforts are directed at groups which have the greatest needs and which offer the biggest effect from the action taken
- systematise and transmit knowledge about risk conditions and operating parameters which has been acquired by following up groups exposed to risk
- help to ensure that companies and employees become more conscious of their responsibilities and initiate risk-reducing measures directed at

particularly exposed groups

- help to illuminate the relationship between preventive work for groups exposed to risk and individual customisation.

Audits have shown that groups of contractor employees generally face more risk factors in their working environment than operator personnel, and that their exposure to these factors is higher. We see, too, that management elements intended to ensure a fully acceptable working environment are weaker for contractor employees than for operator personnel.

Our supervision has also revealed that such operating parameters as contractual conditions, financial terms and work organisation can affect the opportunities of contractor employees to reduce risk. At the same time, limited attention has been paid to the significance of these operating parameters for the risks facing exposed groups.

In our purposeful supervision, we have given emphasis to helping raise awareness of the importance operating parameters may have for the risks facing exposed groups. Audits in 2007-10 have covered all the operator companies with installations in the production phase and a total of 13 contractors. The goal has been to contribute to the development of operating parameters in the operator/contractor relationship which could reduce working environment risk. Supervisory work has been based on earlier studies which show that elements in the contractual relationship which could exert positive or negative influence on working environment risk include

- the significance of a long-term approach
- financial room to act
- incentives related to progress and uptime
- HSE incentives
- involvement in framing and entering into the contract.

We registered in 2010 that our supervision appears to have contributed to increased awareness in the industry about the importance of identifying and following up groups exposed to risk, and the importance of operating parameters in that context.

Follow-up meetings we held after an audit with operator companies making use of contractors also revealed that measures had been initiated and implemented to improve operating parameters for contractor opportunities to reduce risk for exposed groups.

Within the ISS trades, we have seen that supervisory activities directed at a specific contractor helped to put the issue on the agenda at other ISS players. We also saw signs of improvement in 2010 at a number of contractors with regard to the way groups exposed to risk are followed up, and we found it positive that many

companies have established internal projects and implemented measures directed to a greater extent at groups particularly exposed to risk.

Furthermore, we gave emphasis in 2010 to reporting the results of our commitment to groups exposed to risk in various fora, conferences and seminars for relevant industry players.

Exposure to noise and chemicals has been an issue in more broadly based audits involving groups exposed to risk, and has been to some extent the subject of special follow-up activities.

Working time arrangements at the land-based plants

Extended working time arrangements are now being agreed with the unions at the land-based plants. An example might be working 12-hour days over two weeks, with the following three weeks off. We take a restrictive attitude to permitting arrangements which involve more than 10 hours of effective working time per day. This builds on uncertainty about the total exposure of the individual worker to risk viewed over a longer period, and on the precautionary principle. It also accords with practice at the Norwegian Labour Inspection Authority.

Many foreign employees and companies apply to have working hours calculated on an average basis. It might seem that having many links in the contractor chain leads more easily to a lack of understanding about management and risk assessment related to working time. Our challenge is accordingly to help ensure that the working time arrangements desired by companies and employees also take care of HSE considerations for personnel and plant in a long-term perspective.

Crane and lifting operations

We conducted 20 supervisory activities during 2010 where attention was focused – either solely or along with other aspects – on the organisation of safe material handling, including safe lifting operations. This work embraced supervision of the design and construction of new installations, consideration of applications for an AoC, follow-up of major modification projects, and standard mechanical handling audits rooted in an overall concern over a number of years with the direct and underlying causes of serious incidents related to lifting operations, which have been identified earlier by extensive causal analyses.

Supervisory activities embraced audits of seven offshore facilities. Six of these involved verification work related to the consideration of AoC applications. We also supported police investigations into two serious mechanical handling incidents in drilling areas during 2010.

As mentioned above, our supervision focused on the

organisation of safe material handling, including safe lifting operations. Light has been thrown on known problem areas. Involvement of the necessary specialist expertise by the companies in connection with mechanical handling in drilling areas, the blind zone problem, training, risk assessment, management, compliance with governing documentation, technical condition and maintenance have been key issues in the supervisory work.

Norsok R-002 on lifting equipment was approved in April 2010 as the preliminary edition of the forthcoming standard. It contains an appendix B on material handling, which sets a standard for organising safe and efficient operations in this area and provides a reference the industry has lacked. We participated as an observer in the work on the standard, which has subsequently been used in our follow-up of the industry.

We have also participated in the work of the Offshore Mechanical Handling Equipment Committee (OMHEC) and as an observer in the OLF's project on preventing dropped objects.

Chemical health hazards

The industry's chemical project began in 2008 and was due to conclude in 2010. However, it was decided to extend the work to the end of 2011 and financing for this has been secured from the three employer organisations involved. The primary reason for the extension is that the project has not reached its objectives, but there was also a strong desire among the participating organisations to continue the work.

An extensive portfolio of activities was pursued by the project during 2010, and a number of important reports, proposed guidelines, courses and so forth were delivered. Our experience with the project was largely positive in 2010, but we have highlighted the need for a clearer involvement by the companies when the results come to be translated into better practice.

Social dumping

Problems related to social dumping have not been especially noticeable in the petroleum industry, particularly after the most extensive construction work at the land-based plants was substantially reduced. We have accordingly not conducted specific supervisory activities involving this subject as a main issue. However, possible problems and risks are incorporated in various other supervisory activities where social dumping could be relevant. That applies particularly to audits related to groups exposed to risk at the land-based plants.

1.4 Other results from supervision

1.4.1 Investigation of incidents

We have found investigation to be a good aid in learning

about the causes of serious incidents and for focusing attention on causal mechanisms – human, technological and organisational. The primary purpose of an investigation is to help ensure that similar incidents do not recur and to contribute to disseminating experience through the industry which can support learning processes in the companies.

We investigated or initiated the investigation of five incidents in 2010

- gas leak at Mongstad (February)
- gas leak at Mongstad (September)
- well incident on Draugen (December)
- gas leak on Gullfaks (December)
- lifting incident on Njord (December)

The investigation reports are available on our website.

1.4.2 Player picture

The picture is characterised by Statoil as a big national player, a few large international players and some new and smaller participants. This diversity can represent opportunities for improving the level of safety, while presenting a challenge in itself. Many of the new operators and licensees are relatively small companies with limited capacity and expertise, and little or no experience of operations on the NCS. Most of these companies have so far pursued activities in the exploration phase, but a number of them will move on to involvement in development and operation during the years to come.

Experience so far has indicated that a number of these companies face challenges related to the expertise and capacity required to manage their own operations and to ensure that contractors fulfil their obligations. These challenges have helped to encourage the enterprises to organise themselves through new modes of collaboration between players, and to give contractors large and central assignments as well as roles which are to some extent new. We expect that these developments may influence our priorities by presenting us with new challenges in coming years.

When following up the new operators during 2010, we paid particular attention to their first consent

Acknowledgement of compliance (AoC)

An AoC is a statement from us that a mobile installation's technical condition as well as the applicant's organisation and management system are considered to comply with relevant requirements in Norway's offshore regulations.

More information about this a arrangement can be found on our website.

applications for exploration drilling. We have seen that factors such as expertise and capacity – including adequate resources in terms of both quality and quantity for managing their own operations and ensuring that contractors fulfil their obligations – and the implementation and use of their own management systems are often inadequately handled at the new companies.

Where mobile units are concerned, the trend is towards ever more players. Consortia within this type of activity are a relatively new concept, which has emerged in recent years. An organisation of this kind helps to give drilling contractors greater predictability and increased continuity in short contracts. For our part, we have found that this type of collaboration has contributed to better transfer of experience between the various players in the consortium.

1.4.3 Acknowledgement of compliance (AoCs)

Four AoCs were issued in 2010, and 42 mobile units had received such acknowledgements at 31 December.

In our view, the AoC system helps to create greater predictability for the industry, improves knowledge and understanding of the regulations, and enhances the sense of responsibility of mobile unit owners. In certain cases, however, the resources we have devoted to considering applications are unnecessarily large because of the poor quality of the underlying documentation. This has resulted in lengthy communication with the applicant and thereby increased use of our time. Another consequence is that the owners incur costs. The issue of poor-quality applications has been raised with the industry in general. The individual applicant is also reminded of the requirements for submitting an AoC when they notify us of their intention to apply.

An AoC is mandatory for the following units which are registered in a national register of shipping and are intended to conduct petroleum-related operations on the NCS:

- drilling rigs
- accommodation units (flotels)
- floating production, storage and offloading (FPSO) units
- well intervention vessels.

An AoC has been a requirement since 2004 for mobile drilling units to conduct petroleum operations on the NCS. The extension came into force on 1 January 2007. However, it has been resolved that an AoC will not be given for FPSOs when these are operated by the operator company.

A number of new players have emerged in recent years with limited knowledge of the regulations and experience of the routines associated with the AoC system. This has meant that the resources we devote to considering applications for AoCs have been more substantial than expected.

1.5 Regulatory development

New regulations for HSE in the petroleum activity were adopted in the spring of 2010 and came into force at 1 January 2011.

We maintained our involvement in following up standardisation efforts of particular significance for the petroleum sector during 2010. We also followed up the Barents 2020 project in order to identify possible requirements for regulatory changes identified as a result of this work.

Standardisation work

The guidelines for the various regulatory requirements recommend solutions in part by referring to industrial standards (recognised norms) as one way of complying with the regulations. If such a solution is chosen, the regulatory requirement is normally regarded as fulfilled. A company which chooses an alternative approach must document that this meets the regulatory requirement.

In order to obtain the best possible basis for determining which standards should be referenced in the guidelines, we participate as an observer in national, European and international standardisation efforts. We have also participated as an observer in the Barents 2020 project. Our focus in the latter case has been on the working parties for emergency preparedness, rescue and evacuation, and for the working environment. We have participated to a fairly limited extent in the industry's projects for harmonising best practice through the OMHEC and the Working Together for Safety (Sfs) arena.

Some of the industry's multi-year standardisation projects are particularly significant for our work on establishing frameworks. Examples include the preparation of a DNV standard for the design of freefall lifeboats and an appendix to Norsok R002 which sets requirements for launch arrangements with evacuation equipment. Furthermore, following requests from us and Standards Norway as well as repeated serious incidents with dropped loads in the drilling area, CEN/TC 147 has initiated a standardisation project to harmonise requirements for manual and mechanical elevators through a revision of the EN 13155 standard.

Regulatory requirements for carbon management

We worked systematically in 2010 on identifying regulatory requirements related to carbon management. Today's HSE regulations for the petroleum activity contain requirements for a systematic approach to all types of risk in the industry. We will nevertheless review relevant sections of the regulations with associated guidelines to identify any need to supplement or amend their content.

An internal project team has also been mandated to propose the incorporation of changes identified as necessary in the regulations governing HSE in the petroleum activity. The goal is to submit the regulations to the ministry with a view to initiating a public consulta-

tion in the spring of 2011.

2. NATIONAL AND INTERNATIONAL COOPERATION

2.1 Safety Forum

One of the principal intentions with the Safety Forum, which brings together companies, unions and government in a tripartite collaboration, is to provide a consultative arena for strategic projects and processes related to safety in the petroleum activity. In addition, provision will be made to the forum to have a strategic agenda at all times which reflects the industry's main challenges in the HSE area.

Follow-up of the Deepwater Horizon disaster

Sharing of information and experience from a number of processes, reports and projects in the wake of the Deepwater Horizon disaster on the Macondo field in the Gulf of Mexico occupied a prominent place in the Safety Forum's work during 2010. Reducing the risk of major accidents is one of several priorities for the forum. Both the authorities and the industry have taken action after the disaster with an eye to possible consequences for Norway's own industry and to learn from reports and investigations associated with this incident.

The title of the Safety Forum's annual conference in 2010 – Always prepared? – from Kielland to Deepwater – also reflected this special attention. Information and status reports on the follow-up after the disaster from both national and international perspectives are shared at the forum's meetings.

Chemical working environment

Following discussions in the Safety Forum dating back as far as 2002, many years of preparation and follow-up on our part, and pressure from the ministry and the minister, a far-reaching project to improve the chemical working environment was instituted by the industry in 2007. This work is continuing into 2011, with the Safety Forum continuously monitoring its progress.

A diversified commitment has been launched by the chemical working environment project through R&D activities, studies, enhancing industry knowledge and meetings, all organised as a tripartite effort based organisationally in the OLF. The aim is to provide a unified picture of the exposure position, both past and present, describe and close knowledge gaps and help the industry to become better at handling working environment risk associated with the use of chemicals in the oil and gas sector.

The noise issue

Noise is one of the major working environment challenges facing the industry, and has been a key issue at Safety Forum meetings. We have provided regular briefings on our experience from audits in the area and data

from the RNNP process, and have urged the industry to adopt measures. Given the status report we presented at the end of 2010 and the expressed expectations of industry action, both the OLF and the Federation of Norwegian Industries recognised that they have a problem which must be tackled in an integrated way. This will be a priority area for the industry in 2011.

Tripartite collaboration across continental shelf boundaries

One ambition of the Safety Forum is to contribute to increased sharing of information and knowledge across various national continental shelves with a view to identifying possible areas for joint efforts to reduce risk in the industry. A collaboration meeting was held in 2010 with the offshore division of the UK's Health and Safety Executive (HSE) and representatives of companies and unions involved on the UK continental shelf (UKCS). Through further contacts, the ambition is to achieve a transfer of experience and collaboration in key areas such as helicopter safety and measures to establish joint guidelines/models for harmonised practice in critical work processes.

Emergency preparedness

The emergency preparedness issue was discussed in various contexts during 2010, partly as a consequence of regulatory follow-up with the industry following the Macondo accident and partly as a result of other initiatives in the area. The Safety Forum received a detailed briefing, for instance, on the establishment of the new emergency response centre by the Operator Association for Emergency Response (OFFB). This association represents a number of smaller operator companies, and aims to meet regulatory requirements for emergency preparedness by collaborating over planning and organisation, sharing experience and developing expertise in the area.

Area preparedness has also been considered by the Safety Forum with regard to challenges related to the lifeboat position on the NCS and to initiatives by the industry to review such arrangements. A meeting was also held with the Mid-Norwegian Regional Health Authority on possible emergency preparedness consequences of changes in the region's hospital structure. This issue will be taken further in 2011 by a separate tripartite committee.

After the Petroleum Industry Centre for Quality Assurance of Competence (PSK) was closed down, the Safety Forum has questioned how the industry will now maintain a system for safeguarding the quality of safety and emergency response training. Specific measures will be adopted by the OLF in 2011.

Continuous updating

The various sides represented in the Safety Forum update each other on the progress of projects, processes and individual issues of strategic significance for the

development of the risk picture in the industry.

Cases which were subject to continuous follow-up in 2010 include the following.

- The working time project being pursued by the National Institute for Occupational Health (Stami) on the health consequences of shift work in a long-term perspective.
- Groups particularly exposed to risk, one of our four main priorities since 2007, where operating parameters and contractual conditions for a number of groups of contractor employees – including ISS trades and catering – occupy a key place.
- Loss of anchors and position, being pursued by the mooring forum of the Norwegian Shipowners Association to achieve a reduction in the number of serious mooring incidents.
- The RNNP, where the Safety Forum is the reference body, reports on the status of key mile stones set by the forum. An advisory committee based on the Safety Forum has been created to advise on the development and execution of the RNNP.
- Tripartite collaboration, arenas and projects. Developments in the Sfs arena have occupied a key place here, along with the ministry's worker participation committee. The Safety Forum has contributed information and experience to the latter.
- Joint PSA/Employment and Welfare Administration (NAV)/Norwegian Labour Inspection Authority project on improving work customisation in the light of the inclusive workplace (IA) agreement has been followed closely by the Safety Forum both at its meetings and through summations of our initiative in this area – including a seminar on prevention, customisation and follow-up offshore.
- The land-based plants receive special attention from the Safety Forum, with experience from the L-8 HSE area occupying a key place. L-8 holds annual conferences which the Safety Forum's members are invited to attend. This programme was directed in 2010 at contractors and the ISS trades in particular.
- A new White Paper to the Storting (parliament) has been followed up closely through status reports from the ministry to the Safety Forum.

2.2 International

Cooperation with industrial countries consists first and foremost of the global collaboration in the International Regulators' Forum (IRF) and the North Sea Offshore Authorities Forum (NSOAF). Both these fora function well, and we regard this cooperation as a valuable contribution to the overall attainment of our goals. They are supplemented by bilateral collaboration at the expert level with certain countries, particularly the UK, the Netherlands and Denmark.

Our impression is that the international collaboration through the NSOAF and the IRF has attracted more attention and acquired greater significance, not least as a result of the Macondo accident. We expect that the resources we devote to activities in these fora may increase as a result.

2.2.1 International Regulators' Forum (IRF)

Members of the IRF are the USA, Canada, Brazil, the UK, Australia, New Zealand, the Netherlands and Norway. The forum was established in 1994 to be a driving force for developing safety in the petroleum activity through regulatory collaboration on joint projects and the exchange of knowledge and information. In addition to the annual member meetings, the IRF stages the International Regulators' Offshore Safety Conference every three years.

Our senior management attended an extraordinary IRF meeting in Washington DC during September to obtain first-hand information about the follow-up to the Montara and Macondo incidents and to plan the international Offshore Regulators Safety Conference. The latter took place in Vancouver during October, and was strongly influenced by the major accidents which have occurred in recent years – particularly the Macondo event. It was resolved to hold another extraordinary conference as early as 2011 in order to cast further light on the follow-up of these incidents. This meeting will take place in Stavanger during October, and we will be hosting it.

On the basis of the conclusions drawn at the 2010 conference, the IRF resolved during its annual meeting to initiate measures in five main areas where the member countries agree that resources must be devoted to enhance safety in the petroleum sector. The various countries have accepted particular responsibility for individual areas, with Norway handling performance indicators. We have undertaken to lead a working party which will further develop selected indicators in the RNNP process with a view to establishing an international platform for systematising information on hydrocarbon leaks, well incidents, collisions, fires, fatal accidents and serious personal injuries. We have also accepted responsibility for evaluating further development of blowout preventers (BOPs), control systems and instrumentation.

2.2.2 International Committee on Regulatory Research and Development (ICRARD)

ICRARD was established by the IRF in 1994 as a global arena for sharing information and experience from HSE research in the petroleum sector. To help ensure that research activities are known and made available across continental shelf boundaries, we established the www.icrard.org website in 2004 on behalf of the forum. This site is regularly used by member countries to publish R&D-related news stories. It also has a unique search engine which looks only for information on selected websites in the member countries. The site received almost 3 000 hits from 78 countries in 2010, and attracts

an average of 200-300 unique visitors per month. During 2010, the IRF resolved to focus special attention on R&D activities related to aging and producing life extensions, carbon capture, transport and storage, and deepwater drilling.

2.2.3 North Sea Offshore Authorities Forum (NSOAF)

Safety regulators in the UK, the Netherlands, Germany, Denmark, Ireland, Sweden, the Faroes and Norway participate in the NSOAF.

Over the years, working groups appointed by the forum have conducted many projects aimed at identifying common challenges and adopting joint measures which can contribute to improving the level of HSE. Many challenges are of such a nature that they demand common action to achieve improvements. The industry is international, and many companies operate across continental shelf boundaries, which requires the regulatory authorities to act in the most coordinated possible manner. The regulators have limited resources, and exchanging experience, sharing information and collaborating permit more optimum use of these.

From time to time, the Norwegian regulations are alleged to set safety standards which drive up costs compared with offshore requirements in other countries. It is important in this context to have a good understanding of the way each offshore regulator enforces regulatory requirements. The NSOAF collaboration contributes to this.

A substantial proportion of the NSOAF's work is conducted through the working groups appointed by its annual meeting. The latter receives reports from the various working groups and decides on the work programme for the coming period, including the possible winding up or creation of new working groups. Four such groups were in operation during 2010, covering HSE management in general, safety training, drilling and wells, and the exchange of information relating to the EU/EEC. The NSOAF has also been extensively consulted by the European Commission on safety issues.

The NSOAF's members cooperate with the European Diving Technology Committee (EDTC) and the OMHEC.

2.2.4 European Diving Technology Committee (EDTC)

Some 20 European countries belong to the EDTC, and each member state can appoint one civil service, union, industry and medical representative. Norway has appointed a representative from each of these four categories, with the PSA representing the authorities. The EDTC's principal activity is work on joint documents which are posted to its website. Although its scope is confined to Europe, documents produced by the committee are also used as references in other parts of the world. One example is the document on diver expertise,

which has been produced and issued together with the International Marine Contractors' Association (IMCA).

2.2.5 Offshore Mechanical Handling Equipment Committee (OMHEC)

The OMHEC brings together specialists on crane and lifting operations, and holds two meetings a year. Personnel from Denmark, the Netherlands, the UK and Norway participate in the committee's work, and each nation can appoint up to four representatives. Its principal activity is work on joint documents, such as common recommendations on issues related to cranes and lifting. These include recommendations on expertise requirements for personnel and competent persons, and on educational standards.

2.2.6 Bilateral collaboration with Russia

Our collaboration with the Russian authorities represents an extension of the former Boris project, and is supported by the Ministry of Foreign Affairs. We participated during 2010 in a seminar on completion and start-up of new production installations organised by Rostekhnadzor, the official regulator for technical safety in Russia's petroleum activity. A new platform due to be brought on stream in the Caspian was used as a case. The goal was to share information on requirements and experience. Securing insights into requirements set and provisions made for ice-covered waters was of particular interest for the Norwegian authorities.

We contributed papers on Norwegian regulatory requirements for preventing emissions/discharges and experience on the NCS to a seminar organised by the marine environment group of the Norwegian-Russian Environmental Commission.

We have also participated in the Barents 2020 project led by Det Norske Veritas. This initiative by the Norwegian government is partly funded by the Ministry of Foreign Affairs. It has conducted a review of existing national and international standards to identify standards and areas where changes are needed in order for these to be able to set acceptable norms for HSE and the working environment in far northern waters. Participants from the Russian side have largely hailed from the companies and the scientific community, while one goal of our further follow-up will also be to continue working with the Russian authorities on the question of how international norms should be reflected in national standards.

2.2.7 NORAD

The Norwegian government established its Oil for Development (OfU) project in 2005 as an assistance programme for developing countries in the petroleum sector. Operational responsibility rests with the Norwegian Agency for Development Cooperation (Norad), which seeks technical support in this work for a number of specialist agencies. Safety forms part of most OfU pro-

grammes. We contribute to a number of these, primarily together with the Norwegian Petroleum Directorate (NPD), the Norwegian Climate and Pollution Agency (Klif) and the Petrad foundation.

3. PUBLIC AFFAIRS AND COMMUNICATION

3.1 Our information policy

Information supplied to the industry, the media and the public at large will be characterised by openness, accessibility and accuracy. Given the special position occupied by the oil and gas industry in Norwegian society, we will provide information about its activities and answer questions to the extent that this is possible and acceptable given our role as a regulatory authority and our overall objectives.

3.2 Media management

All media enquiries are handled in accordance with the public affairs policy specified above. In addition to direct contact with the media, we use our website to provide information about our follow-up of such matters as undesirable incidents. As a general principle, we publish specially-written articles only about our own activities – the launch of our own investigations, the submission of inquiry reports and so forth.

3.3 The internet

The www.psa.no website is one of our most important channels for spreading information about who we are and what we do. Press releases, technical articles and interpretations of regulations are posted regularly to the site, which also hosts a dedicated section for the Safety Forum (www.psa.no/safetyforum).

In addition, information on all our supervisory activities is presented on the site in the form of articles. We do this both to make our work and priorities visible, and to make it easier for the companies and the industry to use the information for education and experience transfer. The bulk of the material is published in both Norwegian and English.

Publication of supervisory activities on the web in English includes:

- investigation reports
- summaries of our audit reports
- notices of orders and orders
- consents
- acknowledgements of compliance (AoCs)
- circulars to the industry (related to audits).

Apart from complete audit reports, all material is posted in both Norwegian and English.

All relevant statutes and HSE regulations for the Norwegian petroleum sector, with associated guidelines and interpretations, are available at www.psa.no/regulations.

WEB WORDS:

Hits

Hits on our website represent the number of times somebody has searched our web pages and found what they were looking for.

Unique visitors

This expresses the number of people who have visited our website from individual PCs (IP addresses). However, many individuals or PCs may be behind each such address, depending on the IT solution chosen for the user location.

Our site has become one of the most-used sources of safety-related information for the NCS, with roughly 40 000 hits and up to 24 000 unique visitors every month. We also offer a subscription service for news, supervisory information and interpretation of regulations, and had some 4 300 subscribers at 31 December 2010.

We make active use of our website to highlight our role, priorities, activities, audit results and so forth. In our view, the openness signalled through such publication, and the volume of information which is thereby made available to the world at large, represent a substantial contribution to understanding risk conditions and challenges in the business.

Public interest in our activities is reflected in part through the number of requests for access to documents, which is continuing to rise. We responded to 2 784 such requests in 2010, compared with 2 604 the year before. This is almost four times the level of three years ago. Of these applications, 128 were denied or approved with restricted access.

3.4 AuthorityWeb

We continued our collaboration over the AuthorityWeb (AW) during 2010. This provides a two-way web-based communication channel for correspondence between the government and the petroleum industry, and can also be used for inter-agency correspondence. The Exploration & Production Information Management Association (Epim) administers this solution. A new solution was developed in 2010 for the LicenseWeb, which provides a tool for communication and archiving to support administrative interaction between operators, partners and government for all production licences on the NCS. Called License2Share (L2S), this new solution became operational in February 2011 with the AuthorityWeb as an integrated element.

3.5 Courses and speeches

To contribute to knowledge transfer in the HSE area and to provide information on our regulatory role, activities

and priorities, we consider it important to participate with papers and presentations in key strategic arenas such as conferences, courses and so forth. We also stage our own courses and seminars to focus attention on areas which represent safety challenges.

Many of our managers, technical experts and other key personnel were again in demand during 2010 to speak at courses and conferences as well as to chair and participate in a number of committees for such programmes nationally and internationally.

4. ORGANISATION

4.1 Staffing

We had 161 employees at 31 December 2010. Women make up 45 per cent of the staff, and men 55 per cent. The proportion of women in senior posts is 40 per cent, and we are constantly working to achieve an even balance between the genders in all job categories.

The average age of the workforce is 53 years for men and 47 for women.

Sickness absence in 2010 was 3.9 per cent, compared with 5.4 per cent the year before.

Seven permanent employees resigned in 2010 and a corresponding number of new appointments were made to permanent positions. The average age of new recruits was 39 years.

4.2 Senior management

comprises our director-general, Magne Ognedal, and five area directors. Our press spokesperson is affiliated with the senior management team.

4.3 Supervision

Teams responsible for supervision are organised in six groups covering various types of players in the activity. Contact persons have been designated in the relevant supervision teams to provide a fixed point of contact for the various players. Each team is headed by a supervision coordinator with product responsibility and formal decision-making authority.

The responsible managers are Anne Vatten and Finn Carlsen, as the directors of supervisory activities.

4.4 Professional competence

Our professional competence is divided into seven discipline areas, each with its own leader responsible for human resources and for expertise development in their area. In 2010, these areas were:

- drilling and well technology
- process integrity
- structural integrity
- logistics and emergency preparedness
- occupational health and safety

- HSE management and legal affairs
- communication and public affairs

From 2011, the legal section of HSE management and legal affairs has been moved to regulatory development, while communication and public affairs has been subordinated directly to the senior management.

The professional competence areas allocate human resources to supervisory activities and multidisciplinary projects.

Øyvind Tuntland, the director for professional competence, is the responsible manager.

4.5 Regulatory development

The regulatory development activity embraces:

- development of regulations and standardisation
- cooperation with government authorities in other countries and the responsible Norwegian ministry over regulatory development
- incorporating and interpreting European regulations under the European Economic Area agreement
- development of collaboration and coordination agreements
- managing public consultation processes relating to regulatory development.

The responsible manager is Olaf Thuestad, director of regulatory development.

4.6 Operational support and development

is responsible for our in-house operation. It also provides support for developing our own organisation and follows up our sub-contractors.

The activity embraces:

- human resources
- organisational development
- company occupational health service
- finance and contract management
- internal security and reception
- building coordination
- intranet and web information system
- library
- document centre
- system development/electronic processing
- canteen
- operation of shared services for the NPD and Petrad.

The responsible manager is Gerd Randi Kaland, director for operational support.

5. KEY FINANCIAL FIGURES

Operation of the PSA cost NOK 202.8 million in 2010. This breaks down as follows (all figures in NOK):

Pay and benefits	120 513 103	
Goods and services	59 656 678	
Total operating expenses		180 169 781
Contract-related pay and benefits	1 470 966	
Supervising the petroleum activity	19 054 376	
Contract and collaboration activity	0	
Total special operating expenses		20 525 342
Major equipment purchases		2 067 566
TOTAL EXPENSES TOTAL EXPENSES		202 762 689

The PSA had an income of NOK 77 million in 2010, which breaks down as follows:

Contract and collaboration income	1 274 318
Refunded supervisory expenses	67 474 075
Miscellaneous income	5 817 133
Conference/seminars	32 100
Refunded labour market measures	2 332
Refunded maternity/adoption pay	1 027 351
Refunded trainees	49 431
Refunded sick pay	1 322 704
TOTAL INCOME	76 999 444