

# FORUM



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## Ferrari builds on performance



Teekay's customer  
focus pays off

Austria's ÖBB takes safer track

Torp airport blazes a clean trail

Shipowners and ports face  
new security code

## CONTENTS

- 3 LAND, SEA AND AIR ...**  
Making transport safe
- 4 INNOVATION** is the  
lifeblood of Ferrari cars
- 8 AUTOMOTIVE** quality standards  
prepare to meet the 2004 deadline
- 10 TORP AIRPORT** clears take-off  
for ISO 14001 certification
- 12 PORT OF HOUSTON** gains  
its green credentials
- 14 TEEKAY SHIPPING** strengthens  
working practices in tanker fleet
- 17 MARITIME SECURITY** takes  
a high priority at the IMO
- 20 A WEB-BASED FUTURE** as shipping  
commits itself to MariNet
- 22 THE SAFETY CASE** in  
restructuring Britain's railways
- 25 FASTER, SAFER TRAINS:**  
Austria's ÖBB paves the way
- 28 GAS TRANSPORT:** balancing  
the needs of a changing market
- 32 NEWS**
- 34 LAST WORD**
- 35 DNV WORLDWIDE**

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page 4



page 10



page 25



Tore Høifødt

# MAKING TRANSPORT SAFE

The shipping industry is under the spotlight again. When the stricken tanker *Prestige* sank off the coast of Spain, the world was threatened with another major pollution disaster.

The dimension of the incident triggered extensive media coverage and caused the entire shipping world to once again search for improvement in all the many issues related to safe transportation at sea.

Tore Høifødt, head of DNV Corporate Communications, comments: 'The *Prestige* is yet another reminder that today's traders, whose cargoes may be perishable, fragile or dangerous, must ensure that their wares reach the market inexpensively, on schedule and with the minimum of risk. Whether by road, rail, sea or air, safe and reliable transport is essential for a company's survival.'

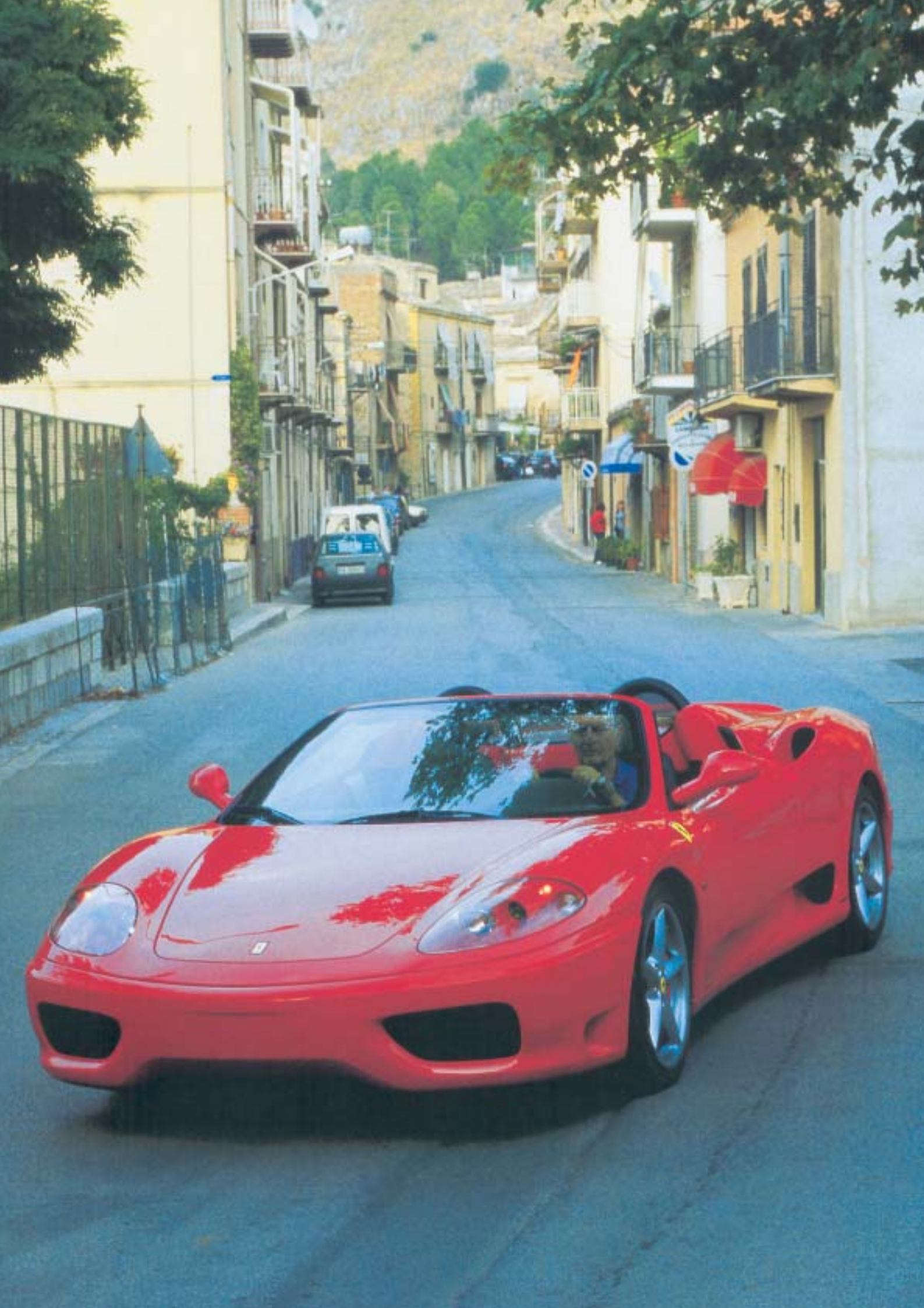
Det Norske Veritas, from its foundation, has worked closely with the transport industry – traditionally the shipping segment. But in recent years, DNV has broadened its involvement into road and rail, aviation and transport infrastructure, and provides experience and knowledge that support their business goals – and reputation.

Says Høifødt, 'Our competence in management systems, work-process analysis, risk and reliability studies and general transport safety provides the entire transport industry with risk-management solutions that improve its competitiveness and ensure its operations are efficient, safe and reliable.'

The articles in this issue of *DNV Forum* will provide you with a valuable overview of the broad range of services DNV has to offer throughout the transportation industry. Risk management is their common theme – from building Ferrari supercars in Modena to operating a world-leading tanker fleet like that of the Teekay group.

'Safety and reliability are vital for any successful business in the transport industry,' concludes Høifødt. 'Incidents like the loss of the *Prestige*, fortunately, are few. It is our determination to help eliminate them.'

STUART.D.BREWER@DNV.COM EDITOR



# Ferrari builds on performance

A Ferrari is, to many, more than just a car: it is a work of art. At the Ferrari plant in Italy, ISO certification has improved its already high standards of quality and innovation.

TEXT: EVA.HALVORSEN@DNV.COM  
PHOTO: COURTESY OF FERRARI

The Ferrari plant at Maranello, Modena, is unlike any other carmaking factory in the world. The wooded surroundings impact a sense of quiet, and the natural light, the fresh air, the white-collared workers, all contribute to a unique work environment.

Says Franco Magagni, Industrial Director of Ferrari for the past three years, 'No other carmaker has a workplace to match this in quiet, cleanliness and comfort.' He is a mechanical engineer from Bologna and has worked his way through the Fiat system. Fiat is the major owner of Ferrari. Magagni's main responsibilities are manufacturing, quality, purchasing new technology and components development.

He continues, 'A Ferrari is a work of art. We have never spent a cent on advertising. The Ferrari brand speaks for itself. The older the car is, the more it is worth. We can provide spare parts for all Ferraris built

in the past 40 years.' The company limits its production to around 4,000 'hand-made' cars annually, and is determined to keep it at that level.

## ISO CERTIFICATION

DNV has certified Ferrari according to the ISO 9000 and 14000 standards, recognising the company's environmental concerns and decision to reduce any negative impact from its operations.

'The ISO evaluation and certification have improved quality and reduced environmental effects,' says Magagni. Ferrari's management system implementation reflects the company's philosophy: 'Provide time and resources and make sure the systems meet our needs.' And the result is impressive. Says Magagni, 'Achieving ISO 14000 was a direct result of working towards the ideal manufacturing environment. After gaining the ISO 9000 certificate I personally wanted the ISO 14000 for our facilities as well.'

Work towards certification began in 1994. The company was beginning to recover from a turbulent period and quality was an issue. To encourage innovation and improve quality, Ferrari decided to go for a quality management certificate: rather than simply a sales tool, they realised it would enable the quality processes to develop in the right direction.

## FRUITS OF COLLABORATION

'We always go for the best in Ferrari. We believe that DNV is the most serious and reliable certification company in Italy,' Magagni explains. 'DNV has had >>

Car-drivers around the world aspire to ownership of a Ferrari ... and the Italian builder's quality standards ensure that its reputation remains unequalled.



'The audit and evaluation proved to be very useful in our drive for continuous improvement'

– Franco Magagni

great influence on our improvement. It has been a masterpiece of collaboration.' But it was no joyride. Ferrari faced tough experiences all the way. He describes it as a sound relationship.

Director of Institutional Affairs Leonardo Omodeo-Zorini in DNV Italy returns the compliment. He also describes the relationship as sound and fruitful. 'Ferrari has always taken our input and comments very seriously,' he says. He believes that their relationship has contributed to increase Ferrari's level of quality as well as its environmental performance. He emphasises that the level of anomalies found since the beginning of the certification process has been extremely low.

'During the latest renewal activities at the end of September this year, we only identified opportunities for improvement. This is a very positive sign with reference to the degree of efficiency of the processes managed by Ferrari,' he says.

In 1996 the ISO 9000 certificate was issued by DNV for Ferrari GT luxury and sports cars, with the scope of 'Manufacture, sale and after-sale servicing of GT cars'. Maserati GT was certified in 2000 with the same scope. The Ferrari plants started their ISO 14000 process around 1999. This certificate was issued in 2001, with the scope of 'Design and manufacture of GT cars through design and development, alloy casting, machining, panelling, painting and assembly. Manufacture of racing cars through alloy casting, composite materials manufacture and painting, machining and assembly.'

Magagni is proud of the company's achievement. 'We are the only racing car company to have certified manufacture of Formula One cars to ISO 14000. Other car manufacturers may be "best in class" in

DNV has awarded ISO 9000 and 14000 certification to the legendary Maranello plant.



some specific environmental aspects, but our goal is to match them.'

#### **STREAMLINING PROCESSES**

'A customer does not buy a Ferrari because the company has a quality or environmental certificate on the wall,' Magagni points out. 'Customers have extremely high expectations of our cars, and we saw this approach to management as a valuable tool that would allow us to adopt procedures leading to both innovation and efficiency. We felt it was a form of guarantee.'

Magagni believes that the ISO 9000 process helped lead to consistency as well as quality. Ferrari's production processes have improved, with less waste, fewer operations that have no added value, and less pollution. The audit and evaluation proved to be very useful in the drive for continuous improvement.



### IMPLEMENTATION AND BENEFITS

The certification work was also well received by the employees. Innovation is part of the company's culture, and the workers do what it takes to contribute to the improvement processes. Magagni states that the processes were implemented without question. The employees' satisfaction is a key issue to him. He personally meets all of them twice a year, and has introduced his own award system to encourage innovation. 'This year 200 members of the workforce were awarded weekend stays in cultural cities with their families. The result has proved to be a highly motivated and cooperative staff.'

Magagni emphasises that the company has not rushed to implement certification. 'But in a company where craftsmanship is as important as technical innovation, rushing the process would have meant we were only interested in a certificate on the wall,

rather than management systems that would improve our performance.'

### RETAINING EXPERTISE

He estimates that besides cost savings from reductions in energy use, and waste due to the plant's energy-efficient design, Ferrari can also attribute savings to significantly reduced personnel turnover. As a result of ISO 14000 implementation, the company has reduced the turnover to an extremely low level.

Concludes Magagni, 'The consequences are twofold: first it has reduced the cost of recruiting and training new employees; and second it has achieved a notable increase in productivity and quality due to the consistency of the workforce. In short, a healthy and comfortable environment has incalculable value.' ♦

Opel's Norbert Ernst (left) and Oliver Steinhoff with the new Opel Vectra.



# ISO clock ticking on Opel drive

The automotive industry is in agreement: the quality standards QS 9000 and VDA 6.2 are history – at least they will be by the end of 2004 when they are replaced by ISO/TS 16949. Carmaker Opel and two of its suppliers in Germany – Infineon and Takata-Petri – put the case for the new standard.

TEXT: HARALD.BRÄTHEN@DNV.COM

**S**ays Oliver Steinhoff of Opel AG, 'We supply a global market, so that one standard is only right. And, in that the deadline is 2004, the suppliers also have enough time to adapt.' Steinhoff is director of total quality assurance management in Rüsselsheim, Germany. He talks to DNV Forum with Norbert Ernst, acting director, plant support, for GM Europe.

## TROUBLESHOOTING

'If something goes wrong, it's easier to find the reason and do something about it,' says Ernst. 'And an independent third party will see your systems with new eyes – as well as having wide experience gained from others,' adds Steinhoff. 'It's important to have a common set of rules that everyone could have confidence in and trust. This need will not diminish, but we don't know what place certification will have in ten years' time. Competition and market requirements have reduced the number of suppliers,

but quality has improved – and that's important for a company such as Opel, with almost 2,500 suppliers.'

## QUALITY INITIATIVES

Oliver Steinhoff describes four major initiatives for improving Opel's quality:

- 1) When work starts on a new car model, it is important that both ease of production and quality are at least at the same level as the previous model – preferably better. Steinhoff calls these ambitious targets.
- 2) The continuous improvement of current cars, carried out by a special team of engineers.
- 3) Suppliers account for 60–70% of the value and 75% of the quality of the product. To achieve maximum benefit from this collaboration, Opel must enter into partnerships with suppliers, all of whom must meet the same quality standards.

4) Harmonisation of quality processes. This applies all the way from design, development and purchasing to the validation of the product, manufacture of the car, the dealer and the after-purchase market.

#### HARMONISING TWO SYSTEMS

Takata-Petri in Aschaffenburg, not far from Rüsselsheim, is one of Opel's principal suppliers. Airbag manufacturer Petri AG, the company that was merged with Japan's Takata in 2000, was chosen as Supplier of the Year by GM Corporation Worldwide Purchasing in 1997. Now a car can have up to 16 airbags, and safety products are Takata-Petri's main business area, including airbags, steering wheels and safety belts.

'The ISO/TS 16949 gives us a unique opportunity to harmonise two systems – the QS 9000 and the VDA 6.1 – and to concentrate on just the one,' says Dr Klaus Brand, director of quality assurance (Europe) at Takata-Petri. He emphasises that Takata-Petri plans to have the best of both the practical and theoretical parts of the two former standards.

'The standard has changed from being element-oriented to process-oriented. This has been a big step for us. Not only have we combined the two standards, we have also tried to meet the requirements of ISO 9001:2000. This was highly appreciated by all our departments. They had already worked on process orientation, and now they were given the opportunity to make these more practical.'

#### NEXT STEP – EFQM

'The next step for us is EFQM (European Foundation of Quality Management). First we have to stabilise the processes,' says Dr Brand, who envisages a two-year stabilisation phase before the company goes further with the EFQM model.

Takata-Petri Europe manufactures 13 million airbags, 4.5 million steering wheels and 5.4 million safety belts each year. Dr Brand explains, 'Opel is one of our oldest customers – and we supply all the leading car manufacturers. Business excellence are the magic words. But nothing is so good it can't be improved.'

#### READY FOR 'BEYOND CERTIFICATION'

Infineon Technologies, one of the world's leading semiconductor manufacturers, serves a broad range of markets from its Munich base. It is a principal supplier to Opel, and sponsors the Jordan Formula1 and Audi Le Mans racing teams.

Leo Stuehler, director of corporate quality management, supports the implementation of the ISO/TS 16949, but is ready to go beyond certification. 'Starting in 1987 with an ISO 9000 certificate followed by QS 9000 in 1997, and as a three times finalist in the

European Quality Award (EQA), we had all the processes in place long before ISO9000:2000 and ISO/TS 16949 were launched. It was a very good exercise for the whole company.'

'To be successful in our business, innovation and quality are a must'

Stuehler would like to see more flexibility in future – and options for alternative ways to demonstrate compliance to the standard. 'To be successful in the semiconductor business, innovation and quality are a must,' he states. 'Our manufacturing flow from raw material (silicon wafers) to finished product consists of some 500 processes; the processing times add up to about 30 days. To maintain a competitive level of overall performance we have to focus on quality in every element of our business.

'So we're very interested in schemes that give us fewer audit days and greater recognition of our own self-assessments. As long as the automotive industry wants certificates, we'll naturally maintain our certificates. In the long run, however, we want to influence the leading automotive companies – preferably with the help of DNV – to further develop methods for achieving improved quality. The Automotive Excellence programme launched by VDA – the association of the German automotive industry – is a first move in the direction of partnerships based more on mutual trust than on certificates.' ♦

Dr Klaus Brand at Takata-Petri (left) and Leo Stuehler of Infineon Technologies.



# Torp airport blazes a clean

TEXT: STUART.D.BREWER@DNV.COM  
PHOTOS: PAAL-ANDRÉ SCHWITAL

Torp airport is the first in Norway to be certified to ISO 14001. 'To the aviation industry in Norway, this may serve as a signal for take-off,' says Norwegian Environment Minister Børge Brende. He firmly believes that environmental improvement is an economic and competitive opportunity, and that ISO 14001 can be an important element in business survival.

The ISO 14001 certificate was presented to Torp CEO Alf-Reidar Fjeld (centre) by Environment Minister Børge Brende (right) and DNV Certification's general manager, Torger Baardseth.



In a part of the world where care for the environment is high on most companies' business agendas, it is remarkable that ISO 14001 certification – for environmental management – has been awarded to just one airport in the whole of Scandinavia.

That airport is the small, privately owned site at Torp, near Sandefjord in southern Norway. Handling primarily charter flights, Torp received its ISO 14001 accreditation from DNV last April in recognition of its many measures to safeguard the environment and ensure that staff awareness about such matters is high.

Says Brende: 'Norway lags far behind other nations as regards such environmental certificates. So it's positive for Torp to go ahead and show the rest the way.' He praised the airport management for accepting their responsibility to the community.

ISO 14000 and its voluntary standards address environmental management systems; environmental



# trail

auditing and related investigations; environmental labels and declarations; environmental performance evaluation; life cycle assessment; and terms and definitions. These address the needs of organisations worldwide by providing a common framework for managing environmental issues.

## **BENCHMARKING**

No company – or airport – can claim a ‘good environmental record’ without some type of international standard against which to measure it. Such benchmarking is a prime role for Det Norske Veritas, whose lead auditor on the Torp contract was Dr Paul Liseth.

‘There were many things that impressed us about Torp airport,’ says Dr Liseth. ‘The new aircraft engine testing site to reduce noise was one. Moving the fire safety training operation another. That used to release smoke, noise and polluted water: now it has been relocated from the airport to a nearby government site at Borre Havariskole.’

‘I would also highlight the new de-icing system. This now takes place within one defined area and all runoff is collected in storage tanks, then further treated in a separate plant before being released. A comprehensive monitoring programme for groundwater quality, as well as for the nearby river, was also undertaken. It showed that no significant pollutants from the de-icing system were found, which is important to sustaining the local eco-system.’

The airport’s commitment must be ongoing to retain certification, and Torp is now in the process of encouraging all companies operating at the airport to endorse its high environmental standards.

The airport management is committed to meeting all environmental authority requirements, and to continuous improvement. They recognise that the environment will need to be protected in the future, as new scientific and technical developments occur.

Says Dr Liseth, ‘The enthusiasm from the whole staff at the airport in implementing and maintaining its environmental management systems, I believe, is the best guarantee for an environmentally friendly airport in the future. We certainly saw much evidence of this.’

‘ISO 14001 certification is a milestone in the work Torp airport has directed towards environmental protection’

Liseth describes the experience of working with Torp as ‘very positive for us, the airport, and most importantly the environment.’ He would like to see other airports in the region following Torp’s lead.

Presenting the ISO 14001 certificate to Torp CEO Alf-Reidar Fjeld, Norway’s environment minister was uncompromising: ‘Research has shown that companies which focus on the environment also score high on other success factors. Previously, only the manufacturing industry has been concerned about obtaining such certificates. The fact that an airport has now done so is a signal, and I hope that more airports in Norway will follow suit.’ ♦



Laura W. Fiffick, environmental affairs manager of the Port of Houston

# Green turnaround at Port of Houston

TEXT AND PHOTO: BEATE.V.ORBECK@DNV.COM

The Port of Houston is the first port in the United States certified according to the environmental standard ISO 14001. Other ports are expected to follow as focus sharpens on green transportation.

The Port of Houston is the sixth largest in the world, a few hours' sailing time from the Gulf of Mexico. More than 7,000 vessels call at the port every year, carrying some 200 million tons of cargo.

'Environmental concern for transportation is on the international agenda, and ports are part of it,' says Port of Houston's environmental affairs manager Laura W. Fiffick. 'We believe implementing an environmental system is a good opportunity to prove we are on the right track. In this, as in most businesses, it is a must to be proactive and prepared for the future.'

The Port of Houston has been part of a pilot project in the U.S., in which the Environmental Protection Agency (EPA) has selected 14 municipal entities to implement an environmental management system during 2002. The Barbours Cut Container Terminal

and Central Maintenance Facility are now ISO 14001 certified by DNV.

### THE CLUE

'Establishing an environmental management system has required the effort of the whole port -- from top management to everyone engaged in operations,' says Fiffick. 'We have managed the difficult task of transforming a word-of-mouth process into a structured, paper-based system that works. Going through such a process has made us aware that we cannot continue doing things just because the law says so. We have to understand why we do it, and what implications it might have on the environment.'

'We believe implementing an environmental system is a good opportunity to prove we are on the right track'

'An example is changing oil near a storm drain. This might cause oil spilled to leak and pollute the fishing waters. Relating work operations to our private lives helps us realise how it might affect all of us. This is what environmental concern is all about. The new system is made transparent and open for continual improvement, which is the basis of our success. We have given the whole organisation a voice in a system based upon continual improvement -- and that will continue as long as we are in operation.'

### REDUCED PREMIUMS

Fiffick believes there is a good chance that the port's insurance premiums might be reduced by as much as 20 per cent if it can prove that the environmental management system is working. So far the Port of Houston is experiencing declining reports and paperwork, reduction of waste disposal and lower atmospheric pollution. These changes have contributed to a more efficient and environmentally friendly workplace. It is not only the Port of Houston that profits from these improvements, but ship operators, traders and the citizens surrounding the port facilities.

Says Fiffick: 'By auditing the system every six months it becomes a living system. And the standard is one that all ports worldwide should implement in order to ensure environmentally friendly operations in public waterways.'

### PROACTIVE STEPS

The Port of Houston is ranked first in the U.S. in international waterborne commerce and second in

total tonnage. It handles general cargo, containers, grain, other dry bulk materials and heavy lift cargo.

To meet the Environmental Management System's goals the Port of Houston has developed and implemented a programme that concentrates on increasing recycling and reducing air emissions. It has tested PuriNOX, a Lubrizol diesel emulsion product, for more than a year on yard tractors and rubber-tired gantry cranes. The results of the emission testing show a 25 per cent reduction in nitrogen oxide (NOx) levels and a 30 per cent reduction in particulate matter. The port has also reduced the use of absorbents by half through using a cement mixer to distribute oil evenly throughout all used absorbent materials. These can then be reused to absorb six or seven additional spills. ♦

**AN ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)** is an overall structure that focuses on the short- and long-term impact of an organisation's products, services and processes on the environment. The EMS ensures order and consistency by guiding the organisation in the sharing of resources and assigning responsibilities, and providing ongoing evaluation of practices, procedures and processes.

Barbours Cut Terminal at the Port of Houston has achieved compliance with the ISO 14001 standard.



Photo: Port of Houston

# Customer focus pays dividends for Teekay

TEXT: STUART.D.BREWER@DNV.COM  
PHOTOS: JAY SHAW

As part of its commitment to becoming 'the first-choice provider in the oil transportation industry', Teekay Shipping is continuously strengthening its best practices.

Teekay has made significant strides into the global shipping industry in the past decade. Unlike most companies undergoing a period of rapid expansion, Teekay has been able to cultivate a personal approach to its customers. This strategy is opening new doors and further increasing the market potential for the company and its investors.

'Teekay is intent on expanding its activities and being available locally to customers around the world. Our Marine Managers act as a "service station", able to advise on all matters nautical, whether generic or specific to a vessel or voyage,' says Graham Westgarth, senior vice president of Teekay's marine operations.

#### **A MARITIME 'SERVICE STATION'**

The service-station concept is part of Teekay's global vision – to be the first-choice service provider in the oil transportation industry – but more important, it is a statement to the customer that Teekay is an international shipping specialist fully capable of providing turnkey/all-round services locally.

A listed company on the New York Stock Exchange, Teekay moved its head office from Long Beach, California to Vancouver in 1991. Today, the company has 15 offices, including one in Oslo, and a network of



Graham Westgarth is spearheading Teekay's drive to strengthen its working practices.



Teekay has further enhanced its operational procedures through several initiatives, including a new safety-management system and shipboard training.

Marine Managers in Houston, London, Singapore, Tokyo and Sydney.

As a publicly-listed company, Teekay has a strong desire to position itself and build up local competence in regions with concentrated shipping activity.

‘Marine expertise can provide Teekay customers with significant benefits’

Says Westgarth, ‘In today’s challenging shipping environment, ready access to marine expertise can provide Teekay customers with significant benefit. Some customers may not have in-house marine expertise, and even if they do, an exchange of ideas can often be beneficial.’

Business is going well for Teekay. A good foundation for the business was created by the company’s success in the early 1980s. Over the past three years, the company has gone from being an owner operating 43 ships to an organisation now operating over 100 ships and managing another 20 or so. In this process, the company has acquired and merged with

other shipping companies and taken them into the Teekay fold.

#### INVESTING IN SHIPS AND PEOPLE

As well as significant growth through the Bona and Uglund Nordic Shipping acquisitions in 1999 and 2001, Teekay has made substantial investments in qualified personnel and procedural areas.

Explains Westgarth: ‘At Teekay, we are proud of our achievements in these areas, but we are continually striving to improve. With our ongoing investment in maintaining a large, modern, high-quality tanker fleet, the equipment side is well in hand. We’ve been active regarding personnel initiatives. The operational procedures area is also important to us and we have, over the past few years, strengthened our best practices through several initiatives, including a new safety-management system, shipboard training and refined ship safety-performance measures.’

More recently, Teekay began a risk-management project with Det Norske Veritas. According to Westgarth, Teekay’s ability to professionally and transparently manage risk is the key success criterion for the company in maintaining its position as a preferred provider of transportation services.

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'Teekay's ability to manage risk is the key success criterion for the company'

– Graham Westgarth

### THREE AREAS OF FOCUS

The project focuses on three areas:

- *Risk Management* – where the operational risks to Teekay's fleet are addressed. Relevant risk-management processes will be developed, supported by a quantitative risk-assessment tool enabling Teekay management to make decisions and implement measures based on quantitative evaluation of their financial benefits.
- *Hull Integrity* – where a risk-based hull integrity scheme is to be piloted for two Teekay vessels. This will enable Teekay to carry out more effective hull maintenance and inspection based on a life-cycle risk/cost perspective. Prototype Hull PMS software will also be developed.
- *Condition-Based Maintenance* – where a new machinery-maintenance philosophy will be piloted on three Teekay vessels. This will provide more reliable and efficient machinery maintenance at optimised costs.

Sam Behramfram, head of DNV District Pacific in Region Maritime North & South America, says: 'This is an excellent example of the value creation Maritime Solutions – DNV's consulting services for the maritime industries – is aiming to provide to its customers. This project took its starting point from issues of strategic importance to Teekay management, and the project was defined based on a common diagnosis of these. DNV will help Teekay through innovation and the transfer of knowledge.'

As one of the world's leading shipping companies, Teekay has gained a reputation of having a better knowledge of the shipping business than many others. This has placed greater demands on the company, but has also given Teekay a 'competitive edge'.

### SEIZING OPPORTUNITIES

Westgarth describes the competition as 'tough', but emphasises that Teekay is committed to maintaining its market position and has a defined strategy to meet its customers on common ground and to assist them technically wherever possible.

'Teekay views the increased emphasis on environmental protection, personnel safety and improved operational practices in the shipping industry as an opportunity to continually improve the overall integrity of its operations. Ultimately, we also believe that our customer-oriented approach will differentiate us from our competitors,' he says.

'This approach is being made easier through our work with DNV. We are developing mutually beneficial business models focusing on the application of practical, user-friendly tools. Based on our experience so far, we're confident that the project work with DNV will help us achieve our goal of becoming the premier tanker shipping company while continuing to provide our customers with the best possible services.' ♦



# Shipowners and ports face new **security** code

TEXT: STUART.D.BREWER@DNV.COM  
PHOTO: COURTESY OF STAR SHIPPING

Like many other industries, shipping too must face up to the realities of global terrorism. The International Maritime Organisation, the maritime agency of the United Nations, has worked fast to develop a new international code for the security of ports and ships. The draft Code, which is to be considered at a diplomatic conference held by the IMO in December, is expected to have a significant impact on the industry, with all ships over 500 dwt having to meet the requirements by July 2004. The deadline for compliance by ports is planned to be 2005. >>

#### IN SUMMARY

- Like many other industries, shipping too is facing up to the realities of global terrorism.
- In December the IMO is to host a diplomatic conference to adopt amendments to the Safety of Life at Sea Convention by including requirements relating to maritime security.
- The proposals are wide-ranging, extending from bridge equipment, through security plans and security officers, assessment and certification of ports, to passengers, crew and port personnel identification and the installation of covert security alarms on ships.

With the recent attack on the French-registered oil tanker *Limburg* off Yemen, shipping was for the first time since September 11, 2001 directly affected by a terrorist act. At home and abroad, the regulatory agenda is now dominated by security. The development of security rules for ships and ports worldwide is now well advanced in international forums.

Taking the lead, the IMO has initiated major efforts to put in place regulations to ensure improved maritime safety. This is a consequence of both increased attention to this issue internationally and, not least, pressure imposed by the USA.

#### PRACTICAL APPROACH

Says Brian Parkinson, trade and operations adviser to the International Chamber of Shipping: 'The primary focus of this work will be on regulations that assign security-improvement responsibilities to shipping companies, ships and maritime personnel. While agreeing that security concerns are real, however, I feel that the response should be practical and pragmatic. There should be a balance between security measures and the need to keep trade moving.'

According to Parkinson, the UK shipping industry and authorities are fundamentally in favour of the IMO's plans and see the consequences of terrorist acts against the USA as a way of achieving better, more comprehensive international regulations for shipping and the transport of goods.

As highlighted in a recent *IMO Briefing*, the new measures are centred around a proposed International Ship and Port Facility Security Code, Part A of which is expected to be made mandatory through amendments to the Safety of Life at Sea Convention (SOLAS), under which more than 98 per cent of the world's international shipping fleet operates. Part B of the Code has been drafted as guidance material and is recommendatory.

The overall objectives of the Code are to establish an international framework involving cooperation between Contracting Governments, Government agencies, local administrations and the shipping and port industries to detect security threats and take pre-

## Viewpoints on the Code

**Brian Parkinson**  
Trade and Operations  
Adviser to the International  
Chamber of Shipping



The UK shipping industry and authorities are fundamentally in favour of the IMO's plans. The measures, however, should be proportional, pragmatic and appropriate. There should be a balance between security measures and the need to keep trade moving.

**Frank Wall**  
Head of Shipping Policy 2  
of the UK Department for  
Transportation



The authorities must take responsibility for maintaining international order on the seas in order for global trade to remain in existence. Such regulations must be agreed worldwide through the IMO, and not by individual nations or as regional special schemes.

**Marianne Lie**  
CEO, Norwegian  
Shipowners' Association



The security of ships and sea transport not only depends on the measures taken by the shipping companies, but even more on the measures taken by states to prevent terrorists from operating in their territories. We welcome this being dealt with by IMO, and we will work closely with the Norwegian authorities and international shipping organisations to promote their goal.

**Chris Austen**  
Managing Partner, Marine  
Underwater Security Consultants



The code will help to improve standards of security for ships and port facilities, but wider issues of the protection of ships from attack at sea and the security of containerised cargo throughout its supply chain remain to be addressed. Maritime security will require co-ordinated effort between governments, ship, port and terminal operators, and crew themselves. The IMO schedule will put pressure on ship and terminal operators to meet the requirements for training of security officers and the development of security plans.

ventative measures against security incidents affecting ships or port facilities used in international trade. It will establish their respective roles and responsibilities and ensure the efficient collection and exchange of security-related information.

**GOVERNMENT-SET SECURITY LEVELS**

The Code seeks to establish the guiding philosophy that will underpin the whole approach to maritime security. The essence of this philosophy is that, because each ship and each port facility presents different risks, the Contracting Government should determine and set the appropriate security level. Security levels 1, 2 and 3 will correspond to normal, medium and high threat situations respectively. The security level creates a link between the ship and the port facility, since it triggers the implementation of appropriate security measures for the ship and for the port. The Code will provide a methodology for security assessments to be made so that plans and procedures can be established to react to changing security levels.

Parkinson comments: ‘The proposals are very wide-ranging, extending from vessels’ bridge equipment, through security plans, security officers and the assessment and certification of ports, to passengers, crew and port personnel identification and the installation of covert security alarms on ships. Every ship will also be required to carry a Continuous Synopsis Record which will provide a lifetime record of details such as

the vessel’s identification, ownership, registration and classification.’

**WORLDWIDE AGREEMENT**

Speaking at a recent security conference in London, Frank Wall, Head of Shipping Policy 2 of the UK Department for Transport, and chairman of the IMO Working Group on Security Issues, said: ‘The authorities must take responsibility for maintaining international order on the seas for global trade to remain in existence. It is fundamentally important that regulations and countermeasures are proportional to the threat, and that such regulations are agreed to on a worldwide basis through the IMO – and not by individual nations or as regional special schemes. This will contribute to the regulations being easier to comply with, and to safeguarding of protection accorded by the law to crews, ships and shipping companies.’

In his speech to the Intersessional Working Group in September of this year, IMO Secretary-General William O’Neil stated there was a need for balance in the inspection and control of ships, and urged those governments wishing to take preventative action and to put in place anti-terrorist defences as soon as possible that it would be prudent to wait until IMO had adopted a meaningful set of international standards.

It is vital, he emphasised, that there be a balance between the need for enhanced security and the continuing requirements of unimpeded seaborne trade. ♦

**Michael Grey**  
*Maritime Consultant*



Ships’ crews do not need just more ‘paper defences’ in the shape of bureaucratic procedures. The real necessity is to have resources available to confront and confound the terrorist. And this calls for practical, specialist help.

**Terje Gautesen**  
*Fleet Manager, Bergesen d.y. ASA*



We are working closely with the Norwegian authorities and shipping organisations to find practical solutions, particularly regarding assessment procedures. Many of the requirements both for ships and port facilities are general, and leave considerable flexibility and interpretation to both the flag states and the port states. We consider this flexibility to be important as it makes it possible to adapt the security measures to ship type and trading area.

**Greg Purdy**  
*Director of Safety and Security, Royal Caribbean Cruises Ltd.*



The inclusion of maritime security in SOLAS is a critical step in creating a culture that embraces security as aggressively and professionally as the other areas covered by SOLAS. The result will be structured and sustainable, and should ultimately decrease risk for the shipping industry.

**Knut R. Samuelson**  
*Head of Maritime Security, Wallenius Wilhelmsen Lines*



We favour international regulations, not regional ones. The quality of security for an individual vessel depends on there also being adequate security at its ports of call. There are the additional aspects of longer port stays, possible delays, and more complex cargo-booking procedures. And who will pay?

**Karl Morten Wiklund**  
*Senior Security Adviser, Det Norske Veritas*



DNV is committed to helping its customers deal with the new code. For the past 15 months we have conducted extensive research and pilot studies to prepare ahead. With over 56,000 vessels and 20,000 port facilities to be incorporated under the code, it is very important that the new requirements for shipping are made as practical as possible to avoid stopping the flow of trade, at the same time as increasing the security level.

# Shipping gets wired up to the web

TEXT & PHOTO: KAIA MEANS

As the web-based project MariNet enters its final phase, partners and suppliers agree that it is setting the agenda for the maritime industry – using Internet and satellite communication technology together with tailored web solutions. Partner Wilh. Wilhelmsen sees its future in this new scenario.



Pål Baltzersen is clear on where his company, Wilh. Wilhelmsen, is heading. 'This is where we see our future,' he says, referring to the research being done in the MariNet project. As Manager System Architecture Services at Wilh. Wilhelmsen, Baltzersen has been part of the project from day one. With MariNet now entering its final phase, he is closely following its outcome.

MariNet, which started in January and runs until the end of the year, has many big-name partners and suppliers -- including the Norwegian Shipowners' Association, IverShips, Telenor and Microsoft. The focus is on developing new services and increasing efficiency – moving beyond the limits of an application-based world, and entering the realm of web-based solutions. As satellite communications become

less costly, much wider use of web-based systems in the maritime industry is possible.

## BANKING PAVED THE WAY

Already Wilh. Wilhelmsen is planning its own concept studies based on MariNet results. Says Baltzersen, 'We are looking to merge our fields of competence, to expand our area of responsibility. Our product is eventually going to be logistics.'

Web-based system architecture is a dominant trend, and one of the foremost examples is Internet banking. 'How many people were using Internet banking two years ago?' asks Baltzersen, who has more than 25 years of experience in IT. 'If you look at the user curve, it's a steep line upwards. The same trend is evident in other industries. And since we know that this



## MARINET'S GOALS

- provide the project partners with knowledge on current and forthcoming information and communication technologies
- develop guidelines for how to develop maritime Internet services
- test possible implementation of the standard by utilising a test lab
- develop prototypes, pilots and demonstrators, based on the business scenarios defined by the project

- simulate real ship-to-shore communication scenarios and implement prototypes and demonstrators in that environment.

## MARINET PARTNERS

- DNV Maritime Industry, DNV Software, Norwegian Shipowners' Association, Microsoft Norway, Telenor, Wilh. Wilhelmsen, IverShips, Nera SatCom, Xantic, Computas, Leif Høegh & Co., Odfjell, IUM Shipmanagement



Wilh. Wilhelmsen's Pål Baltzersen

is the case, we need to work toward clear goals and find out how the new technology can shape our business.'

An important aspect of MariNet is its basis in real situations. The scenarios are worked out 'live' -- not just on paper. At the MariNet lab at Høvik, a satellite connection via Inmarsat Fleet 77 has been in place since August, providing a simulation of ship-to-shore communications. This is open to suppliers and sponsors, who can freely monitor the trials and give constant feedback.

DNV Software's project manager Bjørn Berger says the goal in MariNet is to get the industry going in the right direction. 'Shipowners need to make some decisions. But in this project we can set the agenda together,' he says. Per Marius Berrefjord of DNV Maritime Industry agrees that the partners are coming together. 'Although they each have separate interests, they also have common goals.'

This thought is echoed by Stein Skaar at Telenor. 'We haven't seen each other as competitors, but instead have used the opportunity to focus on innovation and credibility,' says Skaar.

### SECURITY IN GROUP DECISIONS

Some partners have even initiated co-operation beyond the boundaries of the project, working together in other areas. Eyvind Klewe of IverShips points out that crucial decisions have to be made in the shipping industry's IT approaches. 'There's a benefit in making group decisions. It's a form of security. Especially when we have the big suppliers, like Microsoft, working with us.'

There are many potential logistics scenarios which could use the web-based services being developed in MariNet. Currently each segment of a trans-continental shipment is tracked by individual carriers. Inspired partly by the success of small-package shippers like DHL and Federal Express, Baltzersen envisions being able to offer a service where customers can track large shipments at every stage.

Halfway into the project, 60 delegates from the maritime industry were presented with a future maritime scenario at a MariNet seminar focusing on logistics. A team of six programmers worked together intensively for three days, in a so-called 'crash-implementation' based on a script developed by the project partners. Together they found how easy it is to tailor-make simple web applications supporting maritime industry solutions.

A web-based prototype was demonstrated at the seminar, in which a freight order could be tracked at any point in its journey, despite the involvement of several different players, including manufacturer, shipping company and agents.

Anders Føyen of Microsoft believes the MariNet logistics workshop this summer was a great learning experience. This experience is the foundation of the next workshop, which will focus on a docking scenario. Føyen emphasises how important it is for MariNet participants to capitalise on the knowledge gained by bringing the learning even closer to home.

'Specifically, it's necessary to start internal projects that improve existing processes using this kind of technology. Where to start? What is the savings potential? This learning has to start and continue to grow internally in order to move towards the stated MariNet goals.'

The future of the MariNet project is currently being discussed among the partners, and will be on the agenda at the upcoming MariNet Steering Committee meeting. Some participants have expressed a wish for the project to be expanded beyond the initial run through the end of this year. Participants could then continue to develop guidelines, and suppliers could make further commitments.

'This, of course, is on the condition that the various partners, especially the shipowners, wish to continue their cooperation,' says Skaar. 'The owners are the critical factor in that equation -- they need to see hard results.'

Berrefjord sums up: 'We're creating a platform for co-operation. The challenge is whether our results and guidelines will really be used by the industry. That is where the final verdict lies.' ♦

# The Safety Case in **restructuring** Britain's railways

TEXT: DR LOUISE SMAIL AND HARALD BRÄTHEN  
PHOTO: NINA EIRIN RANGØY

Since privatisation of Britain's railways in 1994, Safety Case regulations evolved alongside the privatisation process. Rod Reid, head of Interface Risk Compliance in infrastructure owner Network Rail, explains why he views these changes as a positive way forward to align the interests of Network Rail and the operating companies when addressing the challenges facing Britain's rail industry.

In 1994 Railtrack commenced operations as the first stage in the fragmentation and privatisation of British Rail. Aims of privatisation were to comply with EU Directives to separate infrastructure management from train operations, and also to streamline and change the way in which the UK rail system had operated. Railtrack supplied track access to some 30 train operating companies (TOCs) whilst contracting out most maintenance and renewals activities to a number of privatised infrastructure maintenance companies.

A study by the Health & Safety Commission recognised the significance of the critical technical and operating interfaces that would exist between the large number of different organisations operating on the network. It therefore recommended adopting a Safety Case approach for identifying and controlling those risks and resulted in creation of the Railways (Safety Case) Regulations 1994. These Regulations were based on a safety cascade, from the Health and Safety Executive (HSE) through Railtrack to the Train Operating Companies. There was a clearly defined process for acceptance of Railway Safety Cases, with the HSE accepting the Railtrack Safety Case, and Railtrack in turn accepting safety cases from the TOCs. Railtrack was also required to ensure TOC compliance with their safety cases by conducting an annual audit of each TOC, and monitoring their safety performance.

## **REGULATIONS A BARRIER**

Rod Reid points out that there were some problems with these arrangements. 'It gave Railtrack a quasi-regulatory role, and this acted as a barrier to effective cooperation with the TOCs, who were Railtrack's major customers. Railtrack was required by its licence to separate the safety issues from commercial issues by creating an independent directorate, Safety and Standards Directorate, which oversaw the production of standards and also audited TOCs. However, it was always difficult to persuade external stakeholders that the Safety and Standards Directorate was completely independent of the rest of Railtrack.'

Following the Ladbroke Grove and Southall Rail Accident Inquiries, the RSC Regulations 2000 were introduced. This resulted in the separation of the Directorate from Railtrack, becoming an independent company called Railway Safety. The new Regulations also effectively removed the safety cascade by requiring the HSE to accept all Railway Safety Cases, with Railtrack and Railway Safety independently assessing them and making recommendations to the HSE. Railtrack was still required to audit TOCs, but had to procure these audits from Railway Safety.

The new regulations also required a fundamental change in the content of safety cases. Up to that point, safety cases were required to describe the risks, and measures to reduce them to 'as low as reasonably practicable'. The regulations also required a develop-



Rod Reid,  
Head of Network  
Rail's Interface Risk  
Compliance

ment plan, committing each company to further improvements in safety management. Each operator was also required to review its safety cases to reflect these regulations. A review of the Railtrack RSC was carried out between February 2001 and May 2002.

**CONTINUOUS RISK REDUCTION**

It is important that the RSC reflects the legal requirement to continuously reduce risks so far as is reasonably practicable. The new Railtrack Railway Safety

Case describes the risks and their controls, and considers the effectiveness of these control measures. It also commits to actions to further improve them. This is linked closely with Railtrack's annual Safety & Environment Plan, and with accident recommendations and other inputs, to provide a process of continual improvement. The development and improvement of these links will be worked on over time.

In the autumn of 2001 Railtrack plc was placed under special Administration until, on 3 October >>

<p><b>MANAGING CHANGE THROUGHOUT THE NETWORK</b></p> <ul style="list-style-type: none"> <li>• One of the most densely-trafficked in the world, Britain's railway system was privatised in 1994.</li> <li>• The infrastructure became the responsibility of Railtrack (now Network Rail) and its numerous private contractors, while train operations were divided among 26 passenger and three freight Train Operating Companies.</li> <li>• The majority of locomotives and coaches are owned by three leasing companies.</li> </ul>	<p><b>ENSURING SAFE, COST-EFFECTIVE DESIGN AND USE</b></p> <ul style="list-style-type: none"> <li>• Det Norske Veritas in the U.K. specialises in providing assistance to Network Rail and these TOCs.</li> <li>• DNV's strong background in risk analysis and safety studies combines with a proven track record in applying techniques and systems to ensure the safe, cost-effective design and use of transport systems.</li> <li>• By drawing on its experience throughout the world, DNV is involved in strategic rail research – and in helping Britain's privatised rail companies safely manage change.</li> </ul>
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DNV's Dr Louise Smail and Rod Reid discuss the restructuring of safety work on Britain's rail system.

2002, it was bought by Network Rail. Network Rail is now conducting a review of the company's processes, and one of the work streams to be reviewed is the Safety Baseline Assessment. This will review how effectively the RSC links risks, controls and future actions, and how these relate to practices at ground level. It will also look at how effective the Safety Management System is at different levels within the company. This will result in further improvements to the RSC, the Safety and Environment Plan and company processes.

‘There are still problems with the current regulations, with too many layers of assessment’

Reid sees the safety case as central to this whole process of continuous review and improvement.

He is concerned, though, that ‘There are still problems with the current regulations, with too many layers of assessment, auditing remote from the duty holders, and aspects of a cascade within the audit process. However, there are further proposed changes to the regulations from March 2003. These will simplify the assessment process and change the method of procuring the safety case compliance audit, whereby each Operator will procure its own audit from a competent independent body.’

#### **TOCs RESPONSIBLE FOR COMPLIANCE**

The new audit arrangements will emphasise that the operator has primary responsibility for ensuring compliance with its own Railway Safety Case, and this will include the responsibility to procure an effective audit. Independent enforcement of compliance will be through the Health and Safety Executive. Network Rail itself will remain in a monitoring role and will review the output of audits with each TOC, focussing on implementation of actions to address issues identified by the audit. A reciprocal arrangement will allow TOCs to monitor Network Rail against its own audit action plans. The value will be in opening up the audit process to a wider market.

Rod Reid has a vision for the future in which railway safety cases will play an effective role in driving forward continuous improvement in safety. More important is a close co-operation between Network Rail and train operating companies in the development of railway safety cases, with joint monitoring of actions to improve safety. ◆

# Austrian railways take safer track



International freight traffic is an important revenue earner for Austrian Railways. Except in the north-eastern plains, even the main lines are characterised by sharp curvature and steep grades.

TEXT AND PHOTO: R. KEITH EVANS

Carrying this year an estimated 90 million tonnes of freight and around 185 million passengers, Austria's federal railways (Österreichische Bundesbahnen – ÖBB) are actively pursuing a policy of quality, safety and efficiency. DNV's role in management consultancy for ÖBB is growing year-by-year.

From the start of its involvement in 1998, Det Norske Veritas has provided a growing range of consultancy services to ÖBB's various departments.

At that time, the state-owned rail system was just two years into its reorganisation as a market-regulated business, with separate departments responsible for infrastructure operation, for passenger and freight train operations respectively, and for traction. Outside these core business units are the technical services department, primarily maintenance workshops; electric power supply (mainly hydro, one-third generated in ÖBB-owned power plants and two-thirds purchased); building and construction; telecommunications and others. With some 5,800 route-km of track, 48 thousand employees and cross-border traffic with six countries, Austrian Railways plays a vital part in Europe's rail network.

DNV's first contracts with ÖBB, ISO 9001 certification for Technical Services, were described in DNV Forum No 4/1999. The following year, DNV was asked to study the safety problems in ÖBB's freight marshalling yards, and to formulate a Safety Management concept for the Infrastructure Operator.

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DNV's Dr Rainer von Hagen (right) discusses recommendations with Michael Johrendt (left), quality manager of ÖBB's infrastructure operations, and Ernst Gunsam, operations manager.



Heading DNV's team on this project was Dr Rainer von Hagen from the Essen office, together with Kurt Poschko who had worked on the previous contracts. Says Dr von Hagen, 'In 1998, the Austrian railways' losses in shunting damage totalled around eight million euros. Based on DNV's experience in Loss Control, our remit was to reduce the cost of such shunting accidents, and to show the Infrastructure management what must be done to establish a safety system. We carried out an initial review at four of the railways' freight marshalling yards – all of them around 50 years old – and evaluated the causes of the accidents and incidents. Only a small proportion had any technical cause; most were "behavioural", caused by yard workers' inattention and unawareness of hazards. Worse, we found that safety management was not seen as a high priority.

'In 1998, the Austrian railways' losses in shunting damage totalled around eight million euros'

'So we had to encourage employee awareness and responsibility; to set up performance indicators and goals; and to gain high-level support for a comprehensive safety system. This management commitment was essential, as was selection of the right employees and their own motivation and involvement in safety issues.'

Employee workshops were organised, and a series of field tests initiated with the goals of reducing cargo damage costs by 30 per cent and personal injury by 50 per cent (compared with 1998) by the end of 2000. According to Richard Ulz, ÖBB's overall safety manager, the goals were met and the safety management concept – with its procedures for 'continuous improvement' – is today being introduced throughout the rail network.

### RAIL SAFETY NATIONWIDE

Explains Dr von Hagen: 'Following completion of this project, DNV was contracted to develop an integrated, process-oriented management system covering safety, quality and efficiency for the entire ÖBB infrastructure operation. We are identifying practical solutions that will provide immediate benefits to everyone, from management to shop floor. That is the starting point for optimising ÖBB's processes and customer/supplier relations; then we must ensure this becomes sustainable.' The project is planned for completion in June 2004.

'Moving on from work for a single business unit,' Dr von Hagen continues, 'we are now carrying out a project at corporate level, developing safety guidelines – a Mission Statement – for the entire rail system. Project manager here is Beatrice Maier, also from our Essen office. We have interviewed staff, from those involved in daily running operations up to board directors, and are planning to complete our recommendations by the end of this year. Implementation and training should follow, with the aim of developing a "safety culture" at every level and in every function.

'In October 2002 we began a project for the freight operator, Rail Cargo Austria, to study safety aspects at the interface between the operator and its customers, both internal and external. For example, a significant level of cargo damage can occur in loading and unloading at customers' plant. If we find that this is caused by a customer's own staff, there may be a case for improving their instruction and training.

'Then we shall look again at operations in the freight yards; at staffing levels that will be both efficient and safe; and at integrating safety aspects into Rail Cargo Austria's existing ISO 9001 quality-management system.' ♦

## Quality and safety in a high-profile business

**One of the core Business Units of the Austrian Railways, the Infrastructure Operator is responsible for the operation of track, signalling system and structures throughout the rail network. Quality Manager of the business unit is Michael Johrendt; Operations Manager is Ernst Gunsam. We met in their Vienna headquarters in late October.**

*How do you measure and benchmark 'quality' in rail infrastructure operations?*

Johrendt: 'First we must ensure that track capacity and condition are adequate to meet the requirements of our "customers" – the passenger and freight train operating departments. And we must provide sufficient paths for all the trains they wish to operate.

'Train punctuality is a good measure of our service, and we incur financial penalties if we fail to meet the train operators' requirements. The most recent operating statistics show that 90 per cent of trains run on time (no more than five minutes behind schedule), and 70 per cent no more than two minutes late. These figures include all intermediate stopping points, not just the final destination.

'Delays due to locomotive or rolling-stock problems, of course, are not our responsibility, since both are provided by the train operating departments, not by Infrastructure.'

*Throughout Europe, a measure of passenger satisfaction is the ability of trains to compete with the airlines. Is raising train speeds part of your infrastructure remit?*

Gunsam: 'From the viewpoint of "passenger satisfaction", we believe that what is important is the trains' overall comfort, safety and punctuality. The new timetables from 15 December will see faster passenger-train services on all main lines – Vienna to Salzburg in less than three hours, for example, despite more intermediate stops. This will primarily be due to the introduction of new locomotives and new coaches capable of 200km/hr. They will have improved braking performance, so can safely run faster within the limits of our existing signalling system. And yes, we are also making track improvements to permit higher speeds.

'But major infrastructure improvements, such as modernised signalling, new tunnels and track, are very much subject to government decision.'

*An important change took place throughout Europe's railways during the mid-'90s, in that responsibility for infrastructure was separated from that for train operation. How have you maintained the traditional links on ÖBB, ensuring staff at all levels remain committed to quality and safety?*

Gunsam: 'One way, for example, is that we do not contract out maintenance work. All our track and infrastructure staff are still employed directly by ÖBB. So they retain their strong traditional commitment to the railway.

'Similarly, the Technical Services department, maintaining locomotives and rolling stock, is staffed largely by the same people as before 1996. We have rationalised facilities and gradually reduced the overall workforce, but we place a strong emphasis on a "quality and safety culture", which pays dividends in staff loyalty and motivation.

'This is where DNV's contribution is important, in helping establish the measurement of quality and safety. From DNV's first project for ÖBB, looking to "accident-free shunting", it has built up quality and safety systematics and an integrated management system which gives staff throughout ÖBB a strong feeling of support from headquarters.

'The main achievement has been to place responsibility for quality and safety on each individual employee.'

### **SAFETY IS HIGH ON THE POLITICAL AGENDA**

Richard Ulz is ÖBB's overall Safety Manager, responsible for safety throughout the company. He first describes the intentions behind ÖBB's request for DNV to develop a safety 'mission statement'.



Richard Ulz is ÖBB's overall safety manager, responsible for safety throughout the company.

'In such a large organisation, I believe it is vital to have common guidelines. The first will be safety guidelines, to help establish a safety culture throughout our departments, regions and business units. The safety guidelines are to be a mission statement, or "vision", to formalise unwritten rules on safety-related performance. They will place more responsibility on each employee, rather than rely solely on their following written rules and instructions.'

*In the case of a railway system, unlike a single-site factory or process plant, a large number of employees work individually or in small teams widely removed from management supervision. How do you encourage their concern for safety?*

'A railway system is always very visible and in the public eye. In recent years Austrian railway safety – and industrial safety in general – has become high on the government's agenda. So the mission statement is not an end in itself. It must be widely communicated throughout our organisation – by means of videos and newsletters for example. And the heads of every unit must set visible signs of a safety culture.

'At present, the safety regulations which we establish are monitored by the authority governing rail operation, which is a part of the Ministry of Transport, Innovation and Technology. In the future, it is likely that the authority will take over this rule-setting role itself. However, a consultant such as DNV brings in some very necessary knowledge and experience from outside the industry, of which we can make good use.'

# Flexibility

is key in changing gas market



Norwegian gas transporter Gassco operates the world's largest integrated, offshore gas transport network, supplying energy to 25 million European households. Reliability is vital in a market under continuous change.

TEXT: BEATE.VORBECK@DNV.COM

PHOTO: ØYVIND SÆTRE



'Our transportation system has proved 100 per cent reliable during the past 17 years,' says CEO of Gassco Brian Bjordal. 'But we have to be on the alert. We are operating in a world where energy demand can change from minute to minute in a fluctuating production market. This demands continuous, optimal utilisation of the whole system.'

Gas imports to the European market are expected to increase from one third of the total energy consumption at the end of 1990 to two thirds by 2020, according to the International Energy Bureau. Says Bjordal, 'The more gas we deliver the more stress on the existing system, which might hit our flexibility. We have to look into new means of ensuring reliable supply; so we are therefore in the process of developing a new pipeline for Norwegian gas to the U.K. The pipeline solutions include both the use of the existing U.K. pipeline system and a dedicated pipeline to southern England.'

The Ormen Lange gas field is located 130 km off the coast of Norway. The plan is to have a pipeline running from the field to an onshore terminal, or to an offshore processing platform. First delivery of gas is scheduled to start in 2007, and the field is expected to produce about 30% of the total exports of gas from the Norwegian Continental Shelf.

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'Our focus must be on competence and matching market needs'

– Brian Bjordal

### THE IMPORTANCE OF GOOD INFRASTRUCTURE

Bjordal believes the gas reserves on the Norwegian Continental Shelf are sufficient to feed the European market for the next 100 years. However, he prefers looking at a 20 years perspective. 'We have to be realistic. I see a change in the market, with new players operating on a more dynamic and short-term basis than before. Optimisation of the existing gas transportation system is needed, and several new concepts are being developed. One is the Liquefied Natural Gas (LNG) concept considered a good environmental choice and with potential to exploit offshore gas reserves without the need to invest in capital-intensive infrastructure.'

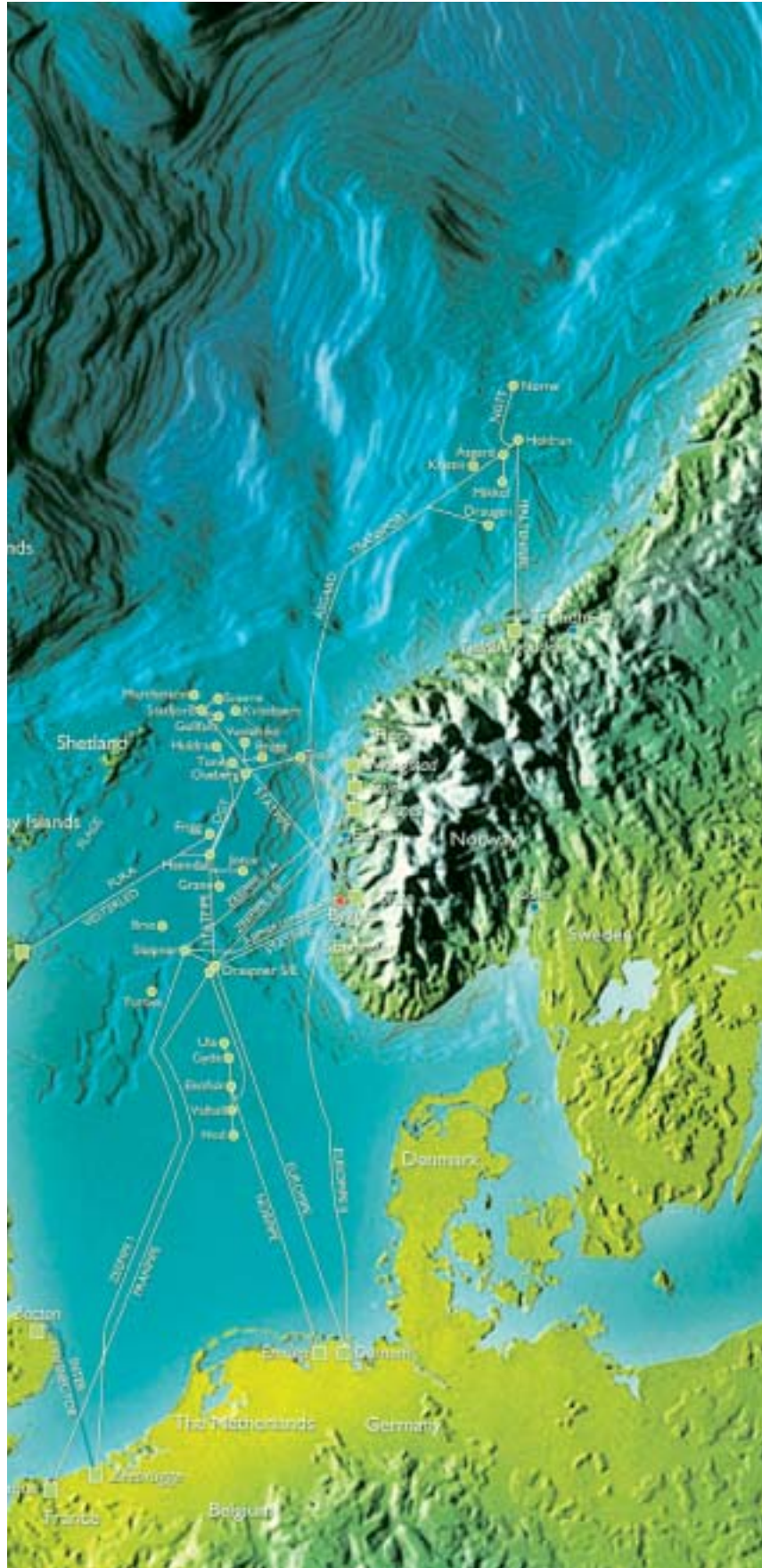
'I believe that as long as there is a well-functioning infrastructure, such as on the Norwegian Shelf, there will be no need for alternative solutions in the near future. It is completely different in other areas of the world, where such infrastructure does not exist. Then alternative solutions such as the LNG concept will come into their own.'

### DEREGULATED MARKET

Gassco took over responsibility of operating the gas transport network on the Norwegian Continental Shelf in January 2002. It is an independent, limited company 100% owned by the Norwegian authorities. It was established as a consequence of new structural changes in the industry and the new EU Gas Market Directive aimed at liberalising the gas market in Europe.

'It is natural to have an integrated, monopoly transportation system on the Norwegian Continental Shelf,' says Bjordal. 'Gassco has two main goals: operating and regulating the capacity of the system. We operate on behalf of the owners and the Norwegian authorities. It is a balancing act between managing the development of transport solutions, and making sure they are operated safely and efficiently.'

'Operators will come and go, fields will emerge, live and die. As long as we operate our system in a cost- and resource-efficient way, and we satisfy our customers, we will remain on the map. Our focus must be on competence and matching market needs.' ♦



Gassco's gas transportation network to Europe.

# FUEL OF THE FUTURE

## NATURAL GAS CONSUMPTION RISES

According to the BP Statistical Review of World Energy, there is a sustained, worldwide rise in natural gas consumption, exceeding the growth of other fuels. Its current share of total primary energy consumption is 24%, rising globally throughout the past ten years.

Oil is still the dominant hydrocarbon energy source, but gas is seen as one of the fuels of the future. This reflects not only the ability of natural gas to compete directly on a cost basis, but also the growing recognition of its environmental strengths.

The developers of a natural gas reservoir are currently facing an increasing number of development alternatives. A few decades back in time, and up to recently in some regions of the world, natural gas has been considered as a waste product or a liability linked to the exploration of oil resources. In some regions the trend has been to flare off the gas not needed for immediate local needs, such as on-site power generation. This is not a long-term optimal solution from an environmental point of view.

2001 was a volatile year in the world's energy markets, as a result of the economic downturn. Despite the volatility, however, markets continued to operate effectively, demonstrating the value of diverse sources of supply, particularly for oil and natural gas.

Analysed by region, energy demand was especially weak in the Americas and in most of Asia, but in Russian markets consumption rose for a third consecutive year as the nation's economic recovery continued.

The Middle East was the fastest-growing gas production region, driven by the expansion of LNG exports from Qatar and Oman.

## THE ORMEN LANGE PIPELINE

DNV has been commissioned by the operator for the development phase, Norsk Hydro, to assist in qualifying development of the demanding Ormen Lange pipeline system on the Norwegian Continental Shelf.

The development concept involves some extreme technological challenges, due to large seabed irregularities and a steep 30–35 degree slope caused by a prehistoric landslide down to a depth of 1,100 metres.

Some of the activities DNV is carrying out in the initial phase include a study of how the extensive trawling activity should be accounted for in case of interfacing with the pipeline, developing acceptance criteria for potentially long free spans, and recommendations of further optimisation of acceptance criteria. DNV's Standards for Submarine Pipeline Systems are being updated according to the demands of this project.

Pipelines at the Kårstø facility in Norway.



Photo: Øyvind Hagen, Statoil



DNV's CEO Miklos Konkoly-Thege hands over the certificate to Statoil CEO Olav Fjell at Statoil's Forus headquarters in Norway.

## Statoil's management systems certified

Statoil was recently awarded certification of its overall management and control to comply with the ISO 9001:2000 standard. In addition, the company has decided that all its central operational units are to be certified by DNV.

Statoil's goal is for all of its units to be certified in accordance with the ISO 9001:2000 standard and/or ISO 14001 environmental standard by the end of 2004.

'We are currently involved in an internationalisation process,' says Statoil's CEO Olav Fjell, 'so it's important for us to document that we have management systems that can deliver what

we've promised. This certification helps us to continuously improve our work processes.'

DNV's CEO Miklos Konkoly-Thege confirms that Statoil's management system is well anchored in the organisation and their management model is excellent. 'During our audit we were impressed by how dynamic and vigorous the Statoil organisation is,' says Konkoly-Thege.

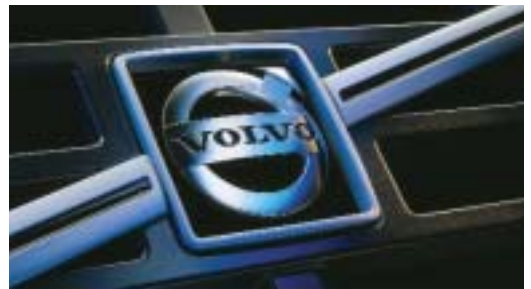
## Volvo chooses DNV

DNV has been selected as Swedish carmaker Volvo's preferred worldwide supplier of professional assessment services.

The worldwide frame agreement includes trucks, buses, construction equipment, Volvo Penta and aero units. It is intended to cover defined services for the manufacturing plants and/or sales organisations in all the countries where DNV is represented. The agreement states that 'DNV shall be a supportive tool in fulfilling Volvo's objectives and goals by supplying Volvo with professional assessment services.'

For Volvo units presently certified by other certification bodies, the transfer to DNV will be carried out in accordance with DNV's international transfer of certification procedures on a date decided by Volvo.

Volvo, which was founded in 1927, has almost 72,000 employees and production facilities in 25 countries. Volvo operates in some 185 different markets. Its revenue in 2001 totalled SEK 181 billion (Euro 20 billion).



## World's deepest TLP

DNV has been awarded a contract by ConocoPhillips to conduct safety cases and supporting risk assessments for the Magnolia Tension Leg Platform (TLP) in the Gulf of Mexico.

The Magnolia Facility is a four-column TLP that will be positioned 270 kilometres off the coast of Louisiana. Magnolia will be located in approximately 1,500

metres of water and designed to produce 50,000 BPD of oil and 150 million ft<sup>3</sup>/day of gas. When placed in service in October 2004, Magnolia will be the world's deepest TLP.

DNV's risk assessment work will include providing a quantified risk assessment, detailed explosion analysis, emergency system survivability analysis, escape and muster study and human factors analysis.

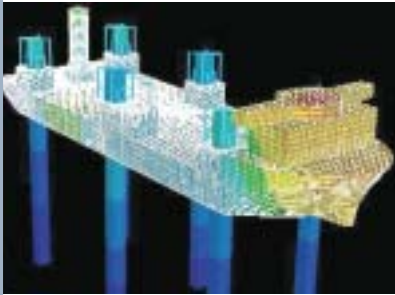
Olav Rasmussen, DNV's risk assessment team leader, says that there are 'significant cost savings to the client by providing

all the assessments in one package while also ensuring proper integration between all activities and studies.'

The safety case portion of the work will include design and safety cases. The major oil companies are slowly implementing safety cases in the United States, and it is thought that this is the first design safety case for a Gulf of Mexico facility.



## New jack-up will revolutionise the offshore market



*Mayflower Resolution* is a unique design for wind-turbine installation.

The new jack-up *Mayflower Resolution* is the lead vessel of a new class that is expected to revolutionise the offshore energy market.

Mayflower Energy Ltd has utilised DNV's extensive offshore experience to classify the vessel. DNV has carried out design approval, classification and statutory surveys, and worked closely with the flag authority to adapt existing criteria and requirements to the new concept.

The new vessel is a ship-shaped jack-up with six legs, seen as a significant ele-

ment in making offshore wind farms a real and competitive force in the energy market. The vessel is due to commence its first contract for National Windpower at the North Hoyle Offshore Windfarm, off the west coast of the U.K., in summer 2003.

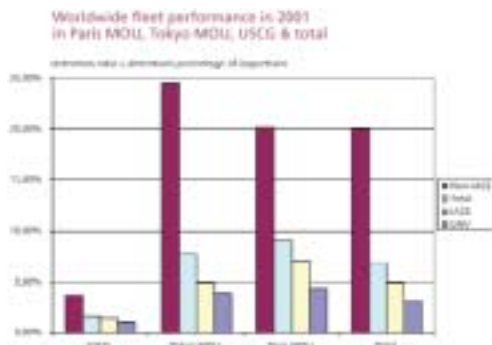
## DNV retains No1 position in PSC rankings

The performance of DNV-classed vessels in Port State Control (PSC) continues to be the world's best.

Accumulated statistics from the 2001 Annual Reports of the Paris and Tokyo MoUs, and of the U.S. Coast Guard, show DNV to have the best record of all Classification Societies in terms of vessels detained following Port State Control inspection.

Based on total detentions throughout 2001, DNV's detention rate as a percentage of vessels inspected was 3.1%, compared to the average of 6.9% (all Class Societies) and 4.9% (IACS Members).

Says DNV's Magdy Shehata, 'The combined figures from these three Port State Control regimes represent some 90% of total 2001 detentions worldwide, and are regarded as a reliable indication of the performance of each Class Society. DNV has retained its No1 position for the past three years.'



## New Chinese gas field under development

A major gas field and pipeline network is under development in eastern China. The Xihu Trough gas field will feed the eastern coastal states of China with an estimated annual gas throughput of 17 billion cubic metres.

DNV is to certify and verify all offshore facilities and submarine pipelines in connection with the development of the Xihu Trough gas field. The project is currently in the basic design phase. DNV's new offshore submarine pipeline standard has been selected as the main reference for the development of long submarine pipelines, which as part of this project will be routed through some environmentally sensitive areas.



The new gas field forms part of China National Offshore Oil Corporation's ambitious strategic plan in building a mighty gas pipeline network to feed the eastern coastal states of China. The overall plan envisages a pipeline network from Guangxi province in the south across ten provinces to Liaoning in the North East. It is expected that such a gas pipeline network will result in good synergy with other onshore gas network projects such as the 4000km West-to-East pipeline currently being constructed by Petro China.

# A compelling need for practical protection

MICHAEL GREY,  
MARITIME CONSULTANT



‘Seafarers need practical help, not merely reactive paper schemes’

The attack on the VLCC *Limburg* (which, let us not forget, cost the life of one of her crew) has sent shudders through the shipping industry, which has no illusions about its vulnerability to terrorist attack. It needs practical and useful help, fast.

No doubt whatever, terrorism adds a new dimension to the various threats which the industry has laboured under for many years. It is worth recalling that in the first nine months of 2002, there were more than three hundred reported attacks on shipping, during which outrages a variety of arms were employed to terrify and traumatise the crews of ships. Several seafarers were killed, more wounded. Any of these incidents might have involved, instead of pirates, hijackers and robbers, determined terrorists, and the challenge for the industry is in devising genuine protection for these vulnerable crews, who every year see attacks upon them and their ships increase in number, and in more areas of the world.

Ships’ crews know what they do not want from this new attention upon ship security, enforced by the attentions of terrorists. They do not need solely ‘paper defences’, in the shape of more bureaucratic procedures, which they – the ships’ crews – have to comply with. They might be interested in the proposals for security officers in ships and ashore in the office, but they are rightly concerned about a whole range of related issues.

## DRAWING THE SHORT STRAW

Are these officers going to be properly trained and will their role be really beneficial and practically applicable to the security dilemma? Or will they be people forced to undertake a short course for the benefit of a paper certificate, and then found to blame for deficiencies in any subsequent auditing by port state control inspectors? Will they have resources? Will they have the time to undertake these security duties in addition to all their other responsibilities, in a ship where the available manpower for anything is strained desperately thin? These are questions that require to be resolved in the early days, as security plans are devised and codes of practice drawn up, rather than imposed externally on some half-comprehending ship’s officer and shore official who suddenly find that they have drawn the short straws.

Plans and procedures are fine: they show that the problem is being thought about. But the real necessity is to have resources available to confront and confound the terrorist. Which is where the external expertise is so very necessary. Terrorism, let’s face it, is outside the usual remit of even the best-trained ship’s officer or shipping company manager. It is a world away from ship safety or commercial practice and needs specialist help. Unanswered questions, which mariners nonetheless must ask, revolve around the reliance they can put upon ports around the world to afford their ships protection from terrorists, when they have been so ineffective at protecting them from pirates and robbers.

Seafarers need practical help, not merely reactive paper schemes which they suspect may well be to cover somebody else’s real responsibilities. Some professionalism is clearly needed. ♦

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## PERFECTING THE BREED

Car-drivers around the world aspire to ownership of a Ferrari ... and the Italian builder's quality standards ensure that its reputation remains unequalled.

Det Norske Veritas has awarded ISO 9000 and 14000 certification to the legendary Maranello plant.

