

Group Review 2009



Lloyd's
Register

LIFE MATTERS

We secure, for the benefit of the community, high technical standards of design, manufacture, construction, maintenance, operation and performance for the purpose of enhancing the safety of life and property at sea, on land and in the air... because life matters.

We advance public education in transportation and other engineering and technological disciplines through research, training and related activities.



A broader perspective

To enhance the safety of life and property at sea, on land and in the air, we work with businesses and organisations around the world. We help our clients face today's challenges and plan for tomorrow and beyond.

With years of experience and our leading edge expertise we take a broader perspective to add value in the short and long term. We believe safety, sustainability and performance are linked. They are an intrinsic part of our holistic approach when working with our clients – for a safer world.

The Group in brief	2
Chairman's statement	4
Chief Executive's review	6
Public benefit: for a safer world	11
Investing in our employees	23
Marine	24
Transportation	32
Energy	36
Management Systems	44
Group Finance Director's report	48
Board of Trustees and Executive Leadership Team	50
Glossary	52

The Group in brief

We provide independent assurance to companies operating high-risk, capital-intensive assets in the energy and transportation sectors, to enhance the safety of life, property and the environment. This helps our clients to create safe, responsible and sustainable supply chains.

The sectors we serve



Marine

We are a leading provider of marine classification services around the world, helping to ensure that internationally recognised quality standards are maintained throughout the life of a vessel from construction to decommissioning. But we provide much more than traditional classification surveying services. There is an increasing need for the provision of sophisticated risk management and support to shipowners and ship managers. Worldwide, Lloyd's Register provides management systems, fuel oil quality testing, environmental services, vetting and training products and services to support our marine clients. Human element issues are of increasing importance in our complex world and we are leading in helping the industry make the most of its people.

[Read more on page 24](#)



Transportation

We offer a full range of engineering, safety, risk and management compliance and consultancy services to the land-transport sector worldwide. In so doing, we aim to help our clients achieve a safe, sustainable and environmentally-friendly future. Our combination of global expertise and local knowledge is a powerful advantage in sectors where engineering and operating practices vary considerably from country to country.

[Read more on page 32](#)

Our four businesses operate across many sectors yet work together to provide a range of services tailored to fit individual needs along our clients' supply chains.

The Lloyd's Register Group is one of the world leaders in assessing business processes and products to internationally recognised standards. The standards are either those of major independent bodies or ones that we have developed ourselves. From design and new build to in-service operations and decommissioning, we aim to deliver complete lifecycle and risk management solutions to help ensure the safety, integrity and operational performance of assets and systems.

Our clients are typically managing large-scale, high-value assets where the cost of mistakes can be very high, both financially and in terms of the impact on local communities and the environment. In such a setting, organisations need advice and support they can trust.



7,398 employees at offices in 238 cities and towns covering 227 countries and other territories*

*as at June 30, 2009



Energy

We provide design appraisal, inspection and consultancy services to asset owners, manufacturers, operators and engineering procurement contractors, particularly those responsible for assets which could pose a risk to people or the environment. Our combination of asset knowledge, technical expertise and ability to generate value quickly, allows us to make important contributions to asset management and safety assurance across the energy supply chain – exploration, production, transportation, processing, refining, power generation, transmission and distribution. We help clients meet their legislative and corporate responsibilities from concept to decommissioning.

Read more on page 36

Our clients range from large multinational companies to small local businesses; from shipowners and giants in the energy market – to those who deliver goods to shops and homes. So many of the everyday things people rely on have benefited from our help. Many companies in the sectors we serve recognise the value of working with us and trust us to help them improve safety, quality and business performance.

With expertise available in almost every country, we are in an excellent position to meet local market demands and provide services to global clients across their supply chains. We can deliver bold new solutions in the harshest conditions, facing the toughest problems. And we combine our global reach with deep local knowledge – you'll find our teams at work all over the world.



Management Systems

Our Management Systems business, LRQA, provides independent business assurance services including assessments, validation, certification, verification and training. Working closely with the other parts of the Group, LRQA helps clients to identify risks and optimise their business performance in the marine, transport, oil and gas, chemicals and power sectors. Our assessors also serve leading names in the engineering, manufacturing, construction, food, information technology and service industries.

Read more on page 44

Lloyd's Register's reputation is built on nearly 250 years of protecting life and property. As an independent body, we are uniquely placed to offer expertise free from commercial constraints and focused on improving safety and quality. We are also committed to advancing education and finding ways to improve how businesses can operate safely and sustainably, whether by carrying out our own research, funding others or providing training.



David Moorhouse CBE
Chairman

The Group's excellent results for 2008/09 reflect the first steps we have taken to weather the economic storm

Our Transportation business has been greatly affected as governments around the world defer or cancel contracts. This same deferment and cancellation effect has also been encountered in our Marine business, but here the lead-time for new construction has afforded us a 12 to 18-month period in which we have been preparing ourselves for the hard economic challenges ahead.

Our Management Systems business, LRQA, has achieved strong growth in a difficult market, as indeed has our Chemicals & Power business, but here the impact of the weakening market has been felt more severely. In Oil & Gas we have seen an exceptionally strong performance both through acquisition and organic growth, supported by a strong market and a strengthening oil price.

I am therefore very pleased to be able to report that Group income in 2008/09 rose by a very healthy 38% to £820 million due in large part to favourable exchange rate movements year on year.

I am particularly pleased to report that the difficulties we encountered in the previous year, with the Group's J D Edwards computer system, have been resolved and the Group's working capital position has not only recovered but also strengthened since the previous year-end.

Marine

After a period of significant growth, the Marine market has seen a slowdown in activity in 2008/09, coinciding with effects of the tightening of global credit markets and the recessionary economic conditions being encountered in most of the world's tier 1 economies. There has been almost no ordering of new ships since September last year. There can now be no doubt that the order book for new ships is shrinking through cancellations and deferment, and the peaks of expected deliveries in the next two years are flattening as cancellations and delays in deliveries are negotiated. These negotiations between owners and shipyards have some way to go, however, before the overall

scale of the supply side outlook is defined. Additionally, a small but growing percentage of the world's fleet is laid up or idle. The size of the future market is uncertain in the medium term and we expect a three to five-year period to elapse before significant recovery is experienced.

Despite these tougher market conditions, our Marine business has posted another year of strong financial growth. This is principally due to the delayed impact on our business of the order cancellations and delays noted above. Our Marine business has recorded high levels of activity during the year, fulfilling orders and commitments placed prior to the tightening of global credit markets in late 2008.

Notwithstanding the downturn in the global economy there remain a number of new opportunities: the offshore energy sector is a dynamic and growing part of our business and the announcement of a new FOI (floating offshore installations) team, drawn from both the new Energy and the Marine business streams, is a first step to develop and better co-ordinate our deep water technology expertise in the offshore sector.

Oil & Gas

A combination of favourable exchange rates, strong organic growth, and a full year of results from our acquisition of ModuSpec completed in January 2008, contributed to a 67% growth in income in 2008/09.

Market conditions continued to be buoyant in 2008/09 despite volatility in hydrocarbon prices. Our focus on Kazakhstan as an area of growth in recent years continues to underpin our strong organic growth. The Caspian is a technically demanding area with large oil and gas reserves, and is one in which Lloyd's Register has a strong presence.

Tight cost control continues to be a feature of our operational success in oil and gas. Recruitment and retention of experienced engineering resources remains a critical success factor, however, we have seen some exciting new business developments in 2008/09, with project wins in

We recognise that our strong financial performance this year should be seen in the context of three significantly more challenging years ahead and the Group-wide cost reduction work already begun. This has added to our performance in the reported period and stands us in good stead for the challenge ahead.

Australia and the USA. Our acquisition of Celerity3, a small Houston-based engineering business specialising in design, process and safety solutions, has enabled Lloyd's Register to increase its service offering in the North American market.

Chemicals & Power

Inspection services remain at the core of our service offering in the chemicals and power sectors, however, we have continued to diversify the business into higher added value in-service activities. The sector continues to offer exciting growth prospects in the next financial year, although strong competitive pressures and a slowdown in the container market in Asia in recent months has provided a challenging situation that we expect to continue in the short term.

Transportation

Our Transportation business has experienced a challenging year, and has been impacted the most by the reduction in public expenditure budgets by various European governments in particular. Key markets remain depressed at the current time, however, Lloyd's Register has had a number of notable contract wins in the Middle East and Asia, including the independent safety assessment of the Al Sufouh Tram project in Dubai.

As a result of the tightening of market conditions in the Transportation business, we have re-assessed the carrying value of the goodwill associated with a number of our acquisitions.

The Transportation business further expanded its range of specialist safety and risk services during the year with the acquisition of Human Engineering Ltd (HEL). The addition of human factors technical services offered by HEL complements our existing risk services and is anticipated to provide a good platform for further growth in the future.

Management Systems

The Management Systems business, branded as LRQA (Lloyd's Register Quality Assurance), grew its revenues by 30% during the year, underpinned by strong organic growth, together with favourable foreign exchange movements.

Difficult market conditions in Japan and the USA have created some challenges for our LRQA business, however, we extended our climate change verification services in the USA through the acquisition of Ryerson, Master and Associates in January of this year.

This year, food supply chain safety has been a significant growth area for LRQA, and we have been playing an instrumental role in the global harmonisation of standards by assisting in the development of the new food safety standard FSSC 22000, which combines both ISO 22000 and PAS 220. We have also been assisting world class brands to better understand and improve safety. Mars Inc. selected LRQA for certification to FSSC 22000.

Other matters

We disposed of our interest in Lloyd's Register – Fairplay Ltd (LRF) to IHS Inc. via its Prime Group Holdings Ltd subsidiary. The transaction allowed IHS to fully integrate LRF into its global network and Lloyd's Register to benefit from an ongoing service arrangement for commercial services.

Governance

In 2004 we embarked on a significant change in our governance brought about by the current government's determination to change the definition of charities, to differentiate industrial fee-charging charities from those that are community based. Following the introduction into Parliament of the new legislation in November 2006 we have been working strenuously to meet the requirements of the various iterations of the Public Benefit Test. The third iteration required us to completely change the governance structure, replacing our Member Trustees with a Board of Trustees. A task which I reported last year, but wanted to return to in this year's report is to pay special tribute to all of the Trustees for their excellent contribution and their leadership of the Board Committees.

The General Committee of Members also made an excellent contribution through their unstinting support of our Board in the delivery of the constitutional objectives of Lloyd's Register. The two bodies effectively work to ensure that we are as efficient and effective as possible in our delivery and that quality and safety for all is always put before fiscal gain.

The Lloyd's Register Educational Trust, one of the pillars of our constitution, received a further £9.0 million (up from £6.0 million in 2007/08) as a consequence of this quite exceptional year. The Trust has become known as a major contributor to the furtherance of education worldwide.

I would like to thank the chairmen and members of our technical and other committees around the world. Together with all those others who give of their time, without reward, for the betterment of society and to ensure that Lloyd's Register remains at the forefront in delivering its constitutional objectives.

I would also like to thank all our men and women throughout the world, they are the engine of Lloyd's Register, they have delivered this excellent performance and given us the confidence to take the next step in securing the Group's long-term future.

David G Moorhouse CBE

Chairman



Richard Sadler
Chief Executive

Our strategy sees us well placed in testing times

The world has changed; our clients face a global shortage of credit and increasing demands for transparency, environmental stewardship, corporate responsibility and sustainable operations.

Nobody could have imagined the changes that were going to occur in the world since our last reporting period. Not only have we had a financial crisis, we have ongoing energy, environmental, security and food crises. Our clients have needed our support more than ever to see them through these turbulent times.

Lloyd's Register's charitable objectives draw us into contact with these issues on a daily basis either directly or indirectly. The safety of crews on ships transiting the coast of Somalia, educating engineers on advanced asset management through the lifecycle of assets, reviewing management systems for food supply chains, assuring transportation safety proposals, undertaking safety inspections on high-risk capital-intensive assets and contributing our knowledge freely to the improvement of international regulations; these are among our contributions to minimising the effects of these challenges.

First year of new strategy

In September 2008 we embarked on a robust new Group strategy to direct Lloyd's Register in the face of this rapidly changing market environment. We recognised the need for change to embrace the new emerging economy and the need to exceed our clients' expectations in everything that we do.

We introduced our new vision: 'Year by year we will continuously improve in helping our clients ensure supply chains are safe, responsible and sustainable', and focused our efforts on building a service portfolio that provides a seamless level of assurance throughout our clients' operations.

We focused our strategy on the need to provide independent assurance to companies operating high-risk capital-intensive assets in energy and transportation to enhance the safety of life, property and the environment so helping our clients ensure safe, responsible and sustainable supply chains. Our strategy was based on the need for every one of our clients to derive value from being able to integrate our expertise, knowledge, innovation and service excellence. That meant

We continue to be guided by a single purpose – the mission that has served us for almost 250 years and will continue to direct our actions. Upholding the safety of life, property and the environment and advancing public education within the engineering and technological disciplines is more important now than it has ever been.

working as one global team, with one common purpose. For example, our new FOI (floating offshore installations) team, drawn from both our Energy and Marine businesses, is a first step towards developing and better co-ordinating our technology expertise in the offshore sector.

Our values – trustworthy, accountable, courageous, open-minded and spirited – have guided us in our decision-making, approach and behaviours toward each other and toward our clients.

A changing world

Like most global organisations, we could not have foreseen the extent and severity of the economic crisis, but our strategy is more relevant than ever throughout these challenging times and continues to guide us.

Our mission, 249 years on from Lloyd's Register's formation, is squarely at the heart of these global issues and we believe we have a vital part to play in supporting our clients to cope with continuing economic pressures. Safety, quality and education remain at the heart of everything we do. The world is no longer focused on economic growth at any cost. The world has changed; our clients continue to face a global shortage of credit and increasing demands for transparency, environmental stewardship, corporate responsibility and sustainable operations. Our obligation is to support our clients in meeting these demands with intelligent and balanced advice to help them build truly sustainable businesses.

Our strategy is encapsulated in the Group strategic plan – a document that illustrates our objectives, initiatives, performance measures, and the links among all the parts of our strategy. It has guided us over the past 12 months and has remained the backbone of our change programme. The plan laid out the four key strategic themes, outlined overleaf, and the objectives and priorities within each theme, in order for us to drive change and measure our performance against each objective. Due to the changing external environment, in particular the credit crisis, our

challenge has changed. Last year it was about increasing capacity to meet demands of the global growth. This year that demand has eased and we need to concentrate on our external focus to ensure we react to the changing demands of our clients and remain aware of the actions of our competitors.

Our clients have needed our support more than ever to see them through these turbulent times.

In the current business environment we recognise that we must continue our focus on exceeding our clients' expectations, while maintaining the highest levels of technical integrity. We know from evaluating formal client feedback that our clients demand nothing less than world-class service from their providers. One of the ways the Group is driving client focus is through our key account management programme, designed to provide clients with globally integrated service and support. This and other initiatives have enabled us to better identify our client needs and helps us to implement improvements that really matter.

A number of key business transformation projects have also been implemented through the business assurance programme, started last year, to achieve a step change in the efficiency and effectiveness of our operations. We have achieved some significant improvements in the quality, cost and delivery of our operating processes in the past year and we remain focused on our aim to consistently deliver hassle-free service to our clients.

We have also invested in ensuring that we have the right people in the right place at the right time. Programmes designed to retain, develop and recruit the best calibre people, deploy our resources effectively, and develop leadership capability, are all focused on providing our clients with a high degree of confidence in our employees.

Our strategy moving forward



1. Driving customer focus

Being sure we understand what is happening in our key markets and providing products and services that clients want and need.

2. Step change in efficiency and effectiveness

Cutting out all the waste, delays, errors, bureaucracy and barriers to being flexible, responsive and free from hassle in everything we do.

Like most global organisations, we could not have foreseen the extent and severity of the economic crisis, but our strategy is more relevant than ever throughout these challenging times and continues to guide us.

We have come some way as an organisation in the past 12 months, but there is still much to do. While we are very pleased to be able to report strong financial results this year there are some dark clouds on the horizon, but also a number of opportunities.

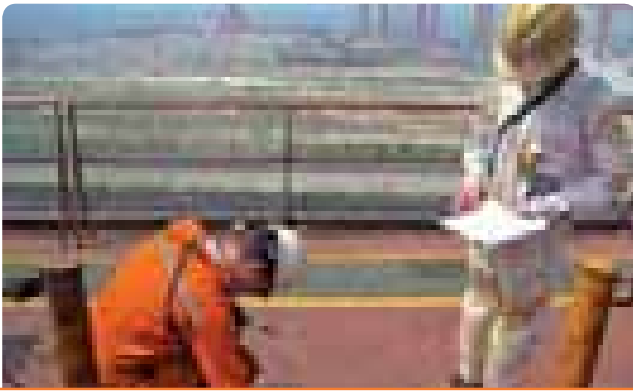
The contributions by our businesses

In the body of this report you will see the contribution our businesses have made to society in the last year. They have all developed their services in different ways while working together to ensure that the capability of the Lloyd's Register Group is made available to each sector's client base. We have been particularly successful in introducing LRQA services to our key clients and now provide management system support to 60% of that group.

While we have not felt the full effect of the recession yet, there is no doubt that, if nothing else, the scarcity of marine new building orders over the past year is going to have a major effect on our new construction and marine component services in the near future. We are also seeing continued pressures in an increasingly competitive market.

However, in the energy sector, there is continuing interest in offshore energy exploration and the reorganisation of our Energy business puts us in a very strong position to build market share in this important sector. During the year we have reorganised our services covering upstream, downstream and power into one Energy group. This reorganisation was done in recognition of the similar demands of that client base and to ensure we developed services of the highest quality to satisfy those demands.

We will be closely monitoring COP 15, the fifteenth Conference of the Parties under the United Nations' Climate Change Convention to be held in Copenhagen in December 2009, in order to help our clients with changes that may affect their market sectors. Our management systems business, LRQA, is helping businesses to quantify their emissions, set emission reduction targets, and implement emission reduction projects.



3. Right people, right place, right time

Ensuring we have the right people with the right skills where needed to provide the best service and value to our clients.

This is a significant part of LRQA's work and has been boosted by the acquisition in February 2009 of Ryerson, Master and Associates, Inc. (RMA), one of the leading climate change verification organisations in the USA. We are also seeing a reversion to quality, with increasing high demand for management systems standards such as ISO 9000 and ISO 14000.

We anticipate that the predicted rise in oil prices over the next few years will mean more investment in land-based public transport systems. The rail business in China and the rest of Asia has huge opportunities for Lloyd's Register to bring leading technical expertise to major infrastructure projects such as subway, metro and conventional rail developments. We are working closely with partner organisations in China and the rest of Asia to bring our knowledge and expertise in independent assurance to those markets.

Organisations do not last for 250 years without constantly innovating and adapting to market conditions.

We continue to be guided by a single purpose – the mission that has served us for almost 250 years and will continue to direct our actions. Upholding the safety of life, property and the environment and advancing public education within the engineering and technological disciplines is more important now than it has ever been.

The year ahead

In 2010, and before we issue another annual report, Lloyd's Register will have begun to celebrate its 250th anniversary. This is not just a celebration of Lloyd's Register, but also a celebration of 250 years of self-regulation, service and quality. It is important to remind ourselves that organisations do not last for 250 years without constantly innovating and adapting to market conditions. We want the celebrations to be forward-looking, modern, and involve our clients and employees alike.

4. Create a high performance culture

Continually developing our capability to do better; better than the competition and to be the organisation others aspire to be like.

During the past 12 months we have elected a new Board of Trustees to help guide us through the next few years and to ensure, like our celebrations, that all our activities are appropriate for the post-growth, carbon-constrained economy that is now emerging.

To summarise, our priorities as a Group for the coming year will be to satisfy our charitable objectives through:

- putting safety, education, quality and technology at the heart of everything we do; and we will be doing more in the year ahead to build Lloyd's Register's reputation as a world-leading safety culture
- listening to our clients to ensure we deliver superior value and excellent service while working to share our knowledge and expertise more widely
- delivering and implementing improved critical operating processes for greater efficiency and effectiveness, with continued vigilance on cost control in uncertain market conditions.

On behalf of myself and the Executive Leadership Team, we would like to thank all of our clients for their continuing use of our services and would like to thank our employees for their dedication and hard work through the year.

Richard Sadler

Chief Executive



Public benefit: for a safer world

The Lloyd's Register Group is dedicated to helping industry meet increasingly complex challenges and to making the world a safer place.

Fulfilling our mission

Safety has been at the heart of our work since 1760 and we invest our time, money and resources to fulfil Lloyd's Register's mission: to protect life and property and advance transportation and engineering education and research. Through our impartial advice, broader knowledge, deeper experience and closer relationships we help ensure a safer world.

All members of the Lloyd's Register Group support our mission which sets out the charitable objectives of Lloyd's Register. Unlike a purely commercial enterprise we are not motivated by securing dividends for shareholders and so we are not required to seek commercial gain at all costs. We re-invest the surplus we do generate in improvements to our services, to public education, research and development and donate to charitable causes that support the Group's mission. Our largest donations, £9.0 million in 2008/09, are made to the Lloyd's Register Educational Trust (LRET). This UK registered charity has objectives aligned to our mission and helps Lloyd's Register to meet one of its charitable objectives. You can read more about the Trust overleaf.

Safety first

Unfortunately, there are many examples of the loss of life of passengers and crew members following the failure of a ship or other means of transport. Property is often lost through casualties to container ships or simply due to containers not being secured properly. Beaches and coastal waters the world over can be impacted by widespread pollution if a ship or oil rig suffers damage.

Our work contributes to the safety of property and the public and protection of the environment around the world.

One of the most significant tasks that Lloyd's Register undertakes to help protect life and property is the production of the classification Rules and Regulations (the Rules). The Rules set appropriate standards for the design, construction and lifetime maintenance of ships, offshore units and land-based installations. The Group's surveyors inspect ships, oil rigs and other large structures against the Rules and other published standards. By this they form an important part of the structure's safety regime.

Lloyd's Register's in-house researchers develop and refine the Rules. Some £20 million was invested last year in the research and development needed to ensure that we have the knowledge and expertise to keep them up to date and also to introduce new Rules when new technologies are developed. It is important that new methods in shipbuilding or new ship types are not developed in ways that would prejudice safety.

A recent example of our work in this area can be seen in the introduction of a new winterisation class notation for ships operating in extreme cold conditions, for instance in the Baltic and waters bordering Russia, and also in the development of new provisional Rules relating to ergonomic container lashing to help improve safety in container ship operations.

Advancing education and research

In addition to the funding given to the LRET, we contribute to both safety and public education through a range of other activities. We make our intellectual capital – our highly qualified researchers and engineers – accessible to academics, students and professionals by making conference papers, publications and the results of some of our research available to everyone. This can involve our employees giving a talk to a learned body, such as the Royal Institution of Naval Architects; a keynote address at conferences, such as the China International Forum on Work Safety; a lecture to university students on the role of classification; or the publication of papers on our website.

Earlier this year we held our first Lloyd's Register marine technology day at our London offices. The papers from this conference can be found on our website and cover subjects as diverse as the history of the development of ship steels, contemporary issues with ship hydrodynamic propulsion and the influence of ship underwater noise emissions on marine mammals.

The interests of the community and of the environment have been at the heart of our business since our foundation in 1760.

We also work in association with other bodies to raise awareness of safety and advance education. Most recently this has seen us working with the UK P&I Club to develop the *Marine Fire Safety Pocket Checklist*. Our research revealed that during the period 2006–2008, 1,216 people were reported killed or missing as a result of fires and explosions onboard merchant ships. It is essential that crew members are appropriately trained to inspect, maintain and operate fire safety equipment and the checklist, which is available for free from our website, can help with this.

One key area we are investigating is ways we can help with the issues of climate change mitigation and sustainability. Our Energy business has developed strong links with the well-recognised Worldwide Fund for Nature (WWF) in Europe and the Americas for the purposes of building a stronger stakeholder engagement process for sustainable energy supply chains. In November 2008, one of our employees gave a talk on biofuels and energy systems to over 350 government, industry and academia delegates at the WWF Kathryn Fuller Science for Nature Symposium in Washington, DC.

Lloyd's Register Educational Trust

An important part of our mission is the advancement of technical education. For many years, the Lloyd's Register Group has made a considerable financial investment in engineering education and developmental research, especially in the marine field.

Fulfilling our mission continued

In 2004 we set up a separate independent charity, the Lloyd's Register Educational Trust (LRET). Five years later, it has become an important force around the globe and it has awarded over £10 million in grants, with another £13 million currently committed over the next five years. The LRET's principal purpose is to support advances in transportation, science, engineering and technology education, training and research worldwide for the benefit of all. It also funds work that enhances the safety of life and property at sea, on land and in the air.

During the last five years the LRET has awarded over £10 million in grants.

The LRET was set up to undertake donative and grant making activities previously undertaken by the Lloyd's Register Group, with some significant 'extras'. It is solely funded by the Group but the decisions on how the LRET funds are used are made only by the six LRET trustees.

The LRET focuses on four categories: pre-university education; university education; vocational training and professional development; and research. In 2008/09, the LRET agreed new funding to:

- *pre-university education*: Engineering and Technology Board, UK; Future Engineers, UK; Learning Grid, UK; Mary Rose Trust, UK; Royal Observatory, UK; Smallpeice Trust, UK; Young Engineers, England; Young Engineers and Science Clubs, Scotland
- *university education*: Dalian Harbin, China; Dalian Maritime, China; Dalian University of Technology, China; Huazhong University of Science and Technology, China; Jiangsu University of Science and Technology, China; Nautical Institute, UK; Shanghai Jiao Tong University, China; Shanghai Maritime University, China; SNAME, USA; Tolani Maritime Institute, India; Webb Institute, USA; Wuhan University of Technology, China
- *vocational training and professional development*: Foundation for Science and Technology, UK; International Ocean Institute, Canada; Maritime London Officer Cadet Programme, UK; Railway Industry Association, UK
- *research*: National Technical University of Athens, Greece; University of Aberdeen, Scotland; University of Western Australia, Australia.

The last category, research, is very important and absorbs the largest proportion of LRET funds to support existing or new centres of excellence at institutes and universities and covering a wide variety of industries.

For more information about the work of the LRET contact its Director, Michael Franklin (email lret@lr.org).

LRET funded project highlights 2008/09

Marine technology courses for young engineers

More than 100 budding young engineers from secondary schools across the UK attended marine technology courses at the universities of Strathclyde and Southampton in June/July 2009. The short courses, held in partnership with The Smallpeice Trust, included team exercises designed to give students a taste of real-life projects and the opportunity to mix with industry specialists.

"We are very fortunate to have the LRET and both universities supporting this inspirational marine technology course for such talented young people. The students have gained new skills and have seen what exciting and challenging career opportunities there are in marine engineering." Dr Andrew Cave, Chief Executive of The Smallpeice Trust.

Scholarships in Athens

The LRET is working with the National Technical University of Athens (NTUA) to provide undergraduate and postgraduate scholarships in naval architecture and marine engineering over the next six years. Through the scholarships, some exceptional students will be able to further their maritime studies before taking up a career in shipping. The winners of the first two scholarships were announced in February 2009.

Making the nuclear option essential

A fleet of new nuclear power plants could be worth £30 billion to the UK economy, as well as providing secure, low-carbon electricity, said Dr Sue Ion to a large audience of Fellows of the Royal Academy of Engineering, senior academics and business managers when she gave the 2009 Lloyd's Register Educational Trust Lecture. Dr Ion, former Group Director of Technology at British Nuclear Fuels, is one of the UK's most influential women engineers. The lecture is an annual event funded by the LRET at the Academy.

Boost to offshore research in Singapore

Professor Yoo Sang Choo, Director for Research at the National University of Singapore's Centre for Offshore Research and Engineering (CORE) became the university's second Lloyd's Register Educational Trust Professor in April 2009. The professorship and research programme were set up in 2005 with the help of funding from the LRET. It was the first time that the LRET had set up a professorship outside the UK, demonstrating its confidence in Singapore's commitment to develop the offshore and maritime industry.

"The establishment of the LRET Professorship has significantly boosted research and manpower development for Singapore's offshore engineering industry. It has launched an influential and convenient platform for networking among offshore and marine industries, universities and research institutes." Prof Chow Yean Khoo, Executive Director, CORE.





For a safer world

Through our impartial advice, broader knowledge, deeper experience and closer relationships we help ensure a safer world. We do this in four key ways: focusing on sustainability of the supply chain; our knowledge of the human impact; driving new technologies; and our local insight allied to global viewpoints.

Fulfilling our mission continued

Impartial advice for a safer world

Lloyd's Register's independence from shareholder dividends means that we can provide impartial and informed advice that you can trust, free from compromise, free from prejudice.

Our clients face continued pressure for transparency, environmental stewardship, corporate responsibility and safe, sustainable operations.

Our obligation is to support our clients in meeting these demands – with intelligent and balanced advice to help them build a truly sustainable business.

Broader knowledge for a safer world

Lloyd's Register is in a unique position to provide deep insight into the interface between assets, people and processes.

Performance and safety crucially depend on skilled human behaviour. Lloyd's Register is a world leader in human factors integration. Controlling human error is critical to the safe performance of assets and processes.





Deeper experience for a safer world

Lloyd's Register is a knowledge-based and technology-driven organisation in the vanguard of understanding and assuring the development of new technologies.

We are committed to be at the forefront of technological innovation and are building a global collaborative network of research and development capability around the world for the benefit of all.

Closer relationships for a safer world

Lloyd's Register has more people in more places, better able to provide high levels of timely service.

We have a truly global view, with over 7,000 employees based in 238 locations worldwide – closer to clients and closer to markets.

We are uniquely placed to understand and provide commentary on issues and trends in local markets from a global viewpoint.





Investing in our employees

We are committed to the health and safety and the development of our employees. The Group relies on their expertise, talent and dedication to meet the challenges of today and the future. Our people are key in the delivery of our mission and our vision to protect lives and the environment.

Investing in safety

Over the past year we have been redeveloping our safety processes and systems under our new safety structure and continued to investigate how we can make our employees safer as they go about their daily work. At the start of 2009 we carried out a safety climate survey across the Group to help us understand where we could make the greatest impact. Over 75% of our employees responded to questions about management commitment, the prioritisation of safety, safety rules and procedures and personal appreciation of risk.

Overall the survey presented a very positive view of the health and safety culture within Lloyd's Register, but we cannot be complacent and its findings are being used to help us prioritise improvements.

Employees' development, health and safety are key concerns.

Also during the year, a review of the risks that our employees face and of our incident history identified a number of key areas for action. Four areas in particular were identified as representing the highest risk exposure for our employees: working in extreme heat; confined space entry; working at height; and driving.

This has resulted in us introducing 'golden rules' and a new format of safety documentation, with instruction and guidance for employees and managers at locations where working conditions can be subject to extreme heat.

Instruction and guidance documents have also been developed for confined space entry, working at height and driving. The driving document, for example, has introduced increased minimum safety standards for vehicles, such as requiring a minimum tyre tread depth of 3mm (below this level wet weather stopping distances increase dramatically).

Beyond the rules

We recognise that developing safety 'rules' and issuing new requirements is only part of what is needed and that truly safe working is only achieved when all employees have the ability to identify hazards and the skills and knowledge to control the associated risks. To help improve in this area a new safety development and training manager position has been established as part of the Group safety function. A more structured and rigorous safety training programme is being developed to ensure that our employees have the skills they need.

The role of our leaders in helping to keep safety at the front of the mind of our employees cannot be overstated, and increased involvement by all levels of management is being driven through the organisation. This includes increasing leadership engagement on safety at events such as team and work planning meetings, at office and site inspections and tours, and in safety conversations with individuals. The revitalised safety training programme includes safety leadership at its core.

Investing in our people

As our organisation goes on growing and changing, we continue to invest in the development of our people to help drive and sustain that growth. In a difficult economic climate it is even more important that we motivate and support the aspirations of our workforce – the people who will see us through the uncertainties ahead.

Over the past year we have continued to implement the five-year human resources (HR) strategy we launched in 2008, completing a significant number of projects aimed at creating a firm foundation for the future. We are currently transforming our global HR teams to provide not only the service excellence required to underpin our operation, but also to focus on the three key areas which are crucial for developing and sustaining our business. These are leadership, technical excellence and performance management.

Leadership

As part of our effort to build our leadership competence, every senior manager undergoes focused capability assessments and has a targeted development plan. Knowing more about the abilities of our leaders enables us to prepare better for the future. It eases succession planning, and means that new managers can come mainly from within the organisation. And it also means that we can develop an effective career track through a robust framework of development activities.

Our employee opinion survey was redesigned this year to include specific measures of the leadership ability of more than 400 managers of people globally. This will help us track the progress of our leadership development alongside other high-performing, global organisations. Our overall leadership score for 2009 was 70%. This was an excellent first result but leaves some scope for improvement against the external benchmark.

Technical excellence

Lloyd's Register's reputation is built on our technical and professional expertise in all areas of our business. Making sure that our technical skills remain leading edge is a key focus for us. Our clients demand this and we aim to deliver. Our business streams are continually developing their technical frameworks to ensure that all of our colleagues are experts in their fields, and we encourage our employees to acquire recognised qualifications with leading industry bodies. Our HR transformation programme aims to increase our emphasis on peer assessment of technical ability, and to further populate the technical career framework with appropriate interventions.

Performance management

Creating a high performance culture is one of our key strategic goals with our people being focused on, and working towards, clear objectives. Over the past year we have refined our performance management programme to enable managers to agree individual personal objectives with their staff in line with the Group's strategic plan. Increasingly we are also emphasising the importance of the way that managers lead their teams as well as their achievement of business goals.



Tom Boardley
Marine Director

Even in these uncertain economic times safety remains our first priority

Industry overview and introduction

The past 12 months have been tough for the shipping business – whether you are a ship operator, shipbuilder or supplier of services to the industry.

Last year, with a growing shortage of available qualified technical personnel, we said that the industry might benefit from breathing space after a period of unprecedented boom to ensure safety and technical standards could be maintained. There can now be no doubt that the order book for new ships is shrinking through cancellations and the peaks of expected deliveries in the next two years are flattening as cancellations and delays in deliveries are negotiated. Additionally, a small but growing percentage of the world's fleet is laid up or idle. The outlook remains very uncertain.

Average daily freight rates for tankers and bulk carriers, year-on-year have declined by 73%. The container ship sector, the most consolidated and integrated in shipping cargo, faces substantial pressure. Long-term financial commitments for chartered ships, together with the collapse in freight rates, are pushing large container ships into lay-up and companies to the brink of collapse or into restructuring of their operations and finances.

Despite these factors, Marine is still managing our share of the largest order book and biggest fleet in history and we have had a strong performance on the back of continued fleet growth. That our share remains strong across all ship types reflects our unusual breadth of expertise.

Our core role is supporting marine safety. And as we approach our 250th anniversary, we are focused on how we move classification forward to contribute to the vision we have of a safer marine industry that meets the needs of society, continually looks to reduce its environmental impact and that provides ship operators and builders with the opportunity to build healthy, sustainable businesses.

We are known around the world for the quality of our advice and for our independence. We provide long term confidence in our assurance and verification services. We will continue to work hard to support the industry in addressing the technical and management challenges we are facing. Our obligation is to support our clients in helping them meet these challenges – with intelligent, balanced advice and service.

Korea – a shipbuilding hub

Korea remains at the heart of Lloyd's Register's new building activity. The world's leading shipbuilding nation is continually improving its capabilities and is now expanding its reach with expansion into ever more sophisticated ship types and offshore structures such as floating LNG (FLNG). We have been especially proud, in each of the last two years, to have been given the Korean Shipbuilders' Association (KOSHIPA) award of leading classification society in Korea.

The technical services for shipbuilders and shipowners we provide in Korea span from technical consulting at a pre-contract stage to design review and site survey during new construction. We deploy skilled and experienced surveyors at key shipyards to address all the technical requirements of new-build activities from conceptual design

to ship's delivery into her maiden voyage. Our team works with colleagues around the world in order to provide technical excellence that can be valued by our clients.

In Korea our team is dedicated to support Lloyd's Register's effort in the development of solutions for the future. Taking advantage of being at the heart of an innovative and fast adapting market our Korea team keeps engaged continuously with clients in research projects that aim at generating new and refined products that support the fulfilment of our mission while focusing on addressing market and clients' needs.



Marine continued



The Norwegian parcel tanker operator, Odfjell Management AS, contracted Lloyd's Register to certify 18 ships with the Green Passport and to provide staff training on the issues around certification. Staff training at Odfjell's headquarters in Bergen, Norway, commenced in May.

Safety first – always

Even in these uncertain economic times safety remains our first priority – in all that we do. We believe that safety cannot be separated from performance: a high performance culture is a safe culture. We put safety first – both for our clients and for our own people, in developing and delivering robust services.

Improvements in safety will continue to be realised through our core role in the formulation and application of technical standards. But significant and continuous improvement in safety and sustainability will now also need to be driven by improvements in management organisation and culture across the shipping industry. Lloyd's Register is leading the way in expanding the role of class into this area and championing its development.

We put safety first – for clients and for our own people – in developing and delivering robust services.

There are baseline safety requirements entailing compliance with class and statutory requirements. Importantly, we are also involved in supporting owners who wish to operate well beyond compliance to further improve safety and sustainability in their operations by developing risk-based approaches. We believe that these will be increasingly important to all in shipping as the dominance of prescriptive rules is challenged.

In order to save lives and prevent pollution, we must prioritise those who experience difficulties in reaching minimum standards. We must be highly proactive in helping clients to maintain a 'quality' ship and fleet. In the last year we have instigated and refined an approach we call the Fleet Quality Programme to manage those who are either close to or are falling below minimum required levels. This programme promotes continuous improvement in our risk analysis-based approach to assessing our fleet, adding or improving processes and data as appropriate, and it enables us to engage operators at an early stage when we identify potentially sub-standard and high-risk vessels. We then seek to manage these ships towards an acceptable and sustainable level of quality. Only if this proves impossible will we look towards removing them from class through a managed class withdrawal process. We believe that this 'active' attitude is more

Record fleet size

Lloyd's Register fleet as of June 30, 2009

- 6,225 ships
- 147.5 million gt
- a market share of 17.2%.

Global reach

More than 1,800 exclusive surveyors worldwide – a network of qualified, ISM (International Safety Management Code), ISPS (International Ship and Port Facility Security Code) and ILO (International Labour Organisation Maritime Labour Convention) surveyors and training facilities.

Significant demand for Green Passport certification

The new International Convention for the Safe and Environmentally Sound Recycling of Ships was adopted in May 2009. When it comes into force the convention will require ships to have an approved and verified inventory of hazardous materials or 'Green Passport'. Some companies have been preparing well ahead of this requirement.

The Green Passport is essentially an inventory of all the materials onboard a ship that may be hazardous to people's health or the environment, and that require careful handling or special awareness. The inventory accompanies the ship throughout its operational life. It is reviewed by Lloyd's Register on an annual basis and recertified every five years. At the end of the ship's life, the inventory of hazardous materials helps the ship recycling yard to formulate a safe and environmentally friendly way of decommissioning the ship.

Wallenius Marine AB attained a Lloyd's Register-approved Green Passport for its vehicle carrier *Tristan* demonstrating an ongoing commitment to safeguarding the environment and early compliance with the new ship recycling convention.





Marine continued

Environmental audit for V.Ships

V.Ships, the world's largest ship manager, were looking to further improve their environmental risk management focusing on the people and management culture in their organisation. They approached Lloyd's Register for help and together we developed a year-long environmental audit – the first addressing human element issues which could affect the safety culture, such as issues around blame, motivation, communication and the need to lead by example.

In-depth interviews over 12 months with crew and shore-based management were analysed to provide the client with a better insight into the next steps necessary to further foster a real and positive safety culture and step further away from a culture of compliance.

effective than relying only on the traditional survey cycles. The ultimate sanction of withdrawing class can be easily taken but still leaves the industry with a potentially sub-standard or dangerous ship.

We have long recognised that properly motivated and trained people using the right systems are crucial to improving safety and operational performance. Our human element capabilities are second to none. Our gap analysis work, cultural audits and leadership training are helping ship operators make the most of the people in our industry. This year we concluded a year-long cultural audit with the world's largest ship manager – we believe that this is a first for class and demonstrates the strides we have made taking classification into new areas.

Motivated and trained people using the right systems are crucial to improving safety and performance.

Technology and technical expertise – every day, worldwide

The industry is urgently looking for expertise, experience and services in support of managing compliance with new environmental regulations. We believe it is crucial that these are provided with the assumption that our industry needs to be sustainable – balancing economic, social and environmental issues. Our energy and emissions experts are already providing environmental guidance and support to our stakeholders, and we offer a broad portfolio of environmental services. These include a new shipping industry-specific guide for the ISO 14001 environmental management standard, which makes use of the years of experience of our Management Systems business, LRQA.

Lloyd's Register's *Guide to the Inventory of Hazardous Materials* (Green Passport) was published in May and is another example of the leadership approach we are taking in preparing the industry for new regulations. It is the first such guide available to reflect the requirements of the Diplomatic Convention on ship recycling held in May in Hong

Kong. Lloyd's Register has already been very active issuing Green Passports to shipowners, winning client contracts with Odfjell, Wallenius and Caledonian Maritime Assets Ltd.

Lloyd's Register has new rules under continual development, new software to support those rules and new guidelines to help owners, operators and regulators move towards safer, and sustainable, more comfortable ship operations. A technology day held in London in February demonstrated the breadth and depth of our technological capabilities. Further such events were held around the world in 2009 – and will be in future years – as we seek to improve and share the extensive technical expertise and insight from non-marine industries that underpins our work in shipping.

Regulatory issues

We play a key role in providing practical input to the regulatory process and in helping the industry manage new requirements. One of the ways we do this is through IACS, the International Association of Classification Societies. We are hopefully near the end of a period of uncertainty for IACS, as the end of 2009 should see the conclusion of an EU competition authorities' investigation into its activities.

In June 2009 the European Commission ran a 'market test'. This aimed to determine industry stakeholders' response to commitments made by IACS to amend its membership criteria and the terms on which non-member class societies can participate in IACS' technical standards-setting work and use IACS' standards, including Common Structural Rules. The commitments focus heavily on removing quantitative membership requirements and replacing them with qualitative criteria – opening the way for potential future expansion in IACS membership.

Meanwhile we have continued to contribute to the development of international maritime safety and environmental protection at the International Maritime Organization (IMO) and in consultation with flag states and other bodies. The development of goal-based standards

PSPC milestone

Last year we profiled the work we have been doing with International Paint in helping shipyards prepare for and implement the Performance Standards for Protective Coatings (PSPC). These requirements are intended to ensure that ships' paint coatings better prevent corrosion, so promoting safety and environmental protection. We have come a long way in a year and in June we completed our 100th PSPC gap analysis in STX France Cruise SA, Saint-Nazaire, France.

The gap analysis surveys that we have delivered for newbuilding shipyards in China and in 55 shipyards in Europe have contributed significantly to the future success of our clients' businesses, an improvement in shipping safety worldwide and in meeting our own, Lloyd's Register, objectives of leadership in developing robust services that reflect our service culture.

And in December 2008, the world's first PSPC compliant ship, the *Mariloula*, was delivered to her proud owners. This vessel is the first of the new capesize bulk carriers developed by DSME and is also the first of four such ships ordered by Greek shipowner Chandris Hellas.

As the first of its kind, this ship is important, but in addition to continuing to improve and demonstrate capabilities in the practical issues that surround achieving PSPC compliance, the focus now moves to the maintenance of coatings throughout the ship's life.



(GBS) to regulate safety at sea is one of the most significant developments in maritime regulation and a key area of IMO's current work. It is of vital importance to class. GBS reinforces the explicit link between statutory and class regulation. IMO embarked on this process to maximise clarity and transparency with respect to the technical considerations that go into the regulatory development process, so facilitating the accountability of the legislative process towards society, as represented by their governments.

A key area of concern for Lloyd's Register had been the verification of class rules to ensure that they meet GBS. Agreement has now been reached on a system that gives credit to good performers and will require commitment towards improvement from those found wanting. All the tools developed over the last seven years to make this process efficient and effective have been retained. The accountability of the legislative process will now be defined in unambiguous terms and both member states and classification societies will benefit from a clear relationship between classification and statutory requirements to be enshrined in the international convention.

The development of goal-based standards to regulate safety at sea is a significant development in maritime regulation.

Marine highlights in 2008/09

New Marine leadership

Tom Boardley was appointed Marine Director in April 2009, succeeding Alan Gavin who retired at the end of June. Tom brings extensive shipping management experience acquired in a career working around the world for operators P&O, NYK Line and CMA CGM.

Container ship safety

One recent initiative is the approach we have taken to help support safety in container ship cargo operations, developing Lloyd's Register's Provisional Rules for Ergonomic Container Lashing (ECL). The frequency with which fatalities, serious injuries and musculoskeletal disorders occur as a result of securing container cargo on board ships is a concern. Lloyd's Register's new notation is a substantial addition to help improve safety in container ship cargo operations.

A new global standard for ice-class ships

Lloyd's Register's Winterisation Rules were published at the end of 2008 extending the coverage of the Rules to include products and equipment necessary for operations in a cold climate as well as hull structures. The new Rules are being updated to ensure that they meet requirements for complex projects in cold environments as operational boundaries are tested.

New training centre in Shanghai

Lloyd's Register Asia opened its first dedicated training facility for marine surveyors, in March 2009, to support demand for technical expertise. With plans to produce 200 graduates over five years the dedicated marine surveyor training centre in Shanghai will ensure that the Group's global marine team will continue to deliver the high technical standards demanded by the modern maritime industry. The Maritime Surveyor Training Institute (MSTI) represents more than a US\$8 million (£5.6 million) investment for the organisation in the first five years of operations.

"Quality staff training provides the most significant contribution to the continued development of our core product – the provision of independent technical assurance to the maritime industry. It ensures that we always will have the right skills to support the provision of

maritime transport services that are safe for both mariners and the environment.

"Innovation doesn't just happen, it has to be stimulated and encouraged. The development of technical competencies is a key ingredient in that mix. It at once fulfils our responsibility to our staff, our clients and the greater public." Roy Ellams, Lloyd's Register Asia's Marine Training Manager – North Asia.

The MSTI represents a new approach to the development of technical competency for the industry, offered at a time when commercial pressures are driving the need for innovation. With the recession shrinking access to new capital for companies in the maritime industry new solutions are required for old problems.



Marine continued



Hellenic strength

Nowhere in the world is there such a concentration of commercial and technical ship operations as there is in the greater Athens and Piraeus metropolitan area. Our experienced and strong presence in that maritime cluster, for more than 130 years, provides considerable support to the worldwide reach and ambitions of Greek shipping. Hellenic Lloyd's is a very important operational, business development and training centre for Marine. Our service delivery activities there are carried out by 22 ship surveyors and a 20-strong technical team in the Piraeus Design Support Office – within a total staff of more than 110.

LNG developments

Demand for liquefied natural gas (LNG) is growing, and it is one of the fuels of the future. Lloyd's Register was the lead class provider in helping support the building of the largest gas ships ever constructed, which are now entering service. We continue to lead LNG classification with the provision of technical support to the industry. New rules concerning sloshing guidelines were released to the industry in May 2009. The *Sloshing Assessment Guidance Document for Membrane Tank LNG Operations* provides support in managing a very important and complex issue that is difficult to address explicitly by either calculation or testing.

Training

Training is of ever greater importance to the shipping industry and Lloyd's Register is seeing increasing demand for all types of course. We are seen not only as a trusted provider of technical training courses but also of new approaches to training, with the ability to deliver high-level management training around the world in many languages. Recent training developments include a significant contract with the Algerian gas ship operator, Hyproc; and our essential dry docking course uses new techniques to maximise its effectiveness. The newly opened Lloyd's Register Maritime Training Institute in Shanghai further demonstrates our training commitments and capabilities.

Looking ahead

We are entering a period of considerable uncertainty – and not just because of the likelihood of continuing weak demand for freight and a relative oversupply of tonnage.

The spectre of climate change, new environmental regulations and their likely market responses are pushing us into a new era. Our clients face continued pressure over transparency, environmental stewardship, corporate responsibility and profitability. Shipowners and shipbuilders will soon need to be developing and assessing new ship designs to meet the needs of future markets and ensure safe operations. Flexibility over fuel type and the ability to switch fuel during a voyage, operating speeds, consumption, efficiencies at different cargo volumes and a continued drive to capture efficiencies in hull shape, propulsion systems and operational management are the new priorities.

Despite the depressed market outlook, there are many new opportunities. The offshore energy sector, for example, is a dynamic and growing part of our business and the announcement of a new FOI (floating offshore installations) team, drawn from both our Energy and Marine businesses, is a first step towards developing and better co-ordinating our technology expertise in the offshore sector.

For a quarter of a millennium we have been a technically led and technically driven organisation. Times have changed but that technical focus remains. And increasingly we will need to deliver services that support people in shipping. Real change in safety, operational and environmental performance will be built on harnessing the creativity and capabilities of the people in the industry. Our human factors training, consultancy, assurance and verification services will support the long-term health of technical and operational management in the industry.



Andy Williams
Transportation Director

We are playing an increasingly prominent role in the independent assurance of railways

Industry overview

Following decades of low growth, recent years have seen a worldwide acceleration in the construction and upgrading of railways: from headline-grabbing high-speed railways to metro and light rapid transit systems.

While in the past 12 months the world economic downturn has had an impact across the railway sector – Europe, for example, has seen a significant slowdown – the sector as a whole has continued to grow, especially in Asia. In global terms, demand is predicted to continue for the next 10 to 20 years as emerging economies undergo rapid urbanisation and need to develop both their infrastructure and their manufacturing bases to satisfy demand for goods.

The growth in railways has prompted huge investment in technology to increase the capacity of networks, improve passenger comfort and, most critically, improve levels of safety. The complexity that has come with this technology has necessitated the development of new methods for assessing system performance and demonstrating the adequacy of safety.

In many countries this has resulted in the abandonment of traditional forms of permission-based regimes for technical and safety compliance and their replacement with goal-based assurance processes. These changes have enabled competent organisations, such as Lloyd's Register, to play an increasingly prominent role in the independent assurance of railways.

Introduction

The year has been one of contrasting fortunes for our Transportation business.

The effect of the economic downturn has been most marked in industrialised economies served by our European operations. In particular, the final quarter of 2008 saw a collapse in both freight haulage and passenger traffic, with substantial reductions in revenue for most railway operators. Not surprisingly, many companies cancelled or delayed projects. As a result there was a reduction in opportunities available to our UK and Dutch businesses.

The lack of capital also had an effect on the viability of some railway projects in the Persian Gulf, with its newly emerging railway market. However, the problem was largely confined to projects funded by private money and many of the state-funded showcase projects continued unabated. One such project, the Dubai-based Al-Sufouh Tram, has recently started and we have cemented our position as the leading independent assurance body in the region through our appointment as the scheme's independent safety assessor (ISA).

Although Asia has not been immune to the effects of the global downturn, growth was significant, in relative terms, and the unprecedented level of new railway construction remained unaffected during the year. The fortunes of our Asian business improved dramatically on the back of this activity.

Our Transportation business remains focused largely on the railway sector. Our direction is principally affected by four key areas: the drive for increased interoperability, the deployment of the European Rail Traffic Management System (ERTMS), improvements in asset performance and the unprecedented level of new railway construction. Our activity has broadened during the year with the acquisition of Human Engineering Ltd, specialists in ergonomics and human factors solutions.

Rail safety in China

In the space of two years in China, we have gone from initial business development efforts to being awarded several independent assurance roles like the Yizhuang line of Beijing Metro. This growth is set to continue as we take advantage of the opportunities arising in the largest new-build railway construction programme of modern times.

Lloyd's Register has been appointed by Beijing Mass Transit Rail Construction Administration Corp (BMTRC) as the independent safety assessor for the communication-based train control (CBTC) system being installed on the Yizhuang line of Beijing Metro. The Yizhuang line is 23 km long and is typical of many modern metro railways, being partially underground, partially elevated and using a CBTC system. However, the line is the first application of a CBTC system entirely designed and manufactured in China. As such, the

Chinese government has classified the project as an industry demonstrator and is placing great emphasis on a successful outcome.

Our independent safety assessor (ISA) role is threefold: firstly, to certify the safety of the new CBTC system as applied on the Yizhuang line; secondly, to certify the generic core CBTC system against international best practice standards such as EN50126-9; and thirdly, to provide mentoring services to members of the project team to enable them to undertake safety assurance activities on future projects.

The certification and mentoring services provided by Lloyd's Register on this project mark a significant turning point in our business development in China. Both activities demonstrate the importance that the massive Chinese metro railway sector now places on the management of system safety.



Surge in new construction

The countries of the Persian Gulf, in particular the UAE and Saudi Arabia, are embarking on a huge railway construction programme as part of a broader thrust to create world-class business and leisure destinations. However, the lack of an indigenous railway sector requires expertise to be drawn from other countries. International best practice is being adopted in these projects, including the requirement for independent assurance. It is in this context that Lloyd's Register has gained an enviable lead in the region, acting as ISA for the Dubai Metro, Al Sufouh Tram and Mecca Metro. Other projects are in the early development phase, but we fully expect to build upon this success with further major wins.

Unsurprisingly, the Asian new-build programme is centred on China, with unprecedented levels of new construction in metro systems and high-speed railways. Unlike the Gulf, China has significant experience in railway engineering. Nonetheless, our programme of awareness building with key industry organisations has enabled Lloyd's Register's

transportation order book to grow by 110% in the past year as a result of rapid escalation in the number of Chinese metro railway projects requiring independent safety assessment.

Interoperability

Interoperability and the ERTMS are issues particularly relevant to Europe, where the desire for unimpeded, cross-border rail travel has led to an array of legislation that mandates the implementation of new technology. ERTMS forms the basis for interoperability within Europe.

The Transportation business has taken advantage of the development of these areas through its role as one of Europe's foremost Notified Bodies (NoBo) in the area of interoperability. One success in the year was our appointment as the NoBo for Stansted Express in the UK. We expect opportunities to grow as national programmes to implement ERTMS gather pace in the next five years.

Transportation continued



Dubai Metro

The first 10 stations of the Red Line of Dubai Metro opened to passenger service in September 2009 and the line carried over 300,000 passengers in the first week of operation, well ahead of the expectations of the Roads & Transport Authority (RTA). Work is now focused on the remaining 19 stations which will open by early 2010. Construction of the 18 stations on the Green Line is also well advanced and it is expected to open to passengers in mid-2010. As the ISA for design, construction, operation and maintenance of the Metro, Lloyd's Register will continue to provide assessment services for the Metro until mid-2011.

Asset performance

Asset performance is always important to railway owners and operators. But, with reductions in freight volumes and patronage levels, the desire for optimisation of performance in areas such as safety, reliability, availability and operability has gained renewed emphasis. Knowledge of these areas has always been central to the Transportation business and demand for our services in safety engineering, fleet performance, system assurance and asset management is greater than ever, as witnessed by the award to Lloyd's Register of a major systems engineering assignment by the Changchun Railway Company (CRC) in China for the new MTR West Rail rolling stock.

CRC was contracted in October 2008 to supply 80 metro cars to Hong Kong's MTR Corporation. This three-year contract will require Lloyd's Register to manage the project's systems engineering during the design, manufacture, delivery, installation, testing and commissioning phases for all the metro cars and associated equipment.

The innovative Gotcha monitoring system has been developed by Lloyd's Register and Baas R&D and detects each wheel of every passing train by means of optical sensors. The resultant data is fed through an advanced calculation programme to provide accurate information on wheel quality thereby improving asset lifespan and safety. The system was further enhanced during the year with the addition of noise monitoring and pantograph measurement modules. Most notably, the systems are now being installed on Network Rail infrastructure in the UK and Réseau Ferré de France infrastructure in France.

In China, our long-term, concerted lobbying of governments and key industry stakeholders for the adoption of global best-practice safety assurance regimes began to pay back handsomely as we secured several high-profile independent safety assessor (ISA) assignments for various new metro lines in Beijing, Xian, Chengdu and Hangzhou.

Similar success has been achieved in Korea, with more major ISA appointments for the Yong-In light rapid transit system and Shinbundang Metro.

Demand for our services in safety engineering, fleet performance, system assurance and asset management is greater than ever.

Mixed fortunes in Europe

While it has been possible to outline four key industry themes shaping our immediate future, there were other key issues that helped to shape last year. Most obviously, the economic downturn resulted in a marked reduction in revenue and profitability in the UK and Dutch businesses. Unfortunately, this was compounded by losses we incurred on a long-term project to install the new European Train Control System to two locomotive fleets intended for operation across mainland Europe.

On a more positive note, one issue we inherited with the acquisition in 2006 of NedTrain Consulting (now LRRE) was that of their dependency upon work provided by the Nederlandse Spoorwegen (NS) Group. We are pleased to report that the proportion of work undertaken for the NS Group has fallen from 65% of LRRE's order book in 2007 to 40% today. This reduced reliance has been achieved through the expansion of LRRE's client base and marks an important milestone in their development as a key consultancy in the European railway sector.

In addition, several notable successes were achieved in Europe, including the award of a further major inspection contract for the new Madrid Metro rolling stock. This assignment maintains the Group's position as perhaps the largest provider of railway inspection capability in the Iberian region and future opportunities have been enhanced with our pre-accreditation against Spanish Notified National Technical Rules (NNTRs). NNTRs are standards notified to the EC by member states to fill open points in the existing common technical requirements of the rail interoperability directives.

The human element: Airport Management Centre (AMC)

Airports Company South Africa (ACSA) knew it needed to enhance the operational capability of Johannesburg's Oliver R Tambo International Airport ahead of the 2010 FIFA World Cup. So it launched a project to redesign the airport operating model and IT systems and create an Airport Management Centre (AMC).

The AMC, which was opened in May 2009, is a central hub from where airport operations can be managed and communications simplified. The objective is to deliver enhanced end-to-end processes and improved passenger service quality through better communication between key stakeholders such as the airport authority, airlines, ground handlers, government bodies, and air traffic control. The technical solution is based on a suite of programs already deployed at Zurich Airport and at London's Heathrow and Stansted airports

and provides stakeholders with real-time information on key aspects of airport operations, allowing informed decisions to be made.

Human Engineering sought to maximise the potential of the people component of the AMC. A consultative approach was used in developing the design to ensure that AMC requirements were well-understood and that solutions seamlessly integrated the system, the processes, and the end users. A transition plan, detailing a breakdown of day-to-day activities, a training plan, and a recruitment and selection plan, is currently being implemented.

The project concept is also set to be implemented in Cape Town and Durban airports.



The human element

In 2008 we acquired Human Engineering Ltd, a UK- and Australia-based human factors consultancy. Human Engineering is a global leader in its field, providing services to the transportation, energy, marine and construction sectors.

We consider that human factors are of growing importance and are rapidly becoming an established discipline in many industries including rail and marine. The acquisition complements our current risk services, providing an integrated approach to risk management. The move also added 60 experienced employees based at offices in Bristol, London, Manchester and in Sydney, Australia.

With a collaborative attitude, they have worked hard to build relationships across Lloyd's Register, and have already helped the Energy business to secure a major piece of work in the USA to improve the operation of a large petrochemical installation owned by one of the oil majors.

Looking ahead

Despite the setbacks in 2008/09, there is a steady growth in the need for railway transport as developing countries undergo rapid urbanisation and goods and raw materials travel through increasingly globalised supply chains.

In western economies there continues to be a move towards liberalisation of railway networks, with the separation of infrastructure assets from operations allowing greater freedom of movement of trade and people. Corollaries of this change are the decentralisation and outsourcing of technical specialisms and the move away from traditional

safety regimes to goal-based regimes that place the onus for the management of safety on the company introducing the risk.

In Asia and the Gulf region many countries are adopting international best practice for the design, construction and operation of railway systems. This is leading to a surge in the need for independent assurance of major projects, particularly in the area of safety.

Taken together, these themes provide strong evidence for long-term growth in demand for the technical, safety and risk services provided by our Transportation business.

In the coming year the most important story is that of worldwide economic recovery. It would appear that the transportation sector has remained buoyant in Asia and may well bounce back faster than anticipated in Europe. However, competition will remain tough in Europe and we have yet to see whether huge injections of liquidity into western economies will result in capital project cutbacks in future years. Ultimately, it looks as if China will remain the big growth story and our most important focus in the coming months will be on ensuring that we gain maximum benefit out of Lloyd's Register's joint venture with the China Classification Society. This should strengthen our position in the rapidly developing independent assurance arena in China's new-build railway renaissance.



Iain Light
Energy Director

In this challenging business environment, safety, risk and technical assurance is crucial

Industry overview

Over the past 18 months we have seen incredible volatility in the price of oil, ranging from US\$147 a barrel to US\$35. This is now stabilising at around US\$70, in part a result of a slowing global demand due to the recession.

However, this is a short-term phenomenon. In the medium to longer term, the demand for energy will continue to rise, in an environment in which reserves are not being adequately replaced, and new finds are in increasingly challenging geographies and geologies.

At the same time, in order to help combat climate change and to tackle the profound issues of energy security, governments are increasing their focus on renewable and low-carbon technologies. This is resulting in a renaissance for nuclear power, and a growing interest in clean coal and carbon capture. These are often technologies either that do not currently exist, or were used and now remain idle and deteriorating. The technical challenge is immense. But more significant still is the challenge of human resources. Put simply, not enough engineers are trained in industry to deliver the energy needs of tomorrow.

In addition, there has been a shift of power – both financially and geographically – from multinational oil giants to major national energy companies such as Gazprom in Russia and Petrobras in Brazil, and the major state-owned sellers and buyers in China and Nigeria, Algeria and Venezuela. The industry is seeing a marked shift towards the East, not only of demand for energy, but of the manufacturing capability to construct the assets that the energy industry needs from drilling rigs to power stations.

Introduction

By any definition, this is a challenging business environment and one in which the world of safety, risk and technical assurance has a critical contribution to make. Lloyd's Register, with its expertise in oil and gas, power and manufacturing, has continued to adapt its structure to the needs of the markets it serves.

Over the past 12 months, we have been working to re-structure this area of our operation to better serve our clients, creating a comprehensive new Energy business by merging our Oil & Gas and Chemicals & Power divisions.

This move recognises the increasing inter-dependencies between sectors of the energy industry and the need to provide clients with a seamless level of assurance throughout their supply chains. The combined business brings together Lloyd's Register's capability in the upstream (exploration, drilling, production, and transport prior to refining), downstream (refining, process and petrochemicals), power (power generation, transmission and distribution) and manufacturing (equipment and component manufacturers) sectors, providing an end-to-end service from concept, evaluation and design, through manufacture, in-service operation and maintenance, to plant-life extension and decommissioning. This means that we can provide support and advice across the industry on compliance, technical consultancy and business solutions.

A strategic assessment of the new combined business has given us a clear view of what we need to do and where we need to sit in the supply and value chains.

Upstream: ModuSpec Technical Training Academy

Our company ModuSpec, has carried out more than 4,000 drilling rig condition surveys around the world over the past two decades, gaining a vast amount of industry specific knowledge and expertise. This has been used to develop ModuSpec's other core services such as commissioning, asset and maintenance management services, QHSE (quality, health, safety and environment) and training services.

ModuSpec's training services are unique within the industry, including courses specifically aimed at technicians who have had limited or no exposure within the drilling industry through to courses for experienced staff who want to enhance their knowledge. The courses are highly respected and intensely practical, so the knowledge gained can immediately be applied to day-to-day business activities – and this was recognised last year with accreditation from the International Association of Drilling Contractors.

Courses such as the Rig Inspection Workshop and the Subsea Engineers Training Programme (SSETP) are organised around the world, and have been successfully completed by thousands of people from major operating companies like Shell, Total, ENI, BP and British Gas. And, because of the value it adds to their staff, large drilling contractors such as Transocean and Seadrill have made our SSETP course mandatory for their subsea engineer trainees.

We will shortly be launching the ModuSpec Technical Training Academy with personal career development as its central focus. The courses offered will vary from basic, low entry level to extremely advanced training in disciplines such as mechanical, electrical, well control and QHSE.



Downstream: Tesoro RBMI project

Tesoro Corporation, based in San Antonio, Texas, is a leading independent refiner and marketer of petroleum products, mainly in the western United States where it operates seven refineries. Over the past two years it has been working with Lloyd's Register Capstone to implement a risk-based asset management programme using our reliability-based mechanical integrity (RBMI) technology.

Compared with a typical inspection programme, RBMI can reduce both the risk in an operating unit as well as inspection costs, simultaneously helping to make process plants safer and more reliable. The programme uses a risk-based inspection process to decide how, where and when to inspect a process plant. In an operating plant, a relatively large percentage of the risk is associated with a small percentage of the equipment items. Risk-based inspection focuses

inspection and maintenance resources on the high-risk items first and lower risk equipment second. The project began with a \$400,000 pilot study at a single refinery which yielded a payback in less than 12 months and savings of more than \$1.5 million in turnaround costs and a further \$7 million in risk reduction.

Since the completion of the pilot, Tesoro has rolled the programme out to six of its seven refineries where the value delivered to date is estimated to exceed \$160 million from a combination of risk reduction and cost savings. Tesoro has also realised a number of additional benefits. The company now has consistent inspection strategies as well as enterprise-wide knowledge available from the RBMI software databases.



Energy continued

Our global team

The creation of a single Energy business has given us a bigger team with a wider skill set operating across a broader range of geographies. More than 1,900 highly skilled employees will now be based in key hub locations including Houston, Kuala Lumpur, Shanghai, Mumbai, Perth, Rio de Janeiro, Rotterdam, Aberdeen, Coventry and London. These include the largest number of qualified ASME (American Society of Mechanical Engineers) surveyors outside the USA.

Our global business is growing significantly. In the past 12 months we have broadened our approach and expanded our reach, particularly in Asia, where growth in inspection and verification is required to meet regulatory frameworks to ensure equipment or systems conform to a recognised standard. The opportunities that exist in FOIs (floating offshore installations) is gathering momentum with experts from across the Group's Marine and Energy businesses co-ordinating on innovative technology assurance applications for the offshore sector.

In the past 12 months we have broadened our approach and expanded our reach.

One example of our global reach is a contract from PT Gunanusa Utama Fabricators, outlined on page 43, which involves work in 29 countries. This demonstrates the confidence that clients place in our services, our network and our team's technical expertise.

Growth by acquisition

Over the past two years we have been building on our existing competence in the energy sector, delivering growth of over 40% a year. The acquisitions ModuSpec, Capstone, Celerity3, ODS, Knowledge Based Management Ltd (KBM) and Human Engineering Ltd, are part of the Energy team, providing compliance, technical consulting, business solutions and services across the full lifecycle of assets.

Acquisitions have helped to drive our business forward. Human Engineering and the risk-based management inspection tool provided by Lloyd's Register Capstone has, for example, increased our ability to provide services to clients in the downstream side of the energy supply chain, and we are currently working through a large contract with an oil major in the USA on an asset integrity management improvement project.

And while a key element of our work is understanding the risks surrounding hard physical assets within the energy sector, Human Engineering provides us with an intimate understanding of the increasingly important area of how people interact with those assets.

Benefiting industry across the supply chain

Lloyd's Register is leading the way in taking an integrated approach to the energy supply chain. Our focus is on creating safe and reliable supply chains that are also sustainable both in commercial and

environmental terms. We assess whether each link in the chain is performing effectively in its own right and as a part of the whole, and make recommendations where weak links are identified. This broad-based expertise has benefits even for those clients operating at just one point in the chain, as we are able to understand the wider context of their work and the daily demands on their business.

The newly formed Energy business will boost our ability to provide the skilled and competent people at all levels needed to help us ensure that stakeholders throughout the energy supply chain understand the risks relating to plant, equipment and systems. The continuing economic pressures through the supply chain, combined with growing accountability for safety and the environment, mean that many of our clients look for more sophisticated methods of managing high-risk assets and ways to reduce risks of failure.

The Publicly Available Specification for Asset Management (PAS 55), published by the British Standards Institute (BSI), is rapidly gaining the attention of global power and utility companies to benchmark management practices in their asset-intensive industries. Safety is always a power company's first priority and the product they deliver is often a necessity to the local community and its economy.

Our clients have confidence in our team's technical expertise.

In May 2009, we completed the assessment of the nuclear power stations of British Energy to PAS 55. This not only demonstrates that British Energy can display the robust management needed to operate its nuclear infrastructure safely and effectively, but also reinforces Lloyd's Register as a world leader in PAS 55 certification throughout the energy supply chain. During this last year, we have made PAS 55 awards to companies in the USA and in Europe including:

- National Grid, an international electricity and gas company, and one of the largest investor-owned energy companies in the world
- ScottishPower Energy Wholesale, which has responsibility for operating and maintaining 6,400MW of power generation in the UK
- ESB Networks, the owner and operator of the electricity distribution network in the Republic of Ireland
- E.ON Benelux, the first electricity generation company in The Netherlands to be awarded this international standard for effective management in the way it generates and delivers electricity, heat and gas to residential and business customers
- Envoy, an Inexus Group company that provides comprehensive asset management services to utility infrastructure providers and asset owners.

Energy continued



Quayside cranes in China

In China we completed our first ever contract from Dalian Huarui Heavy Industry International Co. Ltd. Our scope of work involved design appraisal and third party inspection for four units of quayside container cranes for Lattakia Port, Syria. The project is testimony to our growing footprint in the China market and reinforces our strong position in the ports and logistics sector.

From concept to decommissioning

The recognition of the need for enhanced safety and asset performance has greatly improved in the industry in recent years, but there still needs to be more awareness and understanding of how assets should be managed particularly as economic growth resumes. Increasing demand for energy will require that the life of existing assets has to be extended.

The new Energy business at Lloyd's Register is well-placed to advise the industry on asset lifecycles at any point in the supply chain. Our team has an in-depth knowledge of all the materials, components, systems and operational complexities involved with the energy industry's often large-scale capital intensive and high-risk assets. This expertise equips us to advise at every stage, from initial concept through to construction, operation and decommissioning: an end-to-end approach to physical assets.

Our work with the nuclear industry involves projects across the full asset lifecycle.

Our work with the nuclear industry is a good illustration of this full lifecycle involvement. Our projects encompass advising on the decommissioning of the first-generation nuclear power stations as well as the construction of the new wave of power plants that are being planned and built around the world. This year our technical competency and knowledge was recognised with the award of a contract for a series of technical services under the framework agreement for the UK's Nuclear Installation Inspectorate. The technical services – including internal hazards, probabilistic safety analysis and management for safety and quality assurance – relate to the generic design assessment for the UK's new-build nuclear reactor programme.

Other projects illustrating our work throughout the asset lifecycle stages include those with IHI Corporation Japan, ExxonMobil and Tanker Pacific Offshore Terminals. IHI Corporation Japan awarded us a two-year contract to provide inspection services for the construction of two LNG tanks at Kochi in South India for LNG Petronet. The tanks, each with a capacity of 155,000 cubic metres, are special double walled units built to specific statutory requirements. We provided third-party inspection and testing services on site and also plan appraisal of the tanks.

For ten years we have been working with ExxonMobil in Australia pioneering the implementation of programmes to support safety case regulations that were legislated in early 2000 for hazardous industries. Our risk consultancy services are being provided at their Australian Altona refinery and in their downstream sites. ExxonMobil's recent confirmation that the contract with the Lloyd's Register Group is to be extended until 2014 is further evidence of our ability to deliver quality services and a broad scope of activities from 'HAZOP' assessments and scenario-based risk assessments, to process safety management, asset integrity inspection, human factors and government liaison.

Tanker Pacific Offshore Terminals awarded three contracts for their upcoming life extension and modifications work to be carried out on the floating storage and offloading unit (FSO) *Caspian Sea*, dry-docked in Singapore. On completion of the work the vessel will be back in operation for a further seven years at the Murphy Sarawak Oil, West Patricia Field, Bintulu, East Malaysia. Lloyd's Register also classes the FSO *Shanghai*, operated by Tanker Pacific, which is moored at the Santos Oyong Field in Indonesia.

We are well-placed to advise the industry at every stage of an asset's lifecycle.

Service development

We are always looking at new ways to improve services or develop new applications. One example is a service to screen process pipework for vibration-fatigue-failure risks based on a Health and Safety Executive (HSE) survey which found that 21% of all hydrocarbon releases on UK sector offshore platforms were caused by vibration or fatigue issues. In a joint industry project (JIP) with the Energy Institute that led to the publication of specific guidelines, we have launched a service that includes a qualitative risk assessment, a quantitative assessment of high-risk systems using software developed by Lloyd's Register, and on-site measurement of vibration levels. Training is also given to client personnel on the use of measuring equipment and the application of best practice to avoid failures. The vibration screening team has already won two contracts for this service from clients based in the Middle East and North Africa.

Power: National Grid

We helped National Grid achieve a world first when its liquefied natural gas (LNG) terminal at the Isle of Grain in the UK became the first of its kind to earn a BSI Publicly Available Specification 55 (PAS 55-1) certificate.

The LNG storage capacity at Grain has quadrupled with the construction of three state-of-the-art, above-ground storage tanks, the largest of their kind in the world, each with a capacity of 190,000 cubic metres. The increased capacity will help provide 12% of the expected UK gas needed in a typical winter. With gas demand rising and domestic production from the North Sea in decline, the UK will need to import around 50% of its gas by 2010.

National Grid chose to implement PAS 55 as a means of effectively balancing investment and maintaining a rigorous approach to managing its assets in the safety critical LNG industry. Implementing PAS 55 has helped to meet its customer needs successfully and increase its terminal capacity for imports by four-fold without compromising safety.

“Lloyd’s Register was an active partner working with us throughout our preparations, challenging us to ensure we develop a robust approach to managing our assets within the LNG industry and becoming the first LNG terminal to be assessed to this standard.”
Peter Boreham, National Grid’s Director of UK LNG.



Global management systems network

WorleyParsons Services is a leading provider of professional services to the energy, resource and complex process industries with over 28,000 personnel in 120 offices across 37 countries. As WorleyParsons' chosen certification body, Lloyd's Register Quality Assurance (LRQA) Melbourne are working with the client on management system certifications under a Global Corporate Certificate across an increasing number of diverse operational entities. The close working relationship and joint effort across all offices has ensured a high standard of delivery, and we have since expanded our services to WorleyParsons' American and Canadian operations.



Manufacturing: Global Process Systems

Global Process Systems Inc., based in Abu Dhabi, is a global solutions provider of design and build process facilities, and offers turnkey capability in all areas of process equipment and plant supply. On a recent project, global conformity to CE marking was needed to support the manufacture and delivery of five dew point control modules for MOL plc.

Lloyd's Register was chosen as their notified body to help from the early stages of fabrication to on-site construction. Services were provided by a pool of experts brought in from offices in Coventry, Dubai, Abu Dhabi and Vienna to help provide solutions ranging from design appraisal to inspection, testing and certification.

With an established reputation as a reliable supplier of oil and gas equipment and plant supply for offshore production units and onshore early production facilities, it was important for Global Process Systems Inc. to ensure conformity throughout the process.

"Services provided by Lloyd's Register in this project are exemplary. The organisation has provided invaluable assistance with timely resolution of queries." Robert Mather, QA/QC Manager at Global Process Systems Inc.



Project highlights for 2008/09

Upstream

Our teams in Singapore, Malaysia, Philippines, Indonesia and Aberdeen spent a year working on the design review and survey of the floating production, storage and offloading vessel (FPSO) *Ningaloo Vision* in Singapore. They also worked on the vessel's disconnectable turret mooring system, developed in-house by Prosafe Production. This is the first major contract that Prosafe has awarded to the Group in Asia.

Downstream

We secured an important contract with Sonatrach, BP and StatoilHydro for their In Amenas project in Algeria – the largest wet gas project in that country. In addition to providing a full verification scheme, which incorporates a management introduction, revised performance standards and written schemes of self verification, the contract also includes a major contribution to the In Amenas asset maintenance programme.

Power

Anticipating a change in the Republic of Ireland's inspection regime for pressure safety systems, Utility O&M Services contracted the Group for in-service inspection of the combined cycle gas turbine (CCGT) and related lifting equipment at its Dublin Bay power station. The inspections are to ensure that the safe operating limits for the pressure systems and equipment have been defined and are being successfully integrated into the client's processes.

Manufacturing

Our teams in Indonesia and Singapore have recently won our first contract from PT Gunanusa Utama Fabricators, of Cilegon in Indonesia. The contract requires us to provide a comprehensive third-party inspection and expediting services for an offshore platform. The inspections will be conducted at major manufacturers' works in 29 countries across the Middle East, Europe and Asia.

Looking ahead

In the years running up to the recession there had been a rapid expansion in the energy industry. Our focus during that time was on quality assurance, as opposed to physical testing and standards. The question that we now need to address is whether client management systems are robust enough to meet the future and changing energy needs.

As increasingly high demands are placed upon physical assets we will need to ensure that the quality of materials and components within those assets are up to the job. We will need to deliver on the requirements for physical systems and testing. And while this is true of the oil and gas sectors, its application is just as relevant in the nuclear industry.

There is increasing optimism that by 2011 the industry will be in another period of upswing. But the prospect of recovery brings with it new demands: increased pressure on physical assets not replaced during the downturn; an industry seeking to reverse the slowdown in the replacement of its reserves; and all of this to be achieved with a talent pool that is already stretched.

The Lloyd's Register Energy team is largely based in Europe, and one of the key challenges we face over the next 12 months is to position ourselves for the bounce back in the Far East. We will also need to be prepared for the increasing challenge posed by the shortage of skilled human resources – not least within the area of nuclear energy.



Mike James
Management Systems Director

Though a difficult year for businesses worldwide there has been increased interest for management systems

Industry overview

The global economic climate has placed all aspects of business activity under increasing scrutiny, and management systems are no exception.

Organisations have been rethinking what they really want and need from their management systems. They have been redoubling their efforts to find efficiency gains, cost savings and improved control over their business activities in the face of economic uncertainty and risk. At the same time, their stakeholders have been demanding ever more accountability and transparency. Governments, too, are increasingly influential in the allocation of funds which, in turn, drives demand for management system services.

Assurance services such as ISO 9001 (quality management systems) have therefore grown strongly in 2008/09 as companies seize opportunities to strengthen their operations and improve competitiveness. Demand has also increased for OHSAS 18001 (health and safety) while that for ISO 14001 (environmental management systems) has flattened somewhat. Despite the adverse economic pressures, there has been no decline in the interest for climate change services, particularly for greenhouse gas (GHG) validation and verification services (ISO 14066).

The food sector, and specifically food safety, revealed significant demand for ISO 22000 (international standard for food safety management systems) certification. With the global sourcing of ingredients and food products, the entire food supply chain is facing continuing pressure for improved safety, transparency, sustainability and social accountability.

Introduction

The increased interest in management systems in the current economic climate has benefited LRQA and we have continued to grow our business successfully in line with our five-year strategy.

As clients seek to secure their products, services and reputations, there has been an increasing focus on assurance within the supply chain which embraces companies large and small and often stretches around the globe. Certification, validation and verification all have important roles to play and have provided LRQA with the opportunity to offer solutions which directly address our clients' business problems. This has helped us to offset the impact of the downturn in sectors such as automotive and construction. We have been able to make a measurable difference to organisations seeking reassurance that they are effectively managing their risks in turbulent times.

We have also been able to provide multiple services to existing clients, as in the cases of Anderson Strathern Solicitors in Scotland with triple certification to ISO 9001, ISO 14001 and OHSAS 18001 and of Wildlife Reserves Singapore (Singapore Zoo, Jurong Bird Park and Night Safari) with ISO 14001 and OHSAS 18001 certifications.

With supply chains central to the Lloyd's Register Group vision, we reinforced synergies with other members of our Group. We have worked particularly well with Energy and Marine to explore client opportunities. Today, over 60% of the Lloyd's Register Group key accounts are LRQA approved.

Business continuity: John Laing plc

John Laing plc is a specialist owner, operator and manager of public sector infrastructure assets in the UK and internationally. The company decided on BS 25999 for business continuity, seeing the value of certification and independent verification: an enhanced position in competitive bidding and the provision of reassurance for all stakeholders. They also saw it contributing to their corporate social responsibility (CSR), protecting both the communities they serve and their employees.

LRQA's relationship with John Laing stretches back to 2001 with certifications to ISO 9001, OHSAS 18001 and ISO 14001 as part of an integrated management system. We were selected to assist in the new certification on the basis of our understanding and insight into John Laing's unique role in the public private partnership (PPP) market and its business approach. The company also valued the comments and observations made by assessors during surveillance visits.

Certification was completed in January 2009 for the provision of key supporting services provided by John Laing corporate to its project companies, including IT services, media communications, business development, operations management, accommodation, facilities management, supplier management and group management.

The company believes that it is one of the first in its industry to achieve business continuity certification and that this will increasingly be a factor in tendering for contracts. In addition, it is now looking to promote business continuity with its suppliers. For LRQA, this is evidence for how in-depth client knowledge and industry insight can help to build strong relationships and provide added value.



Clean Development Mechanism: Jocil Limited

The Clean Development Mechanism (CDM) is a way in which developed nations can reduce their greenhouse gas emissions by investing in projects that achieve this end in developing countries. LRQA, being a designated operational entity (DOE), was appointed in May 2008 by Jocil Limited (Jocil) to validate a wind power project in the Tirunelveli district of Tamil Nadu, South India.

Jocil, a subsidiary of Andhra Sugars Limited (ASL), is a manufacturer of fatty acids, stearic acid, toilet soaps, glycerine and also a co-generator of power using biomass as fuel. ASL, established in 1947, is a manufacturer of sugar, caustic soda, chlorine, and other organic and inorganic chemicals. As an alternative to electricity produced from fossil fuels, ASL and Jocil had set up bagasse and biomass-based green power plants. They have ventured into wind power too and the project covered seven wind turbine generators.

We were appointed to ensure the wind power project would result in real, measurable, and long-term emission reductions. The Mumbai climate change team of LRQA in India initially carried out a review of the project design followed by site visits and discussions with senior management.

Since it was agreed that the project satisfied the requirements of the CDM and met the sustainable development criteria of the host country, India, it was submitted to the Executive Board, UN Framework Convention on Climate Change (UNFCCC) for registration. Once the project is implemented, carbon credits will be issued to the project participants based on the emissions reductions achieved and verified.

Resilience and business continuity

LRQA has seen increasing market interest in business continuity and organisation resilience services, with a particularly strong uptake in companies seeking certification to BS 25999, the business continuity standard – an holistic management process which identifies potential threats. We achieved global UKAS accreditation to provide certification services to this standard and have trained more assessors around the world to give us global capability. In addition to certification, LRQA also offers training courses covering the implementation, maintenance and continuous improvement of a business continuity management system using BS 25999. Clients such as Laminar Medica, a specialist supplier of temperature controlled packaging to the pharmaceutical industry, sees the value of certification and independent verification as enhancing its ability to manage risk and ensure business continuity in times of stress.

As companies seek to secure their products, services and reputations, there has been an increasing focus on supply chain assurance.

Global supply chain security

During an economic downturn it becomes even more important to assure an organisation's physical assets and people against loss, theft or harm. LRQA have developed services to assure safety and security of global trade facilitation, supported by the use of ISO 28000, the international management system standard for supply chain security. Logistics clients such as DB Schenker selected LRQA to maximise the benefits they gain from a standard which covers a number of different regulatory frameworks as well as addressing physical aspects, information flow and financial data.

We have also delivered services using schemes such as the Transported Asset Protection Association (TAPA), Freight Security Requirements (FSR), Authorised Economic Operator (AEO) gap analyses and ISO 28000. These initiatives have brought not only confidence for the people and stakeholders of these organisations but are delivering economic benefits through improved security of supply and a reduction in theft of goods.

Food supply chain safety

This year, food supply chain safety has been a significant growth area for LRQA, and we have been playing an instrumental role in the global harmonisation of standards by assisting in the development of the new food safety standard FSSC 22000, which combines both ISO 22000 and PAS 220 (publicly available specification for prerequisite programmes for food manufacturers). We have also been assisting world class brands to better understand and improve safety.

Mars Inc. selected LRQA for certification to FSSC 22000 in support of its company-wide commitment to provide safe, high quality and responsible food products to consumers in over 100 countries. The certification, scheduled to be completed by December 2010, will cover Mars' North American manufacturing sites, including 30 pet food sites and eight confectionary sites. Upon completion, Mars will achieve its goal of becoming certified to a Global Food Safety Initiative (GFSI) approved standard. Further reinforcing Mars' commitment to delivering safe food products, the company's ISO 22000 and PAS 220 certification will be in addition to continued LRQA assessment and certification of Mars' existing world-class, process-based Quality and Food Safety Audit Program for all Mars sites worldwide.

Manufacturers are not the only food organisations seeking assurance. For example, we have also helped Osaka Municipal Waterworks Bureau to become the world's first public water utility to acquire ISO 22000.

CSR and climate change

LRQA continues to gain business with companies that need to protect and improve their sustainability and corporate social responsibility (CSR) performance. Demands by stakeholders for more transparency and accountability about performance cannot be satisfied by a glossy CSR report. LRQA is working with clients to help them make CSR part of their daily activities, create business benefits and reduce risks – all of which contribute to building trust.



LRQA is now validating a similar CDM project, the Bundled Clean Energy Generation Project in the Tirunelveli District, Tamil Nadu.



Food supply chain safety has been a significant growth area for LRQA this year.

Over the year, we have achieved growth in our existing climate change services and developed additional offerings. Our accreditations for the Clean Development Mechanism (CDM) now extend to both validation and verification across sector scopes 1-13; scopes 1 to 9 are industrial sectors and 10 to 13 are sectors based on sources of GHG emissions. The number of projects that were successfully registered with the UNFCCC (United Nations Framework Convention on Climate Change) through our validation services increased by more than 100% in the year.

We are playing a key role in the development of climate change standards and certification.

Our ISO 14064 services continue to be successful with key global clients, while our European Union Emissions Trading Scheme (EU ETS) contracts continue to grow. In 2008, we verified a further 130 million tonnes of carbon under the EU ETS, bringing our year-on-year total to approximately 430 million tonnes. There is also growing global interest in our recently developed services for the aviation industry.

In addition, the Group's acquisition this year of Ryerson, Master and Associates Inc. (RMA), a leading climate change verification organisation in the USA, enables us to take the leadership position in climate change verification services in the USA.

At an international level, LRQA is playing a key role in the development of ISO 14066, the standard for the competence requirements for conducting GHG validation and verification engagements. In the area of carbon footprint for products and services, we contributed to the consultation phase of the new PAS 2050 standard and the associated Code of Good Practice for product GHG emissions. We were one of only six certification bodies selected to participate in the UKAS pilot accreditation programme.

Finally, we were active in the development of the World Resources Institute/World Business Council for Sustainable Development sponsored GHG protocol for products and supply chains.

Accreditation highlights for 2008/09

- LRQA has become the first certification body to gain full sector and global scope UKAS OHSAS accreditation.
- We have been awarded global accreditation to provide certification against the Business Continuity Management Systems standard, BS 25999-2:2007.
- In addition to being accredited and providing services for validation of projects under the Kyoto Protocol's Clean Development Mechanism (CDM), LRQA has now obtained accreditation to provide verification of CDM projects.

Looking ahead

We will continue to evolve our Business Assurance approach to reflect the changing business circumstances of our clients and as the basis for our market leadership through service differentiation.

We will be enhancing our themed surveillance approach, introduced two years ago, to ensure that our assessments focus on the effectiveness of clients' systems to identify and manage their most critical risks. Linked to this we will also introduce improved reporting tools to give our clients deeper insight into the current and future capability of their systems.

We intend to continue helping our clients to manage through the economic downturn using their management systems, and will respond to the continuing need for assurance to support responsible, safe and sustainable supply chains. Specifically we will use existing services to focus more closely on supply chain issues and introduce new products that address specific sector issues in supply chain management.



Alastair Marsh
Group Finance Director

A strong performance against the backdrop of the global economic downturn

The Group has posted another year of strong income growth, boosted by significant growth in our Energy business and favourable foreign exchange conditions.

I would like to comment on selected key numbers from the Group's annual accounts for the year ending June 30, 2009.

In this review I am presenting data for the last six years. The data for income, operating surplus and headcount are all related to continuing operations only.

Income

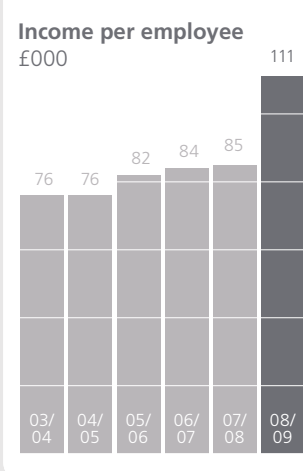
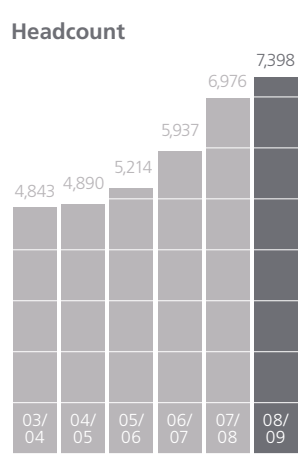
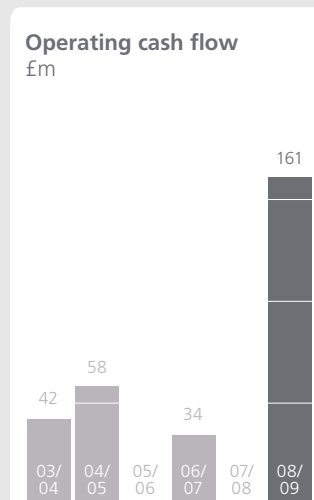
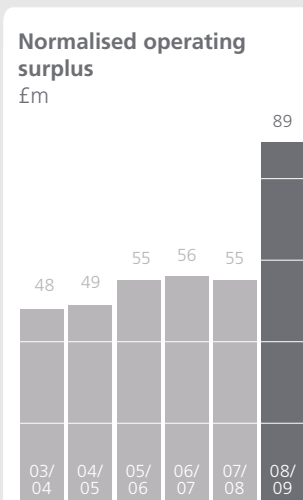
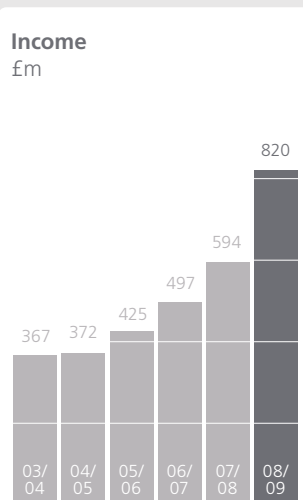
Total Group income for the year was £820 million, up 38% on the previous year. As mentioned in the Chairman's overview, a large part of this growth was due to the foreign exchange impact of weaker sterling against the US dollar and the euro (18%), with organic growth (16%) and acquisitions (4%) contributing the balance.

In the last two years alone, we have grown by 65% in terms of income.

Over the six-year period, annual income growth has averaged 17.5%, with particularly good growth in recent years from our Marine, Energy and Management Systems businesses. In the last two years alone, we have grown by 65% in terms of income.

Operating surplus

Our reported operating surplus was up significantly, by approximately 115%, to £55 million from £26 million. The increase in the surplus is principally due to favourable foreign exchange conditions as noted above. The Income Statement benefited from a £21 million foreign exchange gain during the year to June 30, 2009. The Group's staff costs have increased significantly but at a lesser rate than the income growth. Non staff costs, excluding goodwill amortisation and foreign exchange, have increased faster than the income growth primarily due to an increase in the cost of bad debts due in turn to the impact of the difficult global economic conditions.



The six-year normalised operating surplus trend chart shows operating surplus before charitable donations and pension costs. The former are excluded because of the distorting effect of the £9 million donated to the Lloyd's Register Educational Trust in the current year, compared with the £5-6 million donated in each of the previous four years. Pension costs are excluded because the annual volatility in such charges also distorts underlying trends in performance.

The average annual growth in operating surplus on this basis over the last five years was 16%. While conditions in the Marine market have become more difficult due to the effects of the economic slowdown, favourable market conditions have persisted for our Energy business. During 2008/09 we have seen a continuation of the strong growth and performance of our Energy business. In addition to benefiting from a full year of results from the ModuSpec business acquired in January 2008, the Energy business has benefited from a strong presence in the Caspian market.

Surplus before tax

The £93 million reported this year was £45 million up on the previous year. During the year, the Group disposed of its investment in Lloyd's Register – Fairplay. The significant gain from this disposal more than offset the drop in investment income, due to the global crisis in the financial markets and the increased financing cost of our pension liability.

Operating cash flow

Our operating cash flow improved substantially from the previous year and our working capital levels have now returned to normal. The issues with our computerised financial system were resolved during the year and the invoicing backlog was cleared. This allowed the Group to repay the short-term facility it had drawn on in the previous year and to replenish its cash reserves. As stated earlier, our investment in Lloyd's

Register – Fairplay was disposed of during the year and this generated £40 million cash for the Group. We also spent £9 million on acquisitions during the year, principally the acquisitions of Human Engineering and Celerity3 in July 2008.

Annual income per employee rose from £76,000 to £111,000 over the last six years.

Headcount

We ended 2008/09 with approximately 7,400 employees, the increase over the previous year reflecting organic growth and acquisitions made. Over the six-year period, we have seen headcount grow, on average, by 9% per annum, compared with the 18% growth in income. Annual income per employee has, therefore, risen from £76,000 to £111,000 over the same period. This increase equates to an average annual growth of 7.9% over the six-year period.

While we are pleased to be able to report such a strong financial performance, against the backdrop of the global economic downturn, we are conscious that market conditions have become much more challenging in recent months. Given the uncertainties that currently exist in our markets, we continue to keep tight control over our cost base to ensure that we are able to react quickly to further changes in trading conditions.

Alastair Marsh
Group Finance Director

Board of Trustees and Executive Leadership Team

The Board of Trustees and the Executive Leadership Team work together to govern and direct the activities of the Group.



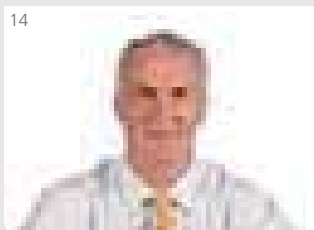
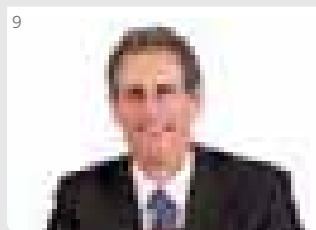
Board of Trustees

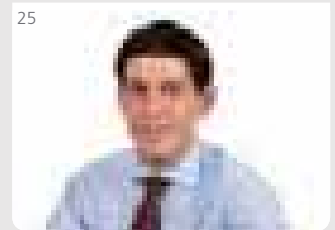
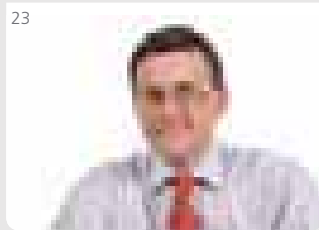
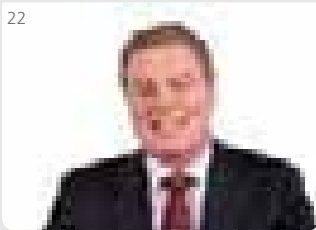
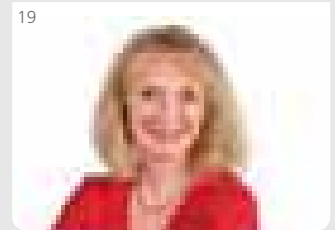
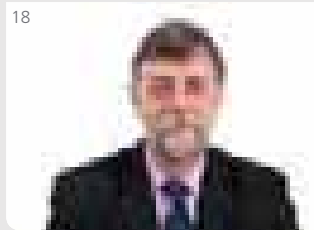
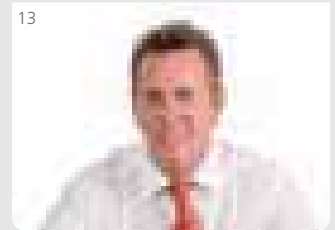
Executive Leadership Team

Lloyd's Register, the parent society in the Lloyd's Register Group, is governed by a small Board of Trustees. The members of this Board are elected by the Members of Lloyd's Register's General Committee. The Board, in turn, delegates day-to-day management of the business to the Chief Executive Officer and through him to the Executive Leadership Team.

Board of Trustees

- 1 David Moorhouse CBE**
Chairman of the Board of Trustees
Chairman, Lloyd's Register Group
- 2 John D Chandris**
Senior Trustee
Chairman of The Chandris Group
- 3 Mrs Christine Dandridge**
Non-Executive Director,
Managing Agency Partners and RFIB Group
- 4 Ron Henderson**
Chairman, Lloyd's Register Audit Committee
- 5 Jan Kopernicki**
Vice President Shipping, Shell International Trading
and Shipping Company
- 6 Søren Skou**
Partner, Group Executive Board Member,
A.P. Møller – Mærsk A/S
- 7 Lambros Varnavides**
Chairman, Lloyd's Register Remuneration Committee
Managing Director and Global Head of Shipping,
The Royal Bank of Scotland





Executive Leadership Team

- 8 **Richard Sadler** Chief Executive Officer
- 9 **Alastair Marsh** Group Finance Director
- 10 **Paul Huber** Chief Operating Officer
- 11 **John Stansfeld** Group Strategy Director
- 12 **John Rowley** Regional Director Asia
- 13 **Paul Thomas** Regional Director EMEA
- 14 **Tom Boardley** Marine Director
- 15 **Mike James** Management Systems Director
- 16 **Iain Light** Energy Director

- 17 **Andy Williams** Transportation Director
- 18 **Ian Hodgskinson** Director
- 19 **Estelle Clark** Group Business Assurance Director
- 20 **Stephen Hand** Group IT Director
- 21 **Jim Harrison** Group Legal Director
- 22 **Bill McQueen** Group HR Director
- 23 **Keith Povey** Group Corporate Secretary
- 24 **Richard Rowe** Group Safety Director
- 25 **Mark Stokes** Group Communications Director

Glossary

A more detailed explanation of some of the acronyms and terms in this review.

Glossary

A

ASME

The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code is the leading internationally accepted construction code defining the requirements for the design, manufacture, inspection and testing of many types of pressure vessels and nuclear power plant components.

B

BS 25999 – 2:2007

Specifies the requirements for setting up and managing an effective business continuity management system that will enable an organisation to recover its critical activities within its recovery time objectives.

C

Certification

The process of evaluation that results in a written statement, usually by a third party, that a system or component complies with its specified requirements and is acceptable for operational use.

Classed fleet

Vessels built and maintained to Lloyd's Register standards. Ships built to other class society standards may be transferred to our class provided our standards can be met. Maintenance of class is subject to surveys.

Classification

The development, implementation and maintenance of standards (Rules) for the design, construction and operation of ships and offshore units. Compliance with these standards ensures assignment and maintenance of class.

Clean Development Mechanism (CDM)

A greenhouse gas emissions reduction project in a developing country where the investor is from an industrialised country. Both countries must have ratified the Kyoto Protocol.

Common structural rules (CSR)

The International Association of Classification Societies' CSR for tankers and bulk carriers came into force in 2006. The new Rules aim to achieve the goals of more robust and safer ships.

Corporate social responsibility (CSR)

LRQA defines CSR as how companies manage their business activities taking account of economic, social and environmental impacts such that they: deliver sustainability; behave ethically; produce an overall positive impact on society; and address stakeholder expectations.

D

Designated operational entity (DOE)

Independent auditors that assess whether a potential project meets all the eligibility requirements of the CDM (validation) and whether the project has achieved greenhouse gas emission reductions (verification and certification).

E

European Rail Traffic Management System (ERTMS)

The new ERTMS comprises the GSM-R radio system for speech and data communication, and the European Train Control System (automatic train protection system). ERTMS forms the basis for interoperability within Europe.

EU Emission Trading Scheme (EU ETS) EC Directive 2003/87/EC, as amended

This requires specific installations to monitor and report their carbon dioxide emissions and enables them to trade carbon dioxide emission 'credits'.

F

Flag state

A sea-going vessel is subject to the maritime regulations of its country of registration, or flag state, in respect of manning scales, safety standards and consular representation abroad.

Floating offshore installation (FOI)

Relates to any kind of floating installation regardless of its capability.

Floating production, storage and offloading vessel (FPSO)

Floating production unit which can process and store oil or gas as it is extracted from the seabed before delivering to export.

Floating storage and offloading unit (FSO)

A simplified FPSO without the possibility for oil or gas processing.

FSSC 22000

FSSC 22000 is the first global food safety management certification scheme specifically targeted for the certification of manufacturing and processing of food ingredients and food products. The FSSC scheme is based on ISO 22000 (requirements for food safety management systems) and PAS 220 (requirements for prerequisite programmes for food manufacturing).

G

Gross tons (gt)

Gross tonnage is a function of the moulded volume of all enclosed spaces of the ship. It forms the basis on which manning rules and safety regulations are applied, and registration fees determined.

H

HAZOP

A hazard and operability (HAZOP) study is a design review technique used for hazard identification, and for the identification of design deficiencies which may give rise to operability problems.

Human factors

Human factors involves the study of all aspects of the way humans relate to the world around them, with the aim of improving operational performance, safety, through life costs and/or adoption through improvement in the experience of the end user.

I

Independent safety assessor (ISA)

ISAs objectively assess the safety aspects of a process, system or organisation. From the evidence gathered in the assessment the ISA forms a judgement on whether the safety requirements have been met.

Integrated management system (IMS)

An IMS results when an organisation uses one single management system to manage multiple aspects of organisational performance, to meet the requirements of more than one management system standard.

International Association of Classification Societies (IACS)

A membership organisation that contributes to maritime safety and regulation through technical support, compliance verification and research and development. More than 90% of the world's cargo carrying tonnage is covered by the classification rules and standards set by the 10 member societies and one associate of IACS.

International Maritime Organization (IMO)

The specialised agency of the United Nations with responsibility for safety and security at sea and the prevention of marine pollution from ships. Established in 1948, IMO first met in 1959 and is the only United Nations agency with its headquarters in London.

Interoperability

The ability of a system or a product to work with other systems or products without special effort. In the European rail sector, this is made possible by the implementation of standards under the EC interoperability directives.

ISO 9001

The international management systems standard concerned with quality management – what an organisation does to ensure customer satisfaction by meeting customer needs and expectations and applicable regulatory requirements, and continually to improve its quality performance.

ISO 14000

A family of international management standards concerned with environmental management – what an organisation does to identify and manage significant environmental effects caused by its activities, products and services, comply with relevant legislation and continually to improve its environmental performance.

ISO 28000

The international standard that specifies the requirements for a security management system, including those aspects critical to an organisation's management of security risk within its supply chain.

L

Liquefied natural gas (LNG)

Cooling natural gas to -136°C , the temperature at which it changes from gas to liquid, creates LNG. When liquefied, the gas is reduced to 1/600th of its original volume making it economic to transport in specially designed LNG ships.

M

Management system

The organisation's business system that focuses on the achievement of results, in relation to performance improvement and compliance with legislation, that consists of defined organisational responsibilities, practices, procedures, processes and resources for developing, implementing and achieving a company's policies.

N

Notified body

A third party appointed by EU member states to perform formal audits of products and quality systems for many of the EU's directives. A notified body is appointed to a particular directive.

O

OHSAS 18001

An international occupational health and safety (OH&S) management system specification that gives requirements to enable an organisation to control its OH&S risks, improve its performance and comply with relevant legislation. It has been developed to be compatible with the ISO 9001 and ISO 14001 standards.

P

Pantograph

A pantograph is a device that collects electric current from overhead lines for electric trains or trams.

PAS 55 – BSI Publicly Available Specification 55 (PAS 55)

A consistent framework for asset management systems. It was developed as a quality benchmark for management practices in asset-intensive industries such as power, oil and gas, and transportation.

R

Risk-based approach

A basis for making decisions by identifying the greatest risks and prioritising efforts to eliminate or control them.

Risk management

This term is used in many business sectors including finance and insurance. Our concern is with risk management solutions in relation to technical, safety and commercial aspects of our clients' assets – ships, oil rigs, industrial plant, railways (including rolling stock and related infrastructure). Risk management supports better decision-making by contributing to a greater understanding and control of risks and their impacts. It is as much about identifying opportunities as it is about avoiding losses.

Rules

See classification above.

S

Safety case

In general terms, a safety case is a formal explanation, regularly updated, of methods adopted to reduce risks to a level that is as low as reasonably practicable.

Sloshing

Sloshing is the motion of a fluid in a partially filled tank which may sometimes be violent. The principal factors that affect the behaviour of the fluid motion are the tank shape, fill height and the ship's motions. As a consequence of this motion high impact forces can occur on the tank boundaries.

U

UKAS (United Kingdom Accreditation Service)

The sole national accreditation body recognised by the UK government to assess, against internationally agreed standards, organisations that provide certification, testing, inspection and calibration services.

W

Wet gas

A natural gas, or a gas produced by a refining process, which contains a large amount of associated liquid hydrocarbons.

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October 2009

Services are provided by members of the Lloyd's Register Group. Lloyd's Register, Lloyd's Register Asia and Lloyd's Register EMEA are exempt charities under the UK Charities Act 1993.

Produced by Lloyd's Register Group Communications and **35** Communications.

Designed by **35** Communications

Printed by Beacon Press



This review is printed on soporset premium offset. The inner pages are virgin wood fibre sourced from Portugal, the cover is virgin wood fibre sourced from Spain and Chile. Pulp is bleached using an Elemental Chlorine Free (ECF) process. Produced at a mill that is certified with the ISO14001 environmental management standard.

**Lloyd's
Register**

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