ENERGY MARKET REVIEW

April 2012

ALL FRACKED UP?

Just how concerned should energy insurers be about hydraulic fracturing?
If windstorm losses are discounted, 2011 is the worst year for energy losses recorded by our database in recent memory.

Source: Willis Energy Loss Database as at April 3 2012 (figures include both insured and uninsured losses)

THE TOP 10 NATURAL CATASTROPHE INSURED LOSSES, 2011

<table>
<thead>
<tr>
<th>Event</th>
<th>Loss (USD billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthquake/tsunami, Japan</td>
<td>35-40</td>
</tr>
<tr>
<td>Earthquake, New Zealand</td>
<td>13</td>
</tr>
<tr>
<td>Floods, Thailand</td>
<td>10</td>
</tr>
<tr>
<td>Storms and Tornadoes, US (April 22-28)</td>
<td>7.3</td>
</tr>
<tr>
<td>Storms and Tornadoes, US (May 20-27)</td>
<td>6.9</td>
</tr>
<tr>
<td>Hurricane Irene, US Eastern seaboard</td>
<td>5.6</td>
</tr>
<tr>
<td>Storms and Tornadoes, US (April 3-5)</td>
<td>2.0</td>
</tr>
<tr>
<td>Floods, Australia</td>
<td>1.9</td>
</tr>
<tr>
<td>Winter storms and blizzards, US</td>
<td>1.4</td>
</tr>
<tr>
<td>Cyclone Yasi, Australia</td>
<td>1.3</td>
</tr>
</tbody>
</table>

2011 has probably been the worst year ever for insured natural catastrophe losses. However it could have been so much worse for the energy market - two downstream losses from the Tohoku earthquake are the only energy losses recorded from these events.

Source: Munich Re
Despite 2011 being the worst ever year recorded for insured losses from natural catastrophes, the energy insurance markets have largely been spared significant losses from these tragic events. Although the downstream market has recorded two major losses arising out of the Tohoku earthquake, another Gulf of Mexico windstorm season free of incident for energy insurers has meant that those who have continued to offer this cover have seen their underwriting results significantly boosted for the third year in a row.

However, our Willis Energy Loss Database indicates that the energy industry has recorded its own worst ever year for non-windstorm related losses. In particular, unusually high losses from an upgrader in the Canadian oil sands and from two Floating Production and Storage Offshore (FPSO) units in the North Sea are causing insurers to begin to reappraise the way in which they assess and underwrite these risks. As this Review went to press we can only hope that, now that the flare on the Elgin platform in the North Sea has been extinguished, this incident will not result in a significant Physical Damage loss. Buyers are therefore increasingly required to differentiate their risk profiles to the market if optimum terms and conditions are to be secured.

Meanwhile, the trend for energy market capacity to increase year on year has continued. Official stated capacity levels are up by 11% to USD 4.986 billion in the upstream market and by 14% to USD 4.304 billion in the downstream market. However, in general terms we would suggest that these capacity increases are mostly the result of the lack of investment opportunities for capital providers elsewhere in the global economy; the key issue is how much of this capacity is willing to compete aggressively for business, which is by no means the case for a significant portion of the market. Notwithstanding this, these capacity increases have, to some extent, countered the impact of the record series of losses in both markets.

As a result, a fragile stability prevails in both the upstream and downstream markets. Generally, modest rating increases are the norm in the upstream market, while the downstream market remains effectively flat. However, as we explained in our EMR Newsletter issued at the end of 2011, there are a number of factors that could disturb these tranquil market conditions, including the impact of the Euro crisis, increased insurer management discipline and an overall hardening of the Property and Casualty sector in general. On the other hand, if none of these factors come into play during 2012, and the situation at the Elgin platform is resolved satisfactorily, it is still possible to foresee the softening dynamic re-assert itself in the second half of the year, as pressure to meet premium income budgets mounts. This is more likely to occur in the downstream market, where the choice of leadership options is more varied.

Despite the media attention, the market is still keen to underwrite shale gas drilling risks. However, again buyers will have to differentiate their risk by proving adherence to best practice if cover is to be provided at an economic price. This is especially the case in the Environmental Impairment Liability arena, which can offer the critical protection for the “gradual” pollution liability risk associated with the hydraulic fracturing (or “fracking”) process.
INTRODUCTION

Welcome to this year’s edition of the Willis Energy Market Review. At a time of unprecedented turmoil in some of the world’s most developed economies and financial markets, it’s reassuring to be able to report that, on the whole, the energy markets around the world continue to offer buyers a stable trading environment, with the portfolio emerging relatively unscathed from last year’s disasters in Japan, New Zealand, Australia and Thailand.

How long will these stable market conditions last? Few need reminding that the energy industry loss record has a reputation for being highly volatile; within this Review, we show how fragile this apparent stability is. The external challenges to our market come from all sides – negligible interest rates, a possible collapse of the Euro, the burden of Solvency II, future US federal legislation on offshore drilling, rising energy prices and inflation levels to name but just a few. The one thing we can be sure of is this: market dynamics in the energy sector can change within a matter of weeks, if not days. Indeed, as we go to press we continue to monitor the situation on the Elgin platform with interest.

In the meantime, the energy insurance industry is facing some challenges of its own. Shale gas drilling, and the hydraulic fracturing process with which this industry is intrinsically linked, has certainly attracted the attention of the behemoth that is today’s global media; what is encouraging is the willingness of the insurance market to continue to provide cover to those involved that can demonstrate that they apply best industry practice. In this edition of the Energy Market Review, as part of our leading feature we are pleased to offer client, loss adjuster and underwriter perspectives on this issue, as well as outline how best practice has evolved recently in this fast moving sector.

The one constant theme that reoccurs time and again in this year’s Review is the issue of differentiated risk profiles. Insurers in all sectors are keen to want to work in partnership with key clients and their brokers; it is therefore vital that buyers position themselves to take advantage of the market appetite for client programmes where best practice is properly applied.

We also highlight some serious underwriting losses sustained by both the upstream and downstream markets during 2011. The energy industry may have generally dodged last year’s natural catastrophes but, if windstorm losses are discounted, our Willis Energy Loss database shows that 2011 was actually the worst year ever for losses in our sector. In particular, losses from the Canadian oil sands and especially the North Sea have caused some scratching of heads in the underwriting community.

Can the insurance industry respond to these losses by providing the cover buyers need? In the Energy Market Review, we regularly call for the development of new, improved risk transfer products; it therefore seems rather ironic at a time when some fresh market thinking is clearly needed, that the Consultation Draft of WELCAR 2012 (the revised market Offshore Construction policy wording) has not been received with universal acclaim by our clients.

AJC Rivers
Chief Executive Officer
Willis Global Energy
What is a Shale?
Shale is a fine-grained sedimentary rock composed of mud that is a mix of flakes of clay minerals and tiny fragments of other minerals, especially quartz and calcite. Typically, all shales have very low porosity and very low permeability.
INTRODUCTION – INTO THE MEDIA SPOTLIGHT!

In an era where an incident involving a dog, its embarrassed owner and a herd of deer on the rampage in Richmond Park, London can come to the notice of millions of people around the world in a matter of days via the medium of YouTube, it’s perhaps no surprise that the energy industry continues to come under the scrutiny of today’s multidimensional news media. Shale gas drilling is now a subject that has attracted the attention of millions whose contact with the oil and gas industry would normally be restricted to the price of petrol/gasoline at the pumps; now, with Hollywood itself recognising the film Gasland (which sought to discredit the shale gas industry) by nominating it for an Oscar for Best Documentary Feature, the interest of ecologists, environmentalists, “Green” political parties, eco-protestors and climate change experts – as well as a significant proportion of the general public, understandably concerned about what they are being told – has now been well and truly aroused by the process of hydraulic fracturing (or “fracking”).
However, regardless of the number of websites now devoted to opposing those who “frack”, one thing is crystal clear – this is an industry that is here to stay, with risks that will need to be managed and/or insured in the usual manner. Indeed, only recently President Obama called the US the “Saudi Arabia of natural gas”, with some predicting that US natural gas production is going to nearly triple by 2035.

So how should the energy insurance market separate fact from fiction when it comes to hydraulic fracking? As usual for our special feature of the Energy Market Review, we have sought the help of a panel of experts to help us evaluate the reality of the risks posed by fracking operations. Those experts are:

— Dominick Hoare, Joint Active Underwriter, Watkins Syndicate
— Dan Mason, Senior Vice President, MatthewsDaniel
— Mark Miller, Chief Executive Officer, Cuadrilla Resources
— Anthony Wagar, Senior Vice President, Willis Environmental Practice, New York
— Matt Yeldham, Senior Liability Underwriter, Aegis

Some of their observations are quoted directly on the following pages. We would like to thank them for their time and their willingness to give us the benefit of their expertise. However, we would point out that, apart from when quoted directly, the views expressed in this article represent Willis’ own conclusions as a result of our research and should be in no way be specifically attributed to any individual member of the panel.

**WHY SHALE GAS DRILLING MATTERS TO THE US**

The US has vast quantities of shale gas reserves, as indicated on the chart below.

Natural gas is taking an increasingly significant role in terms of overall US electricity generation


It’s no understatement to suggest that shale gas drilling has revolutionised the US natural gas industry. In 2001, 1% of natural gas production came from shale gas, compared to 20% today; US shale gas production grew 17% per year from 2000 to 2006, and then simply took off. From 2006 to 2010, economic production from shale was made possible by advances in horizontal drilling and hydraulic fracturing techniques, with production increasing by a staggering average of 48% per year, according to figures supplied by the US Energy Information Administration (EIA) in their Annual Energy Outlook 2012. Analysts now indicate that shale gas production may increase threefold from 2009 to 2035. It’s astonishing to think that only five years ago natural gas production in the US was considered to be in decline!

Shale gas is taking an increasingly prominent proportion of overall US gas output

WHY SHALE GAS DRILLING MATTERS GLOBALLY

The chart above shows how the shale gas industry has developed from its US origins into a truly global phenomenon. The areas of the world shaded in white formed part of an assessment carried out by the EIA in which it identified areas of each country where shale gas deposits exist in meaningful quantities. Although a significant part of the world was excluded from the analysis, it shows plentiful reserves lie in Europe, Latin America, China, Australia and South Africa as well as North America. In these regions, there is now a strong push towards shale gas exploration and production; for example, the shale industry in Poland could transform the European natural gas industry, allowing perhaps a degree of self-sufficiency which would have been difficult to imagine only a few years ago. Meanwhile we understand that some analysts think that China may have more shale gas reserves than even the United States. Even in the UK, it is rumoured that there might be more gas underneath Lancashire than in the whole of Iraq.

No wonder that the growth of the shale gas industry and the increased output has led to a marked dislocation of global oil and gas prices. In November 2011, the price of a barrel of West Texas Intermediate was approximately 10% more expensive than at the same time in 2010, whereas the price of natural gas had decreased 1.3% during the same period. Indeed, US gas prices are now at their lowest for 10 years.

WHAT’S INVOLVED IN THE FRACKING PROCESS?

This chart shows a cutaway of typical shale gas operation. It can be seen that gas-rich shale formations are usually located at deeper depths than conventional non-associated gas deposits, which usually are located just under a “seal” of impermeable rock in a “dome”, capped at the
top end of a layer of sandstone or similar formation. In contrast to a conventional reservoir, shale gas deposits are not conveniently located in one reservoir but are trapped within the shale formation at irregular intervals. Because they are trapped inside a formation of very low porosity, the well will not flow unless the formation is stimulated artificially. The formation therefore needs to be hydraulically “fracked” to allow the gas trapped within the formation to be released into the well. It can also be seen that in many instances a horizontal drilling technique will allow multiple fracking along the formation and thereby maximise gas extraction.

The technique of hydraulic fracturing is used to increase the rate at which natural gas can be produced from subterranean natural reservoirs. Hydraulic fracturing enables the production of natural gas and oil from rock formations deep below the earth’s surface. At such depth, there may not be sufficient porosity, permeability or reservoir pressure to allow natural gas and oil to flow from the rock into the wellbore at economic rates. Fractures provide a conductive path connecting a larger area of the reservoir to the well, thereby increasing the area from which natural gas can be recovered from the targeted formation. The process can be summarised as follows:

- After the well is drilled and casing is fitted, steel pipes are inserted and cemented into place. Additional steel casing is fitted below the water level (1) unlike local private and municipal water wells (3)
- A perforating gun is lowered into the well
- Controlled electric charges pierce the pipe and cement, blasting into the shale where the gas is trapped (2)
- The treating fluid (mainly gelled water) which is injected into the well at high pressure creates and widens the shale fractures, then these created fractures are held open by proppant (usually in the form of sand) which is blended with the treating fluid and introduced to the fractures that are created during the fracturing process
- Natural pressures then force the liquids back through the pipe to the surface
- As the fluid recedes, the sand grains hold open the fractures and natural gas flows up the well
FRACKING – THE CASE FOR THE PROSECUTION

An alternative source of relatively cheap energy supply should, in theory, be universally welcomed by a world facing exponentially increased demand for energy at a time when alternatives to traditional hydrocarbons are being deemed by some to be either too dangerous (nuclear) or too expensive (renewable energy).

It’s a shame, perhaps, that it’s not that simple. As the shale gas industry has migrated further and further into more inhabited and built-up areas, the environmental risks associated with shale gas drilling have been vigorously highlighted by a variety of groups concerned by the long-term consequences of shale gas drilling, in particular the hydraulic fracting process.

So what are the potential hazards associated with fracking? In very general terms, they can be classified into three distinct groups.

CONTAMINATION/DISRUPTION OF THE DRILL SITE AND THE SURROUNDING AREA

One of the major concerns of those who are wary of the shale gas industry is the potential for contamination of the environment surrounding the drilling site. The first of these is the impact on the environment of the sheer volume of water that is required during the fracking process. As by far the largest ingredient of the fracture fluid (see chart above), millions of gallons of water are required at each drill site, which could cause local water tables to fall (although this risk is minimal in the UK and several other regions).

Furthermore, protestors complain at the disruption caused by the comings and goings of lorries carrying the water to the drill site.

However, of more concern to the anti-fracking lobby are the chemicals that are often used as additives to the fracking fluid, some of which are shown in the chart above. Environmentalists paint an alarming picture of millions of gallons of water being mixed with what are described as “toxic” chemicals which are then sent down the well at high pressure. When the treatment fluid returns to the surface, it is alleged that there is a serious risk of pollution, either from a blowout or from any storage pits in which the well fluid is stored.

Not only can the soil around the drill site be contaminated, but heavy rain and/or floods can cause any storage pits to overflow, while in some instances it is alleged that well fluids are sent to sewage treatment plants - which are not equipped to clean it properly – before being released into rivers. The risks of handling and storage of fracking additives at the drill site location should also be taken into account. Finally, it is alleged that “slow release” of the drilling fluid from any storage pond to soils and shallow groundwater could possibly impact shallow aquifers.
The shale-gas hydraulic fracture treatments are being conducted to formations very deep into the ground – as long as you have good isolation of your casing strings with good cement jobs and you’ve established that you have good casing and cement quality between casing and formations down to this shale formation, you should have absolutely no problems performing properly designed fracture treatments.

Dan Mason, MatthewsDaniel

The thing about the regional seal is that gas could never permeate this because of its composition so we make sure we make from there on up a bullet proof well.

Mark Miller, Cuadrilla
CONTAMINATION OF UNDERGROUND AQUIFERS

As much as environmentalists like to emphasize the potential for pollution on the surface, it is the potential pollution of underground water supplies that tend to attract the major headlines, providing the inspiration for films such as “Gasland” and alarming those who fear the arrival of methane gas through their taps and showerheads.

This chart, which has been simplified for clarity’s sake, shows why it is believed that “toxic” chemical-ridden fracking fluid can escape from the well into an aquifer providing drinking water for the local population. We have outlined a typical geology where shale gas deposits can be recovered – the gas is buried within the shale formation some 8,000 feet or so beneath the surface. On the left we have represented a line showing a water well drilled into the aquifer; to its right we have depicted a well that is using hydraulic fracking to bring the gas to the surface.

Under this scenario, while production casing and surface casing have been installed in the well hole, a rupture of the production casing can still allow the treatment fluid and methane gas to escape into the aquifer. This is because the surface casing (and cement) only extends down to just below the aquifer. A failure of the production casing might well allow a mixture of fracking fluid and any gasses present in the formation below the aquifer to contaminate it, thereby causing havoc in the local community.

Furthermore environmentalists suggest that there also remains the possibility of cracks in the shale formation caused by fracking operations to connect with numerous natural faults in the local geology to allow gas and fracking fluid to make its way up the various rock formations and find their way to the aquifer over a prolonged period of time.
In summary, the threats to the aquifer can be summarised as being both:

— “Sudden and Accidental” – seepage from the well into the aquifer is as a result of a blowout, or an underground blowout, or a casing failure caused by a specific fracking of the shale formation
— “Gradual” – seepage from the well into the aquifer is as a result of casing erosion over time, or as a result of fracking fluid and gas flowing into natural fault lines in the local geology

**Earthquake Damage from Fracking Operations**

Finally, and perhaps most spectacularly, it is claimed that fracking operations directly lead to earthquakes that can lead to major changes in the geology of the region in question. If the link between fracking operations and earthquakes can be proven, then it is perhaps understandable how the average layman might be concerned about the potential threat to property, people and the landscape that this industry might pose. Several states in the US have decided to impose a moratorium on hydraulic fracking, while in Europe, France has also suspended all shale gas drilling operations while the environmental implications are studied and considered.

But do these moratoria and environmental concerns mean that shale gas drilling is inherently unsafe? Does it mean that a full scale environmental catastrophe - along the lines of an Exxon Valdez or a Macondo – is only a matter of time? And, more importantly for the readers of this Review, does it mean that the risks associated with this activity are still insurable?

As ever with a subject that has attracted a great deal of attention from those (especially some sections of the media) who are not experts in the matter in hand, there are several popular misconceptions about this industry that have recently arisen.

**“Unconventional” Drilling Methodologies?**

“When people start thinking about the word ‘unconventional’ they start to think that all these technologies are new and therefore they are untried, unproven and potentially unsafe. And so we spend an awful lot of time showing people that a lot of the processes that we are using today are processes that have been around for decades.”

*Mark Miller, Cuadrilla*

One of the major misconceptions that many people have with regard to shale gas drilling is that what has been going on over the last few years represents “unconventional” drilling and fracturing techniques. In fact, the industry itself is well over 40 years old; while the industry does indeed refer to “unconventional reservoirs” (i.e. where gas is extracted from where it was first formed, rather from where it has migrated to at the top of a sandstone dome) there is nothing unconventional about either the fracking process itself or the horizontal drilling techniques with which the industry is associated. The difficulty is not therefore that drillers are doing something new and dangerous but that the activity has a higher profile with a more energised environmental lobby.

“Hydraulic fracturing has been around since the 1950s – what is new is the multi-stage fracking, the duration and the number of wells involved”

*Dan Mason, MatthewsDaniel*
A COCKTAIL OF CHEMICALS?

“The 0.075% of our drilling fluid made up of Polyacrylamide can potentially reduce the horsepower we need by 30%, which allows us to work at a safer pressure.”
Mark Miller, Cuadrilla

It seems clear from a brief perusal of the numerous websites dedicated to the anti-fracking campaign that a majority of the industry’s opponents seize on the idea that the hydraulic fracture treatment fluid consists of a number of different chemicals, each with enough toxicity to poison anyone or anything that comes into proximity with it. The reality appears to be something rather different. In the table below, we list a number of chemicals commonly found in the fracking fluid commonly used in the US. Usually, a maximum of five of these chemicals are used at any one time to make up a maximum of 0.5% of the treatment fluid. As can be seen, most of these chemicals are routinely used in all walks of modern industrialised life. Although some are clearly not meant to be actually drunk, in the diluted form in which they appear in the treatment fluid most of those involved in the industry would hardly describe them as “toxic” or indeed “radioactive”.

“One of the gigantic misconceptions that people get from looking on the internet and films like Gaslands is that they are led to believe there’s a firm out there fooling around with a cocktail of chemicals. When you go along to one of these presentations, you have the list scrolling along the screen of all these lengthy chemical names and how they are all used. But no one uses all 560 chemicals... in our case over here we’ve been able to get by with just a single chemical, Polyacrylamide... we were at a meeting the other night when we heard the opposition say there are 75,000 gallons of chemical cocktail going into the water that we mix. It’s just not true.”
Mark Miller, Cuadrilla

In the UK the regulatory body the Environment Agency have approved three chemicals so far for use, though just one has been used to date.

<table>
<thead>
<tr>
<th>COMPOUND</th>
<th>PURPOSE</th>
<th>COMMON APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acids</td>
<td>Helps dissolve minerals and initiate fissure in rock (pre-fracture)</td>
<td>Swimming pool cleaner</td>
</tr>
<tr>
<td>Sodium Chloride</td>
<td>Allows a delayed breakdown of the gel polymer chains</td>
<td>Table salt</td>
</tr>
<tr>
<td>Polyacrylamide</td>
<td>Minimises the friction between fluid and pipe</td>
<td>Water treatment, soil conditioner, cosmetics</td>
</tr>
<tr>
<td>Ethylene Glycol</td>
<td>Prevents scale deposits in the pipe</td>
<td>Automotive anti-freeze, de-icing agent, household cleaners</td>
</tr>
<tr>
<td>Borate salts</td>
<td>Maintains fluid viscosity as temperature increases</td>
<td>Laundry detergent, hand soap, cosmetics</td>
</tr>
<tr>
<td>Sodium/Potassium Carbonate</td>
<td>Maintains effectiveness of other components such as crosslinkers</td>
<td>Washing soda, detergent, soap, water softener, glass, ceramics</td>
</tr>
<tr>
<td>Glutaraldehyde</td>
<td>Eliminates bacteria in the water</td>
<td>Disinfectant, sterilization of medical and dental equipment</td>
</tr>
<tr>
<td>Guar Gum</td>
<td>Thickens the water to suspend the sand</td>
<td>Thickener in cosmetics, baked goods, ice cream, toothpaste, sauces</td>
</tr>
<tr>
<td>Citric Acid</td>
<td>Prevents precipitation of metal oxides</td>
<td>Food additive; food and beverages; lemon juice</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>Used to increase the viscosity of the fracture fluid</td>
<td>Glass cleaner, antiperspirant, hair colouring</td>
</tr>
</tbody>
</table>

Source: US Department of Energy

“Hydrochloric acid is the main acid that’s used in the fracking process - you would be quite happy to put that in your swimming pool.”
Dan Mason, MatthewsDaniel
A “MACONDO IN THE SHALE”? 
Clearly, one event that could cause significant loss or damage would be a major blowout of the well, with seepage and pollution damage to the nearby environment. Fresh from the images of 2010’s Macondo well blowout, many might imagine that a blowout involving the fluid used for fracking operations might lead to widespread devastation of the surrounding neighbourhood.

“We haven’t come across a blowout in our organisation but where they have happened in our industry they are extremely rare. Perhaps we are talking about one in every 50,000 jobs.”
Mark Miller, Cuadrilla

However, a “Macondo in the shale” is a highly unlikely scenario. One of the immediate differences between, for example, shale gas drilling in Lancashire compared to the Macondo well (apart from the obvious ones of offshore and deep versus onshore and shallow) is that the formations encountered in drilling in the Gulf of Mexico are much more permeable. If this is combined with a much higher pressure, as soon as the well is drilled there is obviously the potential for an uncontrolled flow. However, because of the low permeability of the shale, it is difficult for the gas to flow at all without the fracking treatment, and so a blowout (at least while the well is being drilled) is much less likely.

Even in the event of a blowout, the likelihood of widespread pollution affecting the surrounding area is of course much less given the much lower pressures and the fact that virtually all shale gas wells are drilled onshore. The likelihood of any pollution resulting from any shale gas blowout will therefore be considerably less than might be envisaged by a member of the public with Macondo fresh in the memory. In any event, this would not be pollution by oil, but by the fracture treatment fluid with a maximum chemical content of just 0.5% – hardly the same scenario at all.

A DRINKING WATER DISASTER?
To be held responsible for polluting the drinking water supply in the legal and social environment post Macondo is surely the stuff of nightmares for any company connected with the oil and gas industry. So why are drilling contractors who practice hydraulic fracking so sure that their activities are so unlikely to lead to such contamination?

To answer this question, we must return to our previous drilling schematic, but this time with a significant alteration.

There has been a lot of hot air recently about the dangers of shale gas drilling, but our inquiry found no evidence to support the main concern – that UK water supplies would be put at risk. There appears to be nothing inherently dangerous about the process of ‘fracking’ itself and as long as the integrity of the well is maintained shale gas extraction should be safe.

Tim Yeo MP, Chairman, UK Energy and Climate Change Committee (www.parliament.uk)
There is a confusion out there – people think that those who drill water wells through shallow coal-bearing formations and get methane in their drinking water systems are the same people who drill for shale gas. The two are extremely far apart – pretty much night and day.

Dan Mason, MatthewsDaniel
In our first chart we showed how a typical well drilled simply with surface and production casing could indeed allow drilling fluid and gas to seep into the water supply. We have now added another well, this time drilled on the basis of current best practice in the industry. It can be immediately seen that a further casing string has been inserted (the intermediate casing) all the way down past the depth of the aquifer and into the “regional seal”, i.e. the layer of impermeable rock beneath which lie the vast majority of the gas deposits. We understand that best industry practices to cement the gap between the production casing and the intermediate casing all the way back to the surface. This ensures that, if one of the casing strings fail, hydrocarbons and fracking fluid would still not be able to get anywhere near the aquifer. Any failure of the production casing above the regional seal is covered by the installation of the intermediate casing; any failure below the regional seal means that any treatment fluid and shale gas flowing from the well would have to somehow find its way through the impermeable rock of the regional seal, with a further 2,000 feet or so and sandstone or similar rock between the fluids and gas and the aquifer.

In essence, this means that even if the production casing is indeed ruptured by the fracking operations, there is nowhere for the gas or the fluids to go – at least for them to do any damage at all to the environment.

**A GRADUAL CONTAMINATION OF THE SOIL?**

The risk of soil contamination from the opening up of fault planes due to fracking fluid being pumped down a disposal well has been well-documented in the US, although using disposal wells is not common practice elsewhere. Soil contamination can also occur as a result of seepage or spillage of drilling fluid at the drilling site, as we have explained earlier in this article.

“*Our plastic sheet is buried under the gravel. Any chemical, any flow-back fluid, anything coming out of the well, if it hits that, it’s like a great big bathtub. It contains it, and it goes into ditches and into an underground tank so if there’s an oil product or a chemical product, it simply can’t leave the well site.*”

*Mark Miller, Cuadrilla*

However, if industry best practice is applied, it appears that the risk of such contamination can be significantly reduced. The most conscientious drilling contractors now insist on underlaying the gravel (or similar soil) that is located at the top of the well site with a very thick impermeable plastic layer that typically will have a “working life” of over 100 years. This plastic “sheet” typically slopes into drainage ditches at the well site, and is designed to accommodate and contain any spill from the well itself, a fuel tanker or from the fluid storage tanks on site.

The key difference now compared to historic practice is that this plastic sheet is not removed when fracking operations are completed, but remains in place for the duration of the life of the well. In this way, the industry maintains that all oil or chemical products that are present at the site are efficiently contained. It stands to reason that if such a plastic coating was also used when drilling disposal wells (assuming a professional casing and cementing job) this would also prevent soil contamination from these wells.

A second aspect of modern best practice relates to the storage of the water, drilling fluid and chemicals at the well site and its transportation to an officially approved disposal (or landfill) site. As we have seen, it has been common practice in the US to use earthen pits, which house drill cuttings, drilling fluid and the flowback from the fracking job itself. There have even been reports that flowback fluid has found its way into nearby rivers and streams.

However, it appears that best practice (adopted by Cuadrilla Resources and other contractors) is now to use steel tanks for such a purpose. These steel tanks are then emptied regularly.

Plastic sheeting such as this one at a well in Lancashire, UK can do much to reduce the risk of contamination at the well site (Photo courtesy Cuadrilla Resources)
To contaminate drinking water formations, you would have to have a malfunction of the surface casing, the intermediate casing and/or the production casing. That’s a fairly rare scenario.

Dan Mason, MatthewsDaniel

and the contents taken away to landfill or waste treatment site; moreover, before the contents are loaded onto the truck they are subject to vigorous testing for radiation and chemicals to ensure that they are compliant with what is permitted at the disposal site. This best practice is applied to all the elements involved in the fracking process – the water, the chemicals, the fluid, the proppant. In this way drilling contractors argue that the risk of soil contamination from fracking operations is now much limited than in the past.

“If you have installed a decent perimeter trench system as well as the plastic liner sheeting, as well as some vacuum trucks on stand-by, you shouldn’t really have liquid pollution that leaves the well location.”

Dan Mason, MatthewsDaniel

A MAJOR EARTHQUAKE?

Given the sheer number of catastrophic earthquakes that have occurred during the course of the last few years around the world, it is little wonder that the mere mention of the word can cause consternation in the minds of the general public. But is it really fair to suggest that the tremors that have been proved to have been caused by hydraulic fracking operations can be in any way compared to these events? In a recent case involving an incident in Lancashire, UK, where an enquiry conducted by the British Geological Survey established a connection between fracking activities and an earth tremor, it was found that the larger tremor produced amounted to no more than a 2.3 on the Richter Scale, and that the local geology made the occurrence a seismic event above 3.0 on the Richter scale extremely unlikely.

Are tremors at these levels really sufficient to threaten people and property on the surface? The chart below suggests not; for comparison purposes, we understand that the tremors produced by traffic on a major motorway/freeway in an industrialised country can measure as much as 3 on the Richter scale.
Less than 2 | Micro | Micro Earthquakes, not felt | Continual
2 – 2.9 | Minor | Generally not felt, but recorded | 1,300,000,000 per year (est.)
3 – 3.9 | Light | Often felt, but rarely causes damage | 1,300,000 per year (est.)
4.0 – 4.9 | Moderate | Noticeable shaking of indoor items, rattling noises. Significant damage unlikely. | 13,000 per year (est.)
5.0 – 5.9 | Strong | Can cause major damage to poorly constructed buildings over small regions. At most slight damage to well-designed buildings. | 1,319 per year
6.0 – 6.9 | Major | Can cause serious damage over larger areas | 15 per year
7.0 – 7.9 | Great | Can cause serious damage in areas several thousand kilometres across | 1 per year
8.0 – 8.9 | Devastating | Devastating in areas several thousand kilometres across | 1 per 10 years (est)
9.0 – 9.9 | Massive | Never recorded, widespread devastation across very large areas | Extremely rare, may not be possible

Source: British Geological Survey

“In its most general sense, the word earthquake is used to describe any seismic event — whether natural or caused by humans — that generates seismic waves. During any fracking event, you are bound to have some measurable seismic waves, but this doesn’t mean that there will be any meaningful damage.”

Dan Mason, MatthewsDaniel

Furthermore, tremors on the scale experienced in Lancashire last year are by no means uncommon in the UK. The chart below shows the actual pattern of “earthquake” activity in the UK during the course of the last few years. It can immediately be seen that the largest “earthquake” was a 3.5 Richter scale tremor under the English Channel, and there is nothing to suggest that there was any damage to people or property from any of these events.

Recent earthquake activity in the UK

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>LAT</th>
<th>LON</th>
<th>DEPTH</th>
<th>MAG</th>
<th>INT</th>
<th>REGION</th>
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<tr>
<td>2012/02/09</td>
<td>20:59:35.6</td>
<td>59.397</td>
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<td>2012/02/05</td>
<td>15:15:03.1</td>
<td>55.801</td>
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<td>4</td>
<td>1.6</td>
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<tr>
<td>2012/01/26</td>
<td>01:04:31.4</td>
<td>55.157</td>
<td>-7.619</td>
<td>3</td>
<td>2.2</td>
<td>Buncrana, Ireland, Felt Buncrana</td>
<td></td>
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<tr>
<td>2012/01/24</td>
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<td>49.807</td>
<td>-0.268</td>
<td>5</td>
<td>2.5</td>
<td>English Channel, 110km S of Worthing</td>
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<tr>
<td>2012/01/19</td>
<td>18:12:39.1</td>
<td>53.053</td>
<td>-2.130</td>
<td>2</td>
<td>1.7</td>
<td>Stoke-On-Trent, Staffs</td>
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<tr>
<td>2012/01/18</td>
<td>18:33:29.4</td>
<td>49.628</td>
<td>-4.919</td>
<td>10</td>
<td>3.5</td>
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<td>2012/01/16</td>
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<td>2012/01/13</td>
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<td>53.045</td>
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<td>7</td>
<td>2.1</td>
<td>Irish Sea, 50km SSW of Whitehaven</td>
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</tbody>
</table>

Source: British Geological Survey
Although the risk of any damage from these tremors is small, what can drilling contractors do to minimise the risk still further? It seems clear that drillers should use the existing stresses in the geological formation to assist with the fracking process, as clearly if the fracking process is being conducted in a contrary direction to the existing stresses in the earth’s formation then the chance of producing a tremor is significantly increased. Modern best practice is therefore to identify where the formation is stressed and use it to the driller’s advantage. Drillers are now also installing real time seismic monitoring right in each individual well, enabling them to determine every seismic occurrence well in time to ensure that the fracking activity is shut down well before any tremor is caused.

“This is another popular misconception – when people turn on the TV the only earthquakes they see are the really big ones, those involve millions of times more energy release than anything that we are doing. We say: how far is it between a 2.3 and a 7.5, which knocks down buildings? It’s literally millions and millions of times different. That’s why we know there is no expectation of us producing a six, a five or even a four.”

Mark Miller, Cuadrilla
USEFUL QUESTIONS TO CONSIDER WHEN DEALING WITH SHALE GAS

WELLBORE INTEGRITY
— How far below groundwater (aquifer) is the surface casing set, what is the shoe (rock lithology), has cement been circulated to surface and has the wellbore been pressured tested (FIT or Formation Integrity Test) before drilling out?
— Based on the pressure gradient, lithology and drilling conditions is there the need to set intermediate casing before penetrating the target/pay zone? Has a Cement Bond Log been run (with and without pressure) prior to drilling out?
— Production Casing – once at total depth and production casing set, has cement been tied back (or circulated to surface) to the intermediate (or surface casing) and a Cement Bond Log been run (with and without pressure), and has a FIT been conducted?

PRE-DRILL WELL DATA
— Has the wellbore design taken into consideration pre-existing drilling data to establish a pressure gradient (under-, normal or over-pressured), natural artesian water zones/flows, caving intervals, etc?
— Has the wellbore design been approved by an independent examiner?
— Have surface waters surrounding the well pad been tested for chemicals and methane gas pre-spud to establish a natural baseline?

PRE-HYDRAULIC FRACTURE STIMULATION DATA
— Is there adequate subsurface/geophysical data to determine the level of structural deformation to minimize the risk of triggering a seismic event on a pre-existing critically stressed fault/fault-zone?
— Has a (traffic light) system been put in place to detect minimally -1.0 to 0 magnitude seismic events?
— Will a microseismic mapping system be utilized to determine hydraulic fracture height growth; i.e., propagation of the fracture to intersect (contaminate) ground water?

DRILLING
— Does the drilling contractor have a general and site-specific HSE plans/manual in place?
— Does the drilling contractor have a scheduled Blowout Preventer testing schedule and is it adhered to?
— Do the cement slurries meet or exceed recommended slurry design standards for thickening time, setting time, compressive strength, free water, and fluid loss?
— Is there an active gas monitoring system with alarm/communication to the drill floor?
— Is the disposal of drilling fluids and cuttings transported to a EA approved/certified tipping site? Is post-frac flow back water tested as it comes to surface (both by the Environment Agency and the operator)?
— Is the drill site underlain by an impermeable membrane and is there a spill response plan?
— Is there 24/365 site security?

POST-FRAC FLOW BACK
— Will flow back fluids be contained in explosion proof tankage?
— Will gas flows be vented or flared using a flare stack at safe distances from the wellbore?
THE VIEW FROM THE MARKET

So far in this feature we have focused on the risks inherent in the fracking process, and the industry’s own take as to the reality of these risks. But what is the attitude of the insurance market? Is the industry able to obtain the protection that it needs for it to continue to flourish, or will the market back away from these operations?

Three key areas of the insurance market are particularly impacted by hydraulic fracking operations:

— **Operator’s Extra Expense (OEE)**, which indemnifies the Assured’s costs of regaining control of a well following a blowout, including the re-drilling of the well and the cost of clean up of any resulting seepage and pollution.

— **Comprehensive General Liability (CGL) and Excess Umbrella Liability Cover (Umbrella)**, which in essence will cover the Assured for damage to third party property and bodily injury arising out of the Assured’s operations.

— **Environmental Impairment Liability (EIL)**, which covers the Assured from legal liabilities arising out of the pollution conditions arising out of the Assured’s operations or general pollution conditions at the site itself.

OEE

The good news for those involved in the shale gas industry is that the upstream market remains keen to provide OEE cover for wells involving hydraulic fracking. In general terms, leading insurers in this market have now augmented their detailed knowledge of oil and gas drilling operations with a thorough understanding of the hydraulic fracking process.

From an OEE perspective however, there can be no doubt that fracking presents a very different risk to conventional oil and gas drilling. Traditionally, upstream energy underwriters have always focused on the risks associated with the pressures coming out of the well that can lead to a blowout, and the insurance product is geared to deal with the risks associated with “an unintended flow from the well(s) of drilling fluid, oil, gas or water above the surface of the ground or water bottom.” In contrast, the fracking process involves pressures being applied down the well bore from the surface, thereby effectively reversing the risk. It is therefore the completion phase of the well rather than the drilling phase that attracts the most attention from the market.

“Let’s say there is a 20 stage frack – by the time you have got to the 18th frack, the sheer wear and tear on that well can be quite considerable.”

Dominick Hoare, Watkins Syndicate

Most of the shale gas blowouts that have occurred in recent years have therefore been generated by fracking rather than drilling operations. A typical loss involves equipment failure that may or may not be compounded by human error, while many losses involve burst casing or other casing failures, or surface pressure control systems failing. The issue that most concerns the market is therefore whether the contractor’s equipment can tolerate the pressures that will be generated by the fracking process.

However, the market is also concerned by how often the drilling contractor may be putting some additional liabilities onto the well operator (who is generally the Assured under an OEE policy). This may especially so with regard to drilling equipment at the well site during fracking, where a considerable exposure in terms of value may accumulate; indeed, this can be as high as USD 40-50 million in some instances. Coverage for this equipment under contract now often falls under the Care, Custody and Control (CCC) endorsement of the EED 8/86 policy form, which traditionally provides a sub-limit between USD 1-5 million. Sometimes the contract between the operator of the well and the drilling contractor is such that the operator is also responsible (with OEE insurers assuming liability under the CCC form) for the transportation of fracking trucks from site A to site B. Because of their very size, these trucks are prone to accidents whereby if their wheels sink into a soft roadside verge, they tend to sink in straightaway and flip over.

“Let’s say there is a 20 stage frack – by the time you have got to the 18th frack, the sheer wear and tear on that well can be quite considerable.”

Dominick Hoare, Watkins Syndicate

At Watkins we write a lot of US Shale E&P risk; with a proper assessment it’s a good risk to assume.

Dominick Hoare, Watkins Syndicate
Traditional CCC limits are therefore often totally inadequate to cover the potential exposure to the Assured where fracking is involved. Although insurers are willing to accommodate these increased values at risk for a reasonable premium, they are now insisting on being provided with full details of the equipment that will be stationed at the well site.

The other main concern for OEE insurers concerns their potential redrilling exposure. Most shale gas wells are drilled on a pad, enabling the contractor to drill as many as six wells from the same site, which in turn enables them to all be completed at the same time. Therefore if there is a blowout of one well, there is a very good chance that all six wells may need to be re-drilled. Insurers are therefore facing an accumulation of risk which may not have been envisaged when assessing and rating the risk in question.

Another related concern is the provision of cover for casing failure. Under the EED 8/86, if there is a casing failure which then leads to a blowout, it could be argued that insurers are only providing coverage for any loss at the point of blowout and subsequently, so coverage may not be provided for the actual casing damage prior to the blowout. The market therefore introduced some 18 months ago a Casing Failure Endorsement that clarifies that issue; this Endorsement ensures that if a casing failure is sustained and is recoverable, insurers will cover the original failure, which under the EED 8/86 form would not be covered without the endorsement.

Seepage and Pollution cover continues to be offered by the market for shale gas wells, although on a limited basis. Under Section C of the Energy Exploration and Development policy form (EED 8/86), coverage is provided for the cost of cleaning up seepage and pollution above the surface of the ground occasioned by a blowout of the well. This cover continues to be offered, but it should be noted that the EED 8/86 excludes pollution following an underground blowout – an exclusion which the market looks certain to continue to retain, particularly where fracking operations are involved.
So given the enhanced risk profile involved, how does the market go about rating shale gas wells? Rather than simply relying on a per foot drilled or an amount based on the final cost of drilling the well, the market's rating of shale gas wells therefore involves several different factors. These include:

- Depth of well
- AFE (Authorization For Expenditure, i.e. cost of drilling the well)
- Experience of the drilling contractor
- Number of fracks/fracking phases that will be carried out
- Whether burst pressure tests have been carried out on the casing – are the pressures involved going to exceed (for example) 80% of the design burst of the casing?
- Where the casing has been supplied from
- Strength/quality/testing of the BOP

In addition to these factors, insurers will also look quite closely at the formation in question. Each shale reservoir has different characteristics – drilling and fracking in some involve high pressures, others lower pressures. In the more established the shale “plays”, operators tend to understand the risks and the more experience they have in that particular shale in terms of their fracking skills. Insurers tend to still be wary of newer operators coming into the existing plays that don’t have the experience (in regulatory regimes where this move is still possible).

In summary, the OEE market is certainly open for business when it comes to shale gas drilling – but the coverage provided and the premium charged will depend very much on the nature and extent of the underwriting information presented to them.

If you’ve been in the Marcellus shale for the last few years and you’ve completed 300 wells, well obviously you are going to have a much better understanding of the formations than a relative newcomer to the industry drilling 4 or 5 wells. You are not going to have access to the right information, you won’t have the right experience, the correct data.”

Dominick Hoare, Watkins Syndicate

**CGL/UMBRELLA**

For a CGL/Umbrella policy to respond to a pollution incident arising out of fracking operations, a major incident is likely to have had to happen. This is because in broad terms the coverage provided by this market is third party legal liability for bodily injury and/or property damage arising out of an insured’s operations, rather than coverage in terms of long term unidentified latent issues such as pollution over a long period of time. In essence, cover may be provided for liability arising from an industrial accident such as an explosion at the well site in respect of neighbouring and adjacent property damage, injury to passers by and, under certain circumstances, injury to employees and contractors.
However, if a driller is increasingly conducting fracking operations, CGL/Umbrella insurers will need to be informed as this would clearly present a risk profile which should be clarified to the market. Moreover, if fracking operations are now to be conducted in areas of greater population density, then there is also an increased risk which insurers will need to be informed about.

In terms of the underwriting submission, CGL/Umbrella insurers will want to understand:

— the revenues associated with the hydraulic fracking operations
— the basis on which the Assured contracts
— whether they are an operator
— whether they are a contractor or a service contractor
— how many locations they are conducting these operations in
— what third party exposures exist, the degree of population density
— the proximity of the operations to other industrial activities

They also will be interested to understand the environment in which people are conducting their operations and their adherence to Best Practice, given that some domiciles are known to give larger awards than others.

CGL/Umbrella insurers will also want to be particularly clear as to the triggers which activate the coverage. Normally any event from which the Assured is seeking to recover under the policy needs to have occurred at an identifiable time and place, to be reported within a set period of time. Any covered event/loss situation must be fortuitous and unforeseen and must be attributable to an identified event resulting in third party bodily injury and or property damage for which the Assured has a legal liability.

Finally, most policies will seek to give limited coverage to drilling contractors in terms of underground resources. While usually excluded from standard policy forms, this cover can be written back but with the application of a sub-limit or a very restricted buy-back.

ENVIRONMENTAL IMPAIRMENT LIABILITY

There are two different coverages that are purchased in the EIL market by those who have a pollution exposure as a result of fracking operations. The first covers Contractors’ Pollution Liability, purchased by those drilling contractors and/or subcontractors at a job site who are actually performing the work. Short of any indemnifications offered by the owners to the rights or lease operators, it has generally been the contractors who have been responsible for any ongoing or new pollution conditions caused or the exacerbation of any contamination conditions as a result of disturbing or remobilizing existing contaminants or following unanticipated discharges, releases, spillages, etc. The second is the traditional Pollution Legal Liability policy, typically purchased by the owner of the drilling site itself and can address historical, “pre-existing” and gradual pollution conditions in addition to newly created/operational issues. This is in direct contrast to the CGL/Umbrella market, where coverage is provided for gradual rather than “Sudden & Accidental” pollution, making this something of a niche market.

Provided fracking is conducted in an ‘appropriate’ fashion, it would appear on the whole to present a reasonable risk profile in terms of the intended coverage for most GL/TPL forms. However, underwriters are not there to cover long term health hazard and other latent issues. It is also essential that assureds understand the basis on which coverage is given in their policy forms and that they have continual responsibility to act as a prudent uninsured at all times.

Matt Yeldham, Aegis
Given the nature of the industry, it is perhaps no surprise that it is this market that has come under the most pressure as a result of recent developments. The publicity and media interest generated by the industry – particularly in the Marcellus Shale formation in the North East of the United States – have certainly come to the notice of the EIL market, with some observers becoming concerned that this particular form of cover might not become available in the future. As a result, it can hardly be said that the EIL market is now hungry for business relating to hydraulic fracking operations. Indeed, some insurers have started to exclude fracking activities from their policies; others have said they will cover the activity but not for oil and gas exploration contractors and/or have coverage restrictions in the Marcellus Shale Formation.

However, the good news for the shale gas industry is that other insurers have continued to offer the cover, albeit only to selected drilling contractors and operations in certain regions. The market has therefore become more selective about what business the take on, rather than electing to exclude drilling contractors engaged in fracking per se. How much cover is offered is therefore becoming increasingly dependent on the risk profile of the drilling contractor in question.

Interestingly, most EIL insurers in the United States don’t seem to think that the actual contamination of aquifers is really so much of a risk from a drinking water perspective, taking the view that the fracking activities are being conducted too far way from drinking water sources. The big problem with fracking from an EIL perspective is not so much the actual drilling or even so much the chemicals involved but the large amounts of waste water that is produced (as discussed earlier in this feature), the storage of drilling fluids and chemicals and the transportation to treatment or disposal facilities. Of additional concern is the practice of some contractors whereby they re-inject the waste water in the surrounding area (usually through disposal wells) as opposed to transporting them off site for treatment.

Notwithstanding all this, the coverage offered by the EIL market is relatively wide compared to other liability insurance products. For example, there is no exclusion if the contractor is negligent; if a site becomes contaminated and the policy covers that particular contractor, the policy will respond. Furthermore, if the market is willing to provide this cover, overall market capacity levels suggest that a total of approximately USD 200 million can be structured for an overall EIL programme limit – at a price.

**CONCLUSION – TOWARDS A REALISTIC APPRAISAL OF THE RISK?**

We hope those readers who have stayed with us to the end of this feature will agree with us that much that is written about the shale gas industry should be taken, in the time-honoured old English phrase, “with a pinch of salt”. While hydraulic fracking operations will continue to pose a measure risk of pollution and contamination risk – just like the upstream oil and gas industry or any other industrial process in general – the extent of the problem has, in some quarters of the media at least, perhaps been blown somewhat out of proportion.

There can be no doubt that regulators in the US, Europe and other domiciles will have their work cut out to keep abreast of developments in best practice in this rapidly expanding industry. The debate over whether further regulation of the shale gas industry will be a good or a bad thing is perhaps best left to the politicians; perhaps the broking community should instead turn its attention to playing our part in ensuring that our clients’ risks are presented to the insurance market in the best possible light.

Our study has shown that cover is much more likely to be provided to those buyers who can demonstrate that they have completely bought into the highest standards of the industry. Indeed, the contrast between contractors who do indeed adhere to these standards and those who do not is already very pronounced.

“Going forward we are going to set up a designated risk committee based on each site – this is going to consist of people doing the actual role who will drive forward the new risk assessments, to make sure there is a consistent approach. We are also identifying the risks that are attached to each role as well. This will ultimately feed into a risk profile for the whole business. So we have identified where the risks are, what we need to control, where we need to put more practice in place, training, and anything else, whatever it might be, to control that risk.”

*Mark Miller, Cuadrilla*
FRACKING INDUSTRY BEST PRACTICE – A DRILLER’S PERSPECTIVE

1. Well sites lined with plastic to prevent surface leakage
2. Use of steel tanks for all well fluids (no earthen pits)
3. Installation of shallow monitor wells surrounding drilling sites
4. Extended depth for surface casing to protect groundwater
5. Use of intermediate casing to prevent natural gas leakage
6. Follow industry best practice for design, execution and evaluation of the casing cementation process
7. Simple and safe hydraulic fracturing fluids (all fluid additives and volumes published on company website and approved in advance by Environment Agency)
8. Real time seismic monitoring during hydraulic fracturing
9. Use of gas seal threads in production casing and tubing
10. Use of subsurface safety shut-off valve for producing wells

Source: Cuadrilla Resources

“EIL markets are being pretty selective right now when it comes to fracking, they are limited as to which type of risk they will underwrite. But, I wouldn’t say they are throwing universal exclusions out or declining across the board and some markets have a more robust appetite than others – if you have the right risk profile, the right experience with a successful track record, utilize “best industry practices” and operate in specific geographic regions, you’ll get the cover you need.

Anthony Wagar, Willis Environmental Practice”
A few weeks before this Review went to press, Willis Energy talked to Lloyd’s Performance Management Director Tom Bolt about the Lloyd’s market position on a number of issues, including his own views on the Energy portfolio. The following is an edited transcript of our conversation.
Willis Energy (WE): Tom, what is your personal goal as PMD Director?

Tom Bolt (TB): My personal goal is simply to make the market better. At the end of the day, I and PMD work for the market. We want the market to succeed and part of that is giving underwriters a somewhat critical, dispassionate view of their business plans and business ideas. I like to think of us as a “critical friend”.

WE: On a macro level, do you think the historic trend for Lloyd’s to develop fewer but larger syndicates will reignite itself over the course of the next few years?

TB: The notion that an insurer has to be of a certain size seems to be in fashion, and this has perhaps come about through Solvency II pressures, Solvency II expense concerns and the regulatory system we have here in the UK. However, we don’t think it has to be the case. One of the strengths and attractions of Lloyd’s over the years has been that we have had smaller, very focused underwriting units with people who know a vast amount about a given risk. In conjunction with the intermediaries, the Lloyd’s market has often been able to come up with innovative insurance solutions. We would like to make sure that we have a structure that permits and encourages that entrepreneurial underwriting approach. If there’s a new line of business and set of risks, one of the few places on earth which ought to be set up to respond is here at Lloyd’s.

WE: Is this how you will continue to differentiate yourself from the company market?

TB: We don’t have a monopoly on innovative ideas; however, we do have a tradition of implementing more interesting ideas than what has historically been offered by the company markets. There are some innovative people in the company market, but it’s much easier to get a deal done here. Brokers tell us that the thing they like most about Lloyd’s is that they can come and talk to a decision maker. I want to continue to foster that environment, where people feel they can talk to someone who can make a decision.

WE: So you still get a healthy throughput of applications?

TB: We have plenty of conversations and I give them roughly the same story. I understand why we are attractive to you, help me understand why you are attractive to us. I owe it to the existing market participants to make sure we are always adding people that bring something themselves.

WE: Broadly speaking, what are the things that you think Lloyd’s Energy underwriters currently do well, and what are the particular challenges that Lloyd’s Energy insurers face?

TB: Historically, underwriters at Lloyd’s were some of the first to embrace taking energy risks, and we’ve always been involved in the technical nature of underwriting these risks. But the world changed for the insurance industry after Deepwater Horizon, especially in terms of challenges to the operating agreements. So even if you are still just as good as you ever were as an underwriter in the technical sense, you need to address how you have accommodated those challenges in the shape of your policy and in the way that you think the risk will come to that policy. For example, how are you making your policy wording ensure that the limits you think you are offering are all that you are offering, and that the beneficiaries of the policies are the people who you intend should be the beneficiaries of the policy?

WE: We think that it’s similar to the historical issues with aggregations arising out of Gulf of Mexico windstorm – how you address those issues about stacking limits and buyers claiming on their own policy based on their part of the exposure – and everything that goes with that.

TB: I don’t think we should look at the trend on the Gulf coast as being an isolated one – for example, if you have the same kind of spill offshore Scandinavia I think people there will begin to behave in the same way. If you go back historically, after Katrina, Rita and Wilma, there were some issues that came up and brokers and underwriters got together to address those issues, including the structure of policies. And after hurricane Ike, underwriters
and brokers worked together to come up with a variation in the policies and address the issues. However, post-Deepwater Horizon, while there was a lot of talk, there was no similar change and emerging consensus of market view. We are resilient here, capital is robust, but it’s important that the market is thinking about and discussing the issues which could impact on it. It’s our job to facilitate those discussions.

**WE:** How do you feel now about the whole issue of Seepage and Pollution from wells? Are you now comfortable about underwriters continuing to write this risk as part of the EED 8/86, rather than transferring the S&P into the liability portfolio?

**TB:** The fundamental issue is that we have confidence in the approach taken by syndicates. They need to demonstrate a reasonable approach towards tracking their aggregates, show us that they know what they are doing and enable us to calculate our total exposure in a given situation. If they do that, I don’t really mind whether it’s the responsibility of a Control of Well underwriter or a Liability underwriter.

**WE:** Do you see most Lloyd’s syndicates – certainly those who write upstream energy – now having on their staff a competent liability underwriter to underwrite the liability aspects of those risks? To what extent have the right people been recruited?

**TB:** When we’ve been discussing plans with underwriters we have suggested there should be a conversation between the Control of Well underwriter and the Liability underwriter so that the risks are considered collectively. But syndicates may have a different approach that works equally well. We ask underwriters to explain their underwriting methodology in their business plan narratives. We reached a position where we could approve all those 2012 plans, but the proof of the pudding will be in the eating. That’s why we will be re-visiting all the energy syndicates fairly soon and see how it’s going, to ensure that the market walks like it talks.

**WE:** Are you encouraged now about how the market is going to go forward after the discussions that you have had?
TB: I’m very encouraged by the response to the business plans and the dialogue that we have had. All we are really asking people is this – you are holding yourself out as an expert at a particular class of insurance; so can you make sure you apply that expertise?

WE: How would you respond to the growing trend for some Lloyd’s insurers to wear both their Lloyd’s and corporate “hats” when underwriting particular classes of business? Do you see this as a threat to the Lloyd’s premium income stream?

TB: If they have multiple platforms, they should have given us a protocol ahead of time for how they are going to write, what and where. Some allocate by line of business, some by line size, and some by broker request. If they have evidence that the broker has requested that it goes in to the syndicate, then of course it has got to go into the syndicate. The key thing is that beforehand underwriters give us something that’s documented and auditible which sets out the rules of engagement.

WE: Could that ultimately lead to some dilution of Lloyd’s position? Could it be a threat to the income stream?

TB: More importantly I don’t think it’s a threat to the profit stream. If we put pressure on underwriters to articulate a thoughtful approach as to why they are underwriting a risk, and they find that too big a burden and decide to put that risk in their company, more power to them. What I can demand however is that syndicates tell us their rules of engagement. So long as we understand the method by which you choose to leave it in or out and this is described in advance, that’s what I am looking for. We hope we are asking people to do things that a prudent business person would do themselves anyway.

WE: We presume you have always got to protect the integrity of the Central Fund.

TB: The Central Fund is there as the final link in the chain of security. However, we don’t operate a no-fail regime. We expect to manage things so any shortfalls are within the syndicates’ own Funds at Lloyd’s. The division of the funds at Lloyd’s between the syndicate and the Central Fund is based on the way that each syndicate takes risk, its line sizes, the Lloyd’s Realistic Disaster Scenarios and other such drivers. Having syndicates tell us what the rule of engagement is ahead of time seems fairly instrumental to us having an easy working relationship.

WE: You are on record for suggesting that Lloyd’s doesn’t make money from Energy in the long term on a gross basis. How do you think Lloyd’s can resolve that position, or will Lloyd’s reduce its market share in this class of business in the future due to increased pressure from your competitors?

TB: I don’t have a conscious desire either to reduce or increase our market share. If there’s plenty of expected profit on offer through the rates involved, we are quite keen to see the business grow. Alternatively, if underwriters make the decision that a piece of business doesn’t meet their return criteria and that means that our market share shrinks, that would be fine since it would be for the right reasons. If an underwriter has a huge loss, that doesn’t mean that I think that particular underwriter is not writing the business in a sensible way, it just means the loss happened. But if an underwriter is in business where, even absent a loss, it looks a little nutty, then that is equally hard to support. They need to be charging a rate that reflects experience and exposure. Take deepwater drilling; in our publication – Drilling in Extreme Environments (the report is available here: www.lloyds.com/energyreport) we examined what are the hazards that people face. The fact is that there are thousands of wells that have been drilled in the Gulf and so far we have only had one Deepwater Horizon. The problem is there are 54 wells like Macondo, we’ve had one huge loss and several near misses out there, but that analysis makes it a whole different equation. So as people’s pursuit of oil drives them to take more extreme risks, I’d like Lloyd’s to be their partner in meeting those challenges, but I also want that partnership to reflect the risks that are there.

WE: Clearly one of the biggest of variables in the market is capacity, and in our view capacity has always driven rating. If you believe that rates have to rise to secure underwriting profitability, how do you do that if there remains an over-supply of capacity?

TB: We are in a position now where it feels like there is enough capacity. Underwriters who position themselves in the higher layers of liability programmes are starting to think about it and asking themselves: am I getting enough return for this?

WE: Although capacity continues to rise, the pricing has still continued to creep up during the last two years. That suggests to us very strongly that it’s not just a pure supply and demand dynamic. There are other factors at work, one of which would
certainly be the PMD but another might be an apprehension about being singled out as an unprofitable portfolio?

**TB:** There has been a bundle of loss activity over the last two years on the Energy side and without investment income, the pressure on achieving an underwriting profit is higher than it’s been in recent memory. Even if you haven’t had much claims activity, I think that you still feel pretty vulnerable. I think there is some movement – the senior guys get it, the Active Underwriters, the Underwriting Directors; they all understand the implications of little or no investment income. They have to figure out how to make money from underwriting alone. Whether this has got down to class underwriters so firmly, I don’t think so as yet, but it’s just a matter of time.

**WE:** The composite market seems willing to write Energy risks such as PD/BI, Liabilities and OEE on a package basis for selected clients. Are you concerned that more business will transfer away from Lloyd’s towards the composite market, based on a “one stop shop” approach?

**TB:** I would refer to the same rule of engagement that we mentioned before: underwriters have to show me that they are applying the appropriate underwriting expertise to the individual risks that present themselves in the policy. So if we think about the fact that other competitors want to write package policies as a way to increase premium income, I agree it’s a marketing advantage to write all this business together. I would also tell you that it’s rare that I’ve found any instances where they have applied equal levels of expertise to all the lines that have been added into the package. So in principle I don’t have a problem with it, if you can show me you have equal amounts of expertise across the package, and if there is some reasonable thought in how you attribute any credits to that combination.

**WE:** And if some of your composite market competitors were to “take a view” and not perhaps worry about the expertise, just focus on the amount of premium that is available?

**TB:** Then I would expect us to probably be under attack for premium and market share. The good news is that in the long term we will still be here!

**WE:** So you wouldn’t follow your competitors from outside Lloyd’s down if they chose to take a different underwriting approach?

**TB:** Correct. I’m always interested in what insurers do outside Lloyd’s because I like to understand how they write business. And if there is a smarter way to do something, then I’m a big fan of everybody adopting it. But if it’s just something where someone is in love with more premium, and not applying the right expertise across the lines of business in terms of how they secure that premium, I don’t have any interest in trying to encourage the market to follow that.

**WE:** Finally Tom, do you think that the importance of personal relationships in our industry is being diminished by the developments in modern technology, the web, the 24/7 nature of business?

**TB:** I think insurance is still very much a people business, a face-to-face business. In fact, in all our efforts to try to modernise the operational aspects of Lloyd’s as a market, we are in no way trying to do away with face-to-face trading. What we are trying say is this: once you have made the trade, let’s make the execution as efficient as anywhere on this planet.

**WE:** Thank you very much indeed, Tom.

“We want the market to succeed and part of that is giving underwriters a somewhat critical, dispassionate view of their business plans and business ideas.”
In 1972, OIL Insurance Limited was formed to address a shortfall in critical energy insurance capacity. Forty years later, OIL continues to evolve. While the last five years have been focused on reducing premium volatility and promoting transparency, 2011 and 2012 continue to present new opportunities for members, prospects and brokers.

*By George Hutchings, Senior Vice President & COO, Oil Insurance Limited*
SUMMARY OF 2011

1. Membership News

Following a comprehensive membership survey in 2010, OIL’s members decided that the company should broaden its membership base globally through the implementation of a structured marketing strategy. Specifically, the Board and members are looking to attract 3-5 new members each year for the foreseeable future. In 2011, three new members joined OIL, bringing the membership count to 52. As of February 2012, there are several qualified companies considering an OIL membership from the Far East, Middle East, Eastern Europe, Africa and Latin America.

2. Special General Meeting (SGM), held on 9/13/2011 – Recent Changes

At the OIL SGM held on September 13, 2011, the members approved the following changes with effect from January 1, 2012:

— The OIL per occurrence limit was increased to USD 300m (from USD 250m) for the 8 business sectors only. The maximum windstorm limit remains unchanged at USD 150m part of USD 250m.
— Bifurcation of the Aggregation Limit into two components: USD 900m for the 8 business sectors and USD 750m for windstorms in the Atlantic Named Windstorm (ANWS) zone.
— Collateral is now required in advance of loss events for members that have pool participations in excess of 30%.
— The Board now has the authority to implement a windstorm quota share element in the annual aggregate retention (not to exceed 25%).

The limit increase was the result of feedback from the 2010 membership survey where members requested that OIL enhance its product offering. It was the members’ view that OIL’s limits needed to remain relevant and to keep pace with the growing asset values of the membership. OIL’s USD 300 million capacity is considered by OIL’s membership to be one of the largest and broadest blocks of property.
capacity available in the energy insurance marketplace. To date, roughly 80% of the membership has taken up the increased limits.

The requirements for collateral and the new windstorm quota share element were implemented to provide Management with additional tools to better manage the distribution of risk within the pools, and in particular for the windstorm pools. As credit risk is one of OIL’s main exposures, having tools of this nature helps protect the membership from potentially large credit positions with individual members.

3. 2011 Financial Highlights

Another year has passed at OIL with no windstorm losses. Furthermore, OIL closed the year with USD 507m of non-windstorm losses which is relatively consistent with our expected level of losses in respect to our current members’ Limit and Deductible profiles. Almost half of the losses were the result of the Horizon Oil Sands Coker fire incident that occurred in January 2011. Premiums written and earned for the year were USD 543.4 million and shareholders’ equity remained strong at USD 3.1 billion.

5. Offshore Pollution Liability Association (OPOL – UK, North Sea) – Availing OIL capacity to satisfy OPOL requirements

Since the commencement of OPOL’s operations in 1974, OIL has provided it members with an endorsement to allow them to use their OIL capacity to satisfy their requirements under OPOL’s Evidence of Financial Responsibility. With recent changes made to OPOL’s rules in late 2011, changes were necessary to OIL’s endorsement so that OIL could continue supporting its members. At the March 2012 OIL Board meeting, the directors approved a new form of endorsement that provides, among other things, the following features:

- A dedicated USD 250 million per occurrence limit for OPOL incidents
- The ability to accommodate any differences between the OPOL coverage conditions and a member’s coverage with OIL

This endorsement became effective immediately after OIL’s Annual General Meeting concluded.

6. Marketing

a) OTA – OIL Technical Accreditation
Select OIL members and brokers will soon be test driving OIL’s new e-learning tool, enabling an accreditation in the technicalities of OIL’s unique mutual system. The “language” of mutuality is different to that of the commercial market and both members and brokers have requested tools to better understand how OIL works and the value that it generates. The OTA will be offered to energy brokers and members following the AGM in March 2012.

b) New OIL Website
OIL is in the process of upgrading its website which will be launched sometime in late Q1 or early Q2 2012. The new website will have new design features and will also include member and broker specific information in a secured area.
In 2011 we said:

— The market was digesting the impact of the Tohoku earthquake and the Gryphon A incident in the North Sea
— The market remained in a “false equilibrium”, with rating increases continuing in the wake of the Macondo loss despite a growth in overall capacity levels
— 2010 looked as if it might still end up as a profitable one for the upstream market
— In early 2011 there were signs that the market might soften once more later in the year, with the possibility of a brighter outlook for buyers renewing in the second half of 2011
— OEE remained “a market within a market”, with underwriters focusing on this class on a more technical basis
— Specialist liability underwriters were assuming increasing control over the Marine/Energy Liability book
— The offshore construction market continued to soften
— In overall terms, the market remained difficult to read as opposing dynamics vied for control of the overall market direction
INTRODUCTION
The market direction remains in the balance as insurers wait on the Elgin platform situation...

In December 2011 we issued an EMR Newsletter in which we outlined a number of factors that could de-stabilise conditions in the upstream insurance market in the near future. These included “macro” factors such as the impact of natural catastrophes, Solvency II and the Euro crisis and milder conditions in the global reinsurance market than might have been expected as well as “micro” factors such as the increased demands for higher policy limits, the lack of any major capacity withdrawal and a loss free Gulf of Mexico windstorm season.

The first quarter of 2012 has seen the upstream market maintain the fragile stability that we reported at the end of 2011. However, there are plenty of signs of a change in the way several insurers are viewing this portfolio, and the outlook for buyers may not be quite as appetising as might be expected given that, once again, overall capacity levels have increased to a new record level. In particular, the market is monitoring the situation at the Elgin platform in the North Sea which was still ongoing as this Review went to press.

CAPACITY
It’s another record

Our capacity chart for the last 12 years outlined above shows that overall levels are now nearing the USD 5 billion mark. Even Offshore Construction, historically often regarded with trepidation by a significant portion of the market, has shown a marked increase from this time last year. In practical terms, we can now say that for the most attractive business requiring the maximum capacity that the market can offer, programme limits of USD 4 billion for operating business and USD 3.6 billion for offshore construction business are now achievable - at a realistic price. The chart also shows that since 2007 the gap between total Operating and Construction capacities has narrowed considerably: in 2007 overall Construction capacity was only 70% of the Operating total, compared to 86% in 2012.
This increased capacity has been generated from all quarters of the global upstream market. Although there have been some new entrants to the market – not least Brian Randall at Brit and Paul Dawson at Hardy – no newcomers to the market have emerged to challenge the dominance of the panel of leaders that has essentially been in place for the last five years or so. So although capacity has increased, this has not resulted, as yet, in any significant change in the way that the portfolio as a whole is being assessed and underwritten.

Be that as it may, why has additional capacity found its way into the market once more? Some might say that this new capacity is a response from the market to keep pace with rising values and to respond to the increased demand for insurance from the likes of the planned massive Floating Liquefied Natural Gas (FLNG) projects that require far more capacity than is currently on offer from the market. Of course, if this were the besetting reason why capacity has increased, it would not exactly help existing market participants to maintain a profitable portfolio; the number of major projects requiring maximum market capacity can be counted on the fingers of one hand, whereas capital providers will require a reasonable premium return on their investment across a much wider portion of the portfolio, generating additional competition elsewhere. We should also mention that although we have seen values for some programmes increase, this is by no means a consistent trend.

It is therefore unlikely that decisions to increase capacity have been made by underwriters purely to meet the demands of the buyer, as any additional capacity is likely to generate more competition for the lower-valued business. One reason for the additional influx of capacity is the simple fact that investors cannot obtain a better return elsewhere (given the current global economic environment) so the upstream portfolio continues to be regarded positively by investors.

Following the Macondo loss there has been an increased focus on the Marine Liability and Operators Extra Expense portfolios, which will certainly extend into 2012. Those classes have seen significantly increased demand for their products as energy companies have sought to purchase higher policy limits.

EMR Newsletter, July 2011
Furthermore, the chart above showing Lloyd’s own figures for Upstream at the end of 2011 demonstrates that there is often a significant time lag between the time that the premium is received and the time when losses have to be paid. A tension therefore exists between the returns apparently available form the portfolio from a capital provider perspective and individual line underwriters’ own perception of the innate profitability of this class.

**MAJOR UPSTREAM LOSSES, 2011/12**

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<tr>
<th>TYPE</th>
<th>CAUSE</th>
<th>COUNTRY</th>
<th>PD USD</th>
<th>OEE USD</th>
<th>BI USD</th>
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<td></td>
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<tr>
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*Source: Willis Energy Loss Database as at April 3 2012 (figures include both insured and uninsured losses)*

The chart above shows how the 2011/12 loss record looks from the perspective of the first quarter of 2012. As we suggested in last year’s Review, the Gryphon A FPSO accident in the North Sea has proved to be a loss of profound significance to the market, and this has been followed by a similar (albeit smaller) loss involving the Banff FPSO, also in the UK sector of North Sea (we discuss some of the implications later in this section of the Review). Furthermore 2012 has begun with a blowout and total loss of jack-up rig offshore Nigeria. What is striking about the loss pattern for 2011 is the number of incidents that have involved a quantum of USD 100-200 million or so. This is particularly relevant as many upstream insurers’ reinsurance programmes tend to respond excess of the USD 100 million mark (in 100% terms), which suggests that several of these losses have had to be absorbed by the upstream market with little or no recovery from their reinsurance programmes. No wonder that recently an upstream underwriter, speaking before the onset of the ongoing situation at the Elgin platform, ruefully reflected that he would much rather have had to cope with another major catastrophe rather than absorb several of these mid-range losses.

**In the future, the development of large scale FPSO (Floating Production and Storage Offshore)/ FLNG (Floating Liquefied Natural Gas) projects, potentially requiring capacity in excess of that currently available in the conventional energy markets, is likely to provide large sections of the upstream market with the opportunity to deploy their maximum capacity at an inflated rate and/or premium return.**

**EMR Newsletter, December 2011**
On a gross basis, 2010 is going to be the worst non-windstorm affected underwriting year of the last two decades – and 2011 may be even worse, once the database figures reach maturity

Source: Willis Energy Loss Database as at April 3 2012 (figures include insured and uninsured losses)

This chart shows the development of the upstream energy loss record during the course of the last 22 years. In previous editions of this Review we have often pointed out that the only years since 2001 in which the market in general has made significant losses have been the windstorm affected years of 2004, 2005 and 2008. However, now the picture may be beginning to change. In 2010, the Deepwater Horizon loss ensured that this year was the worst year ever for upstream losses ex-Gulf of Mexico windstorm and, given how each loss year develops over time, 2011 looks like it might be even worse – especially if the significant portion of the Deepwater Horizon loss that was not insured is discounted. Although as we mentioned last year using estimated global premium income set against both insured and uninsured losses is only a very rough guide to portfolio profitability, the chart suggests that the difference between the total losses for 2010 and 2011 and the estimated global premiums for this class is becoming more extended, suggesting perhaps reduced profitability and indeed possibly underwriting losses.

RATING LEVELS

Given the recent spate of losses, it is perhaps not surprising that the effect of any increased official capacity has been muted to say the least, and that modest rating increases have therefore been the norm in this market during recent months.
However, as the chart above shows, market conditions are now more tranquil than was the case only last July, when the level of rating increases reached its height in the aftermath of the Japanese earthquake and the Gryphon A loss, with upstream insurers anticipating a serious hardening of the reinsurance market. Since then the mood of the market has swayed from a cautious optimism to concern at the mounting losses to relief that the 1/1 2012 reinsurance market renewal season was not as tough as anticipated.

The result of this “seesaw” effect of differing factors has been:

— Greater differentiation in favour of the most attractive business, some of which has renewed on essentially an “as before” basis
— A dampening of the overall hardening dynamic prompted by the increased losses to the point whereby modest rating increases are the norm for the remainder of the portfolio

RETENTIONS
For most classes of upstream business, retention levels remain as they have been for several years, some despite increases in values and the continuing effect of modest but relentless global inflation levels. The exceptions are, perhaps predictably:

— In the deep water Operators Extra Expense (OEE) arena, where the minimum required deductibles can now be as much as USD 10 million (with a norm of USD 5 million) whereas the norm in the recent past would have been around USD 2 million
— Large offshore construction projects, where buyers are now often willing to assume a significantly higher retention level in return for a premium break
— Business interruption (BI) retentions will be under review, with specific attention being applied to FPSOs whose owners are unable to differentiate themselves favourably to the market
FPSOS – DIFFERENTIATION THE KEY?

This shift in emphasis of the market on FPSO BI deductibles is only one reflection of the market’s growing concern with this particular class. As the market moved into 2012, it became clear that most insurers were not as yet full apprised of the detailed reasons for the Gryphon A and Banff FPSO incidents. As a result, a tendency was beginning to develop within the market to view the class as a whole with increased suspicion, with the inference being that essentially the same risk profile was being presented each time a broker sought terms for any FPSO programme from the market.

Then in March of this year, AP Moller-Maersk kindly gave a detailed presentation to the London and European upstream market, in which the company shared with insurers the key information and data relating to the Gryphon A incident. The presentation covered a narrative of what happened, the key reasons why the loss occurred and the lessons that had been learned as a result of the incident. Furthermore, the UK Health and Safety Executive produced their own report of the incident earlier in the year, which we understand is now in the public domain.

Largely as a result of this, insurers have now been given a much greater opportunity to differentiate between differing FPSO risk profiles. This development has obvious implications for all FPSO owners/operators; it is very much in their interests to articulate the factors that differentiate their own risk from their peer group to their broker and their insurers.

Overleaf, we have outlined a detailed questionnaire that should provide the framework for buyers to achieve this differentiation. In summary, in the immediate aftermath of the AP Moller-Maersk presentation it seems likely that there are perhaps three areas on which insurers are likely to focus:

1. **The age of the FPSO, and the sophistication of its design.**
   There can be little doubt that there have been significant improvements in the design of these units during the last twenty five years.

2. **The nature of the Dynamic Positioning System (DPS).**
   Insurers will need to know full details of the unit’s DPS system, as well as its redundancy, i.e. the availability of a back-up system should there be a failure of this key piece of equipment.

3. **Details of the mooring and alarm systems to be used.**
   Insurers will want to know the system will be monitored and inspected, and in particular whether or not equipment is in place that can automatically monitor any breakage of or undue stress on the system. They will also need to know the system’s redundancy and its ability to withstand a breakage.
FPSO QUESTIONNAIRE

AGE OF UNIT
— New Build or Conversion?
— Date of build of Hull
— Date of conversion
— Date last refurbished
— Date moorings installed

DESIGN CRITERIA
— Define the design life of the mooring system and what plans are in place to address “end of life”
— What is the design criteria of the mooring system, i.e. operating and storm condition, return period, absolute wind speed, wave and current loading?

EQUIPMENT EMPLOYED, MONITORING AND MAINTENANCE
— Describe the system in place – internal, external turret or spread moored
— Provide details of the type of mooring system
— Describe the maintenance and inspection practices for moorings
— Is regular change out of mooring legs performed? What is the criteria used to determine the frequency of this operation?
— What mooring integrity monitoring system is in place?
— Does the FPSO have DP (or a thruster to aid positioning)?
— What was availability of positioning system over the last year?

OPERATING PROCEDURES
— What operational procedures are in place (moving mooring chains, replacement of critical links subject to fatigue and extreme loads)?
— Is there an emergency disconnect function and how long does it take to implement? Does the emergency disconnect operate remotely or does it require hands on deck to execute?
— Is there a formal hurricane/typhoon/storm weather contingency plan?
— How often are relevant exercises conducted?
— What are the operational practices in respect of the use of thruster and what are the maintenance practices to ensure operability?

CONTINGENCY AND FAILURE ARRANGEMENTS
— What redundancy is built into the current mooring system?
— Have there been any mooring leg failures? Please provide details such as the cause and the actions taken as a result.
— What redundancy exists for critical components?
The good news for buyers is that upstream insurers are still willing to provide cover for these units. The market can hardly turn back the clock; FPSOs are now an integral part of the upstream industry as new geographical frontiers are explored. Any insurer who is tempted to withdraw from the FPSO portfolio will find, for premium income reasons, that they will have to compete more vigorously for other less attractive parts of the upstream book.

OFFSHORE CONSTRUCTION – WITHER WELCAR MARK II?

Not for the first time in the upstream market’s history, the attempt to introduce a new policy form has not been received with universal enthusiasm by the broking and buyer communities. Space prevents a clause by clause analysis of the WELCAR II policy form; suffice to say that the feedback from our client base has been that risk transfer certainty has not been achieved and if anything cover has been actually narrowed at a time when clients were actually looking for a broader product. As a result, the new wording has been “put on hold” while the underwriting community considers its next move. From our perspective, there are always going to be difficulties involved in a market committee producing a new wording with little reference to the requirements and input of the buyer. What was promised was a “reshaping” of the existing wording; what seems to have been delivered has been effectively an entirely new wording, with the deletion of the words “All Risks” being an example of the way in which the coverage now offered no longer squares with what is required by the buyer.

In virtually any industry, buyers usually have a choice of product to choose from and there is little doubt that alternatives to the WELCAR form in all its guises would be welcomed. The difficulty, as ever is price, as very few buyers are prepared to pay for broader policy cover.

While capacity for Offshore Construction risks has certainly increased in 2012, it is interesting to note that insurers are more likely to deploy their full capacity for smaller, lower-valued risks that feature tried and trusted technology than for programmes where it is really required, for example the large scale FPSO and FLNG projects where values test the available capacity. Having said that, the willingness of major international energy companies to use their captive insurers to participate in these major construction programmes has to a large extent mitigated this capacity problem, with every “super” programme of this nature to date eventually placed and bound.

However, the chart below shows that the market can expect more losses to materialise from this portfolio in the future. The chart shows that the 2006 year of account has deteriorated considerably since this time last year and, although the figures for the next four years seem to have improved, 2011 seems to have begun ominously for Offshore Construction insurers. Indeed, the chart shows that 2011 represents the largest loss total for Offshore Construction risks for the first year of reporting than any other year since 2006.
GULF OF MEXICO WINSTORM - THE MODEL REMAINS UNTESTED

Once again the models and forecasters predicted carnage in the Gulf of Mexico in 2011; once more Mother Nature seems to have proved them wrong. Although there were the usual number of windstorms in the North Atlantic region this year, as in other recent years the storm tracks generally took the windstorms north and up towards the Bermuda region rather than into the Gulf of Mexico itself.

As a result, the status quo in this part of the market continues. While the amount of risk transfer on offer from the commercial insurance market for Gulf of Mexico windstorm (Gulf Wind) is in many buyers’ opinion insufficient to provide a comprehensive solution to their windstorm risk transfer needs, we have not seen any reduced demand for the market product compared to this time last year. At the same time, those insurers that have continued to write the windstorm book – by no means the whole of the upstream market – have reaped the benefits of another loss-free year, without tempting too many of their competitors to re-enter the fray.

Given that the new Lloyd’s risk code has now been introduced for Energy Gulf of Mexico windstorm risks, for the first time it will soon be clear whether this part of the upstream portfolio can now be regarded as profitable in its own right, and the extent to which this class has been subsiding the remainder of the upstream portfolio during the windstorm-free years of 2009-2011. Should 2012 prove to be another windstorm-free year, it may well be that other insurers might be tempted to re-enter this market, given that in very general terms those insurers who have continued to write this class have recorded more favourable upstream underwriting results than those who have stayed away. Interestingly, perhaps what might tempt other upstream insurers back might be a windstorm that did actually produce some upstream energy-related losses; only then would the rest of the market be able to see how the new underwriting model has responded and whether or not the portfolio can produce long term underwriting profits.

OEE – INCREASING USE OF AFE RATING METHODOLOGY

We can report that the issue of Seepage and Pollution from wells, which caused a stir in the market when first addressed by Lloyd’s PMD Director Tom Bolt last August, has been addressed; this risk can now continue to be underwritten by Lloyd’s underwriters in combination with the Control of Well portfolio.

Meanwhile, the shift from the old orthodox per foot drilled rating methodology for Operators Extra Expense (OEE) risks towards a rate on Authorization for Expenditure (AFE) has continued during 2012, although existing programmes featuring significant levels of producing and shut-in wells continue to resist this trend and continue be rated on the old methodology. There can be little doubt that insurers would be delighted if more of these risks were to be insured on the new rating methodology; however, this has continued to be resisted by buyers and their brokers. Consequently, some wells are “escaping” higher rating levels; an extreme example would be where a deep water, high AFE well is added to an existing programme with established drilling rates on a per foot drilled basis where such rates have been established for a more benign risk portfolio.
To date, brokers have often been able to persuade insurers alarmed by assuming these new risks as part of a well-established programme package that this has to be the price they pay for being offered the more attractive parts of the overall package; it remains to be seen whether insurers will continue to go along with this if increasing amounts of new drilling risk continue to be attached to such packages.

UPSTREAM LIABILITIES - THE MARKET HARDENING CONTINUES

The liability market for marine, upstream operations and construction has certainly hardened during the last half of 2011, affecting pricing, conditions and programme structures. For some time it has been felt by insurers that something in this market has been amiss, and as we explained in our August 2011 EMR Newsletter, the letter from Lloyd's PMD Director Tom Bolt to Lloyd's energy underwriters outlined areas in the liability arena that were considered to be the cause. Certain components of the market, especially general excess liability, have been hardening since 2010, reacting to an unexpectedly large spate of costly pipeline losses and issues which the Deepwater Horizon only exacerbated. However the Bolt letter has clearly now focused ammunition for those trying to drive this change in the liability market, particularly where the coverage has been packaged with property and control of well insurances.

Underwriters now are being directed to hone in on the liability coverage that they are providing and to evaluate the adequacy of package pricing as compared to independent liability programme structures. Certain items that are being focused on in light of requested reforms, include pollution from wells, treatment of defence costs, first party removal of debris/wreck, exposure concentration and client aggregation, to name but a few.

The market hardening now covers all facets of the upstream industry, pulling in product manufacturers, contractors, and construction operations in addition to operators, drillers, and marine and non-marine oilfield servicing. Beyond the matters raised by the Bolt letter, the market continues to demand additional information on matters making headlines, including the hydraulic fracturing process (addressed earlier in this Review), pipelines and operations in difficult and harsh climates.

We see no signs of any let-up in 2012, and it seems that any attempt to push for premium relief is countered by any further adverse claims development from the recent losses.

OFFSHORE CONSTRUCTION LIABILITIES - WHAT CONSTITUTES DAMAGE TO EXISTING PROPERTY?

Notwithstanding the developments in the overall marine liability arena, upstream insurers have focused even further on the coverage they provide for Offshore Construction Liability risks. In particular, the most significant development concerns the coverage provided in respect of damage to surrounding non-Project property, which continues to receive careful consideration from Offshore Construction Liability underwriters.

One of the difficulties in arranging cover for this exposure is that damage to existing property can mean different things to different people. The Offshore Construction market, which has traditionally underwritten this coverage, has tended to assume that the cover relates to “owned surrounding property” i.e. non-Project property owned by the Principal Assured.

However, insurers affording coverage based upon the WELCAR 2001 policy form ordinarily
apply the Existing Property/Contractual Exclusion and Buyback Endorsements. In addition to providing a basis upon which to declare owned surrounding property, the Exclusion and Buyback Endorsements have also highlighted the need to expressly declare to underwriters any contractual liability exposures faced by the Principal Assured in respect of damage to property of others e.g. liabilities arising out of pipeline crossing agreements.

The standard Existing Property/Contractual Exclusion Buyback Endorsement does not automatically provide contractual liability cover for loss of use suffered by the property of others, although certain insurers will consider providing such loss of use coverage on a case by case basis.

Despite this, in relation to loss of use, the market is becoming increasingly concerned about the strict liability nature of many of the contractual liability exposures faced by Operators and their Joint Venture partners. Such strict liability exposure is often exacerbated by the absence of any subrogation rights against the vessel contractor.

However, Offshore Construction Liability underwriters are particularly reluctant to provide loss of use cover in respect of the Principal Assured’s owned surrounding property.

There can be little doubt that concerns around owned surrounding property, contractual liabilities and loss of use have prompted this part of the marine liability market to harden still further in the last few months.

However, there have been relatively few pure Third Party liability claims in the Offshore Construction arena caused by the negligence of the Operator. More often than not any loss will have been caused by the negligence of the Contractor, by virtue of the fact they are the party carrying out the work. As vessel contractors will have their own Marine Liability policies in place, wherever possible Operators may wish to consider resisting attempts by the vessel contractors to gain access to the Liability section of the Offshore Construction policies. This stance should assist in improving Offshore Construction Liability underwriter’s perception of the risk.
CONCLUSION - A MARKET IN A MOOD TO DIFFERENTIATE!

The chart above is an old favourite that we have used for many years in the Energy Market Review and our EMR Newsletters, updated for 2012. It is a sign of how complicated the dynamics of the current upstream market are that it is perhaps now more of a hindrance than a help in ascertaining the true state of this market. For years, we have pointed to the correlation of capacity with rating levels; however, if we are to faithfully record official capacity set against the current overall rating trends, we find ourselves reproducing an economic anomaly – increased underwriting capacities accompanied by increased rates.

As long as insurance remains a safe and reliable haven for capital deployment during these troubled economic times, this anomaly looks likely to continue for some time to come. What we can say is that the gentle hardening that is currently prevalent in the upstream market would be felt much more keenly without all this capacity in play; furthermore, insurers’ appetite for quality business (which we referred to rather graphically in our December 2011 Newsletter) still remains relatively robust. Of course, should the situation at the Elgin platform deteriorate in the next few weeks, market conditions could change overnight.

On the other hand, if the situation at Elgin is resolved satisfactorily, there is ample opportunity for those buyers that can continue to differentiate themselves from their peer group by offering quality underwriting information and a positive risk profile to obtain much more preferential terms from a market that needs their business to generate the premium income required to remain in this most enigmatic of markets.
In April 2011 we said:

— The Tohoku earthquake signified a change in market dynamics, although increased capacity in this sector suggested that any market upswing might be short-lived
— A degree of market fragmentation was becoming apparent, as insurers heavily exposed to natural catastrophe and North American risks adopted a more cautious approach while those insurers who were free to operate on a truly global basis began to generate a different underwriting perspective than those whose focus was more regional
— Insurers concerned by the recent spate of natural catastrophe losses looked for higher rating levels, but competitive pressures continued to prevent an overall market upswing
— Premium levels have remained relatively consistent, due to increased values disguising the more competitive rates on offer before the Tohoku earthquake
— Insurers were being presented with a series of options for addressing this class of business during 2012, including withdrawing from the market, starting to write previously rejected business, focussing exclusively on target business, offering capacity on a long term basis, and competing for cross-class business
INTRODUCTION – A MARKET READY TO SOFTEN?

To understand the dynamics associated with the downstream energy market for oil, gas and petrochemical risks, one must always bear in mind that this portfolio cannot be viewed in quite so much isolation as its upstream energy counterpart. As we explained in last year’s Energy Market Review, this sector continues to feel the impact of recent natural catastrophe and mining losses far more keenly than the upstream sector, and there can be little doubt that recent events, including the tragic flooding losses in Thailand, have had a more significant effect on market conditions.

However, this correlation with “macro” natural catastrophe events has historically proved to be something of a double-edged sword; in recent years we have found that several insurers have elected to compete more vigorously in this sector precisely because it offers a more benign loss record than other parts of the overall global Property portfolio. The question that we have to ask in April 2012 is therefore this: will insurers continue to try to point to the recent natural catastrophe (and other sector) loss record to lead the charge for increased rating levels (or at least maintain current prices) or will natural market forces re-assert themselves once more, leading to a softer market later in 2012?

CAPACITY – ARE THE FIGURES ALL THAT THEY SEEM?

Our historical capacity chart outlined above shows that, for International programmes at least, overall official capacity figures continue to increase year on year. There is now as much officially stated capacity in the International arena as there was at the height of the “great soft market” of 1997-2001 (although the reinsurance market capacity to protect this portfolio is nowhere near as robust and competitively priced as it was twelve years ago).

Perhaps the greatest difference now is between the stated capacities for North American business and for International (i.e. ex-North American) business. The major reason for this has to be the growth of regional insurance markets in key areas such as the Middle East, Eastern Europe, the Asia-Pacific rim and Latin America. In several of these regions, the local insurance market is still very much in emerging mode and clearly there are plentiful opportunities for insurers to grow new business. In contrast, North America (and indeed Western Europe generally) remains a developed market and so perhaps it is not so surprising to see capacity remaining essentially flat.
for the last five years or so. What we can say for both sectors is that there has certainly been no meaningful withdrawal of capacity, with all the key leaders both in North America and in the International region very much in place and open for business.

In any event, as with the upstream sector the overall capacity figured tend to mask the reality of the market in which we are operating. During the last five years, we have certainly encountered more competitive market conditions where overall capacity has not been as plentiful as it is today. Part of the reason for this anomaly is the growth in official stated capacities of those large (re)insurers who, in theory, are capable of providing large stretched of capacity but only at a price where they feel they can obtain a decent return. This “opportunistic” capital is, in reality, effectively irrelevant to the vast majority of buyers whose programmes do not require the participation of the entire market.

Instead, four rather different dynamics tend to drive the direction of the market:

— The perception (rather than the reality) of insurers, brokers and buyers as to the amount of capacity there is available for a given programme
— The extent to which the same capacity can be accessed for programmes emanating from different parts of the world
— The degree to which the capacity available is prepared to compete for market share to generate more competitive terms
— The extent of the natural catastrophe exposure of the programme concerned

These dynamics are driven in turn by the downstream energy loss record.

## LOSSES – A CHALLENGING YEAR FOR THE MARKET

### Major Downstream Losses, 2011

<table>
<thead>
<tr>
<th>TYPE</th>
<th>CAUSE</th>
<th>LOCATION</th>
<th>COUNTRY</th>
<th>PD USD</th>
<th>BI USD</th>
<th>TOTAL USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil sands</td>
<td>Fire/lightning/explosion</td>
<td>Alberta</td>
<td>Canada</td>
<td>710,000,000</td>
<td>600,000,000</td>
<td>1,310,000,000</td>
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<tr>
<td>Refinery</td>
<td>Earthquake</td>
<td>Miyagi Prefecture</td>
<td>Japan</td>
<td>590,000,000</td>
<td>590,000,000</td>
<td>590,000,000</td>
</tr>
<tr>
<td>Chemical</td>
<td>Earthquake</td>
<td>Kashima</td>
<td>Japan</td>
<td>11,000,000</td>
<td>162,600,000</td>
<td>173,600,000</td>
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<td>Petrochemical</td>
<td>Mechanical failure</td>
<td>Ontario</td>
<td>Canada</td>
<td>35,000,000</td>
<td>125,000,000</td>
<td>160,000,000</td>
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<tr>
<td>Chemical</td>
<td>Earthquake</td>
<td>Various</td>
<td>Japan</td>
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<td>130,000,000</td>
<td>155,000,000</td>
</tr>
<tr>
<td>Refinery</td>
<td>Fire/lightning/explosion</td>
<td>Singapore</td>
<td>Singapore</td>
<td>150,000,000</td>
<td>150,000,000</td>
<td>150,000,000</td>
</tr>
<tr>
<td>Gas plant</td>
<td>Windstorm</td>
<td>Oklahoma</td>
<td>USA</td>
<td>47,500,000</td>
<td>102,500,000</td>
<td>150,000,000</td>
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<tr>
<td>Petrochemical</td>
<td>Fire/lightning/explosion</td>
<td>Rhineland-Palatinate</td>
<td>Germany</td>
<td>10,500,000</td>
<td>112,500,000</td>
<td>123,000,000</td>
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<td>Earthquake</td>
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<td>Japan</td>
<td>120,000,000</td>
<td>120,000,000</td>
<td>120,000,000</td>
</tr>
<tr>
<td>Petrochemical</td>
<td>Fire/lightning/explosion</td>
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<td>USA</td>
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<td>80,000,000</td>
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<tr>
<td>Refinery</td>
<td>Fire/lightning/explosion</td>
<td>Texas</td>
<td>USA</td>
<td>100,000,000</td>
<td>100,000,000</td>
<td>100,000,000</td>
</tr>
<tr>
<td>Refinery</td>
<td>Fire/lightning/explosion</td>
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<td>Earthquake</td>
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<td>Japan</td>
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<td>75,000,000</td>
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<td>Texas</td>
<td>USA</td>
<td>12,000,000</td>
<td>55,000,000</td>
<td>67,000,000</td>
</tr>
</tbody>
</table>

Source: Willis Energy Loss Database as at April 3 2012 (figures include both insured and uninsured losses)
The 2011 Downstream Energy loss record has been dominated by the Canadian Sands upgrader loss, which has not only produced the largest loss in terms of physical damage but also a very significant Business Interruption loss, and the Tohoku earthquake, which has produced three losses over USD 150 million.

However, a list of the major losses does not, in itself, tell the whole story for 2012 as the chart below shows.

### WELD downstream energy losses 1990-2011 (excess of USD 1m) versus estimated global downstream premium income

<table>
<thead>
<tr>
<th>Year</th>
<th>Losses excess USD 1 million</th>
<th>Estimated Worldwide Premium (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>'90</td>
<td>1.06</td>
<td>2.43</td>
</tr>
<tr>
<td>'91</td>
<td>1.13</td>
<td>2.59</td>
</tr>
<tr>
<td>'92</td>
<td>1.21</td>
<td>2.75</td>
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<td>1.39</td>
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<td>1.57</td>
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<td>'97</td>
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<td>5.96</td>
</tr>
<tr>
<td>'11</td>
<td>2.92</td>
<td>6.14</td>
</tr>
</tbody>
</table>

This chart shows the disparity of the overall Downstream Energy loss statistics for 2011 compared to those recorded over the last twenty years or so. We can see that 2011 is by far the largest loss year that this sector has suffered if the Gulf of Mexico windstorm losses of 2005 and 2008 are discounted – even if the Canadian upgrader loss is ignored, the ex-Gulf Wind loss total would be the largest for the last ten years. Again, it should be remembered that the Willis Energy Loss Database totals include both insured and uninsured losses and, given the deductible discipline that the market has assiduously maintained over the last ten years, it may be that a significant portion of these losses may have been avoided by the market. Be that as it may, it is clear that this factor has up until now, been sufficient to offset the effects of increased capacity that we highlighted earlier.

Of particular concern to many insurers following the losses of 2011 has been the issue of Contingent Business Interruption (CBI), with particular focus on supply chain, named suppliers and sub-limits. We are very grateful to Michel Krenzer of SCOR for his views on this issue, which are reproduced below.

### Contingent Business Interruption – An Insurer’s Perspective

“The March 2011 Japanese earthquake disrupted many supply chains of industrial companies around the world; we all read about the catastrophic indirect consequences of the damages caused to automobile or electronics manufacturers.
The magnitude of the losses was a surprise - some of the companies were affected despite being prepared and having contingency plans. The extent of the disruption shows how highly interconnected manufacturing chains are today and how manufacturers often remain vulnerable when they depend on single sources of supply.

As if one natural catastrophe wasn’t enough to illustrate the fragility of today’s manufacturing networks, at the end of 2011 the Thailand floods provided a further demonstration that supply chain disruptions constitute a potentially catastrophic risk for both insureds and (re) insurers. Again, automobile and electronics manufacturers were hit hardest.

However all the above events have affected the Downstream Energy sector as well, although these have been less publicised and on a smaller scale. It is public knowledge that several petrochemical companies were impacted to some extent by these events, mostly due to customers being themselves hit by the catastrophes.

Hurricanes Katrina and Rita in 2005 had already provided us examples of Contingent Business Interruption (CBI) losses in the Downstream Energy sector following natural disasters. However, even if the full extent of CBI losses has yet to be determined because they filter through very slowly, 2011 will certainly be the worst year ever for CBI insurance.

Man-made disasters can also cause major economic losses to Oil and Gas suppliers and customers. The Santos Moomba gas plant explosion (2004), the Apache Australia gas pipeline explosion (2008), the SPSE crude oil pipeline failure (2009) and the Enbridge crude oil pipeline failure (2010) all generated CBI losses to Downstream Energy companies that were supplied with crude oil or natural gas.

According to several recent surveys, risk managers have been increasingly worried about their dependencies (see for example the FERMA 2011 study) and this complex issue has now become one of their top concerns.

In the downstream sector in particular, 2011’s buoyant capacity is fuelled by an extensive array of leadership options. There is a marked contrast this year in terms of leadership options compared to the time of the last truly soft market in 1999.

EMR Newsletter, December 2011
SCOR has always paid attention to suppliers and customers of its corporate clients because underwriting capacities take into account contributions from CBI accumulations. Monitoring relationships between insureds and interdependencies between locations of industrial companies is embedded in the underwriting processes.

Insurance markets have been reacting to the 2011 losses by focusing on CBI sub-limits, coverages, deductibles and wordings (which for the most part are not very detailed). Senior management of major industrial (re)insurers are now very sensitive to business continuity issues and are putting pressure on underwriters to better understand and limit CBI exposures, thereby avoiding nasty surprises.

Cover for unnamed or indirect CBI risks will certainly reduce. Cover will also be restricted for catastrophe exposure, especially in critical areas such as Japan, Thailand, California, Gulf of Mexico, and the definition of “direct” will also need some clarification.

In order to maintain the CBI cover, underwriters will also need to receive good quality information to be able to properly underwrite CBI risks. Insureds will be expected to disclose their contingency plans and any material and critical facts necessary to properly assess their risk management. We expect our clients to do their risk management “homework” and (re)insurers to cover the residual risks.

In addition, to gain a better knowledge of risks underwriters will request engineers who visit individual locations on a regular basis to dedicate specific time to establish CBI exposures. For this information (re)insurers have been relying, to a large extent, on engineering surveys of individual locations. However for most clients, surveys do not provide much detail on suppliers and customers and this will no longer be enough.

In order to better manage their aggregates underwriters now need to know as a minimum (for each production line and for every client location):

- The supply chain flow diagram:
  - Product names
  - Flow rates

- The list of main suppliers and customers:
  - Their criticality
  - Whether there is a plan in place to replace these key suppliers

- Where suppliers (and their replacement plants) are located, especially in catastrophe-prone zones – real diversification means suppliers (or customers) are not affected by the same natural catastrophe event

- The type of contracts in place for alternative sources:
  - Will the alternative source be able to replace 100% of the production?
  - How quickly?
  - Will this involve significant extra expenses?

SCOR will also promote and support more general, dedicated, corporate level CBI and Interdependency studies with the aim of reviewing and evaluating supply chain management systems in more detail and ascertaining what has been done to prevent major impacts from supply chain disruptions- such studies do exist, but they are rare.

Underwriters will be pushing for these surveys to complement information provided by clients in order to assess the robustness of risk management systems and to establish how critical suppliers are managed at corporate level. The degree of duplication of sources will be appraised, although relying on alternative sources is not the only way to mitigate CBI losses. Insureds could also possibly use different processes and switch to different products and different feed stocks instead of relying on existing stocks.

With sufficient information on exposures and an assessment of the quality of the prevention plan, underwriters will then be able determine the probability and severity of catastrophic scenarios able to impact insureds and continue to underwrite CBI.

It will not always be easy to obtain detailed information on the quality of the suppliers and customers, and underwriting of CBI will remain challenging. However the relevant quality information will allow underwriters to tackle the issue.

SCOR Business Solutions intend to work with both risk managers and with brokers and their engineers so that together we can respond more effectively to the underwriting challenges posed by CBI and interdependencies.”
THE MARKET TODAY
In essence, the downstream market has been in “soft mode” for much of the last ten years, as our chart below shows.

The chart above shows the development of capacity and rating levels in the Downstream market during the course of the last twenty years or so. In general terms there has been a notable correlation between the two factors over the years, with increased capacities naturally leading to decreased rating levels. However, as in the upstream market, this correlation seems to have weakened markedly over the last couple of years, with a significant increase in overall capacity failing to lead to a further decline in rates.

How long can rating levels remain flat, given that capacities have continued to increase? As we remarked at the beginning of this chapter, not all of this capacity is being used to generate competition in the market. Furthermore, the chart shows that current rating levels remain at their lowest ebb for over twenty years, making further aggressive bids for premium income and market share a brave underwriting decision, especially in light of the recent losses.

The effect of these record low rates has also to an extent been mitigated by the increased values of the subject matter insured, which has meant that the market’s premium income levels have generally been maintained. Insurers have also been helped by the maintenance of retention/deductible levels, which has prevented an increase in attritional losses.

Does all this mean that the market has behaved entirely consistently, offering similar terms for each renewal programme over the last 12 months? By no means – if anything, the market is differentiating even further between those risks and risk partnerships that it truly values and those which have either been more impacted

Having reviewed the various factors that might influence both markets to move in a particular direction, it seems more probable that any new softening process is more likely to materialise in the downstream rather than the upstream market as 2012 unfolds.

EMR Newsletter, December 2011
by recent losses, or which do not offer either a sufficiently attractive risk profile or sufficient underwriting information to generate their interest. We have therefore seen some programmes achieve even more competitive terms than 12 months ago, while others, especially those with significant natural catastrophe exposure, have not been treated with such leniency.

Although the overall situation remains static, we can now detect a shift in insurers' resolve compared to the immediate aftermath of the natural catastrophes in Japan and Thailand. At one stage last year, the market seemed resolved to demand rating increases on all programmes, regardless of individual risk profile; this only lasted a short while before market forces ensured that this did not apply to the most popular programmes. The emphasis then shifted to an insistence that rating reductions would not be tolerated under any circumstances; again, brokers have been able to re-configure individual programmes to ensure eventual market acceptance of an overall improved deal for the buyer. In any event, increased values have certainly come in useful for the market; not only have they served to disguise how low current rating levels are but they have also been generally absorbed into programmes at pro rata of existing rates. However, in many cases the actual risk to the insurer has not increased in proportion to the increase in value, and the more astute brokers are often now being able to negotiate discounted additional premiums in such circumstances.

Meanwhile market verticalisation, a trend which we have highlighted extensively in previous editions of this Review, has continued to be used extensively to complete major programmes. In a number of instances we have seen programmes being placed in the market at varying prices, with each insurer seemingly content with the premium received for their participation. However, there are two particular issues with vertical marketing that can cause difficulties for the buyer. One is the issue of coverage and claims; it is important that when brokers conduct a vertical marketing process, the policy wording used and the panel of loss adjusters are universally accepted by all insurers subscribing to the placement, regardless of the premium charged. The other is the issue of the next year's renewal; all too often insurers who have perhaps underwritten the placement at the most competitive rates have realised, belatedly, that others have been offered a share at a more generous price. It is under these circumstances that the broker's skill is brought most to bear to ensure that the long term outlook for the programme is not impacted significantly by too wide a variety of terms within the market.

LOOKING TO THE FUTURE – WILL 2012 BE A GOOD ONE FOR THE BUYER?

Is it possible that the market might soften further later in 2012?

LLOYD’S DOWNSTREAM PROPERTY INCURRED RATIO, 1993-2011 (AS AT Q4 2011)

The chart above shows official 18 year Lloyd’s figures for Downstream Energy as at Q4 2011, and as ever we must caveat these figures. Firstly, the figures for 2010 and 2011 are still too immature for us to judge them realistically, and secondly, because Lloyd’s has such a small share of the
overall Downstream portfolio their own figures may not correlate with the overall portfolio total. However, from a capital provider's perspective, they do not suggest that the losses that have been sustained have, as yet, produced underwriting losses on the scale required to offer a convincing case for capacity withdrawal.

The chart suggests that downstream insurers have generally made money more often than not during the course of the last ten years. They have received a significant volume of premium from a relatively small number of risks (although some bankers might suggest if they were offered these returns in return for the exposure, they would be unlikely to find the ratio acceptable!). Furthermore, the portfolio has offered these insurers an important additional advantage – market penetration into several of the world’s Global 500 companies.

As we pointed out earlier, the market has been essentially soft for a large part of the last decade. Logic suggests that in the absence of the major catastrophes of the last two years, rates would have been forced down some time before 2012.

We do not believe that official figures such as those provided by Lloyd’s will change markedly during the course of the next nine months and, notwithstanding an event such as a Tohoku or a further development in the European banking crisis materialising during this time, it seems that the over-supply of capacity in this market may mean that the market is likely to soften once more in 2012 – particularly during the latter half of the year, when the need to satisfy premium income budgets may force insurers to find ways of generating new business; this may focus on certain streams or non-capacity risks. By then the budgetary gaps that will have materialised because of a withdrawal from programmes during the last year will have become apparent for several prominent market leaders which, in the absence of intervening factors, may well prompt a renewed drive to win some of this lost business back.

This looks like good news for the buyer, and no doubt if these market conditions do indeed materialise during the second half of the year many will take full advantage. However, will a potential market “feeding frenzy” really be in the buyers’ best interests in the long term? It is certainly possible that by the end of 2012 this latest downward pressure on rating levels may be sufficient to finally prompt the first major insurer withdrawal from the market. We certainly think that, if one major insurer were to withdraw, this might lead to a “domino effect” whereby overall capacity might plunge quite dramatically.

CONCLUSION: TOWARDS MORE LONG TERM RISK PARTNERSHIPS?

For several years we have argued that for buyers to see the downstream insurance market as “the enemy” from which as many concessions should be wrung without mercy during a soft market is fast becoming an outdated notion.

There can be little doubt from our review of the market that, in general terms, downstream insurers are beginning to hurt. In order to avoid a potential full scale market withdrawal at the end of 2012 – which would hardly be in the long term interests of the buyer - we would suggest instead that now might be the right time for to consolidate relationships with key insurers. There can be little doubt that the development of a long term partnership with key insurers would:

— Allow buyers to continue to access the capacity provided, even if the overall portfolio turns red in the future
— Help protect those buyers from the inevitable market upswing that would result in the wake of a widespread market withdrawal
— Provide a rationale to allow the insurers to offer discounted premiums
— Pave the way for these insurers to participate on more lines of the buyer's overall programme on a “package” basis
It should always be remembered that Downstream insurers are as keen to write attractive programmes as buyers are to transfer the risk. However, if they are put in a position where they can no longer justify underwriting the business – which they might well be soon if new competitive pressures are generated towards the end of 2012 – any withdrawal of capacity that results will signify bad news, not just for the insurers concerned but for the buyers and their brokers.

To survive, insurers need to get close to the client, to penetrate all lines of their business and cross sell their capacity as far as possible, and we believe brokers should be taking the same view. Major composite insurers should be approached and asked why, for example, if they are happy to provide capacity on the property programme, that they are not so happy to offer terms for the D&O or Employers Liability programmes?

In this review, we have continued to emphasize that insurers like to differentiate; however, differentiation can come in many different forms. It need not necessarily be all about price – it could be about the amount of premium that can be generated from a major energy company to a major insurer through multi-line cross-selling.

Perhaps such a move towards developing partnerships between the downstream energy market, insurers and brokers will lead to the market stability that all sides profess to value – rather than the market rollercoaster which, it seems, is on the cusp of the next “loop the loop”. During 2012, Willis will keep our clients full apprised of developments.
ONSHORE CONSTRUCTION

In April 2011 we said:

— The recent natural catastrophe losses were likely to have little effect on the onshore construction market
— The market had seen a continued period of softening for the last four to five years, and competition remains high between insurers
— The volume of new projects coming onto the market was beginning to increase
— The trend towards a decentralised underwriting philosophy has continued, with an increased insurer focus on the developing economies of Brazil, China, India and Russia
Despite an unprecedented number of natural catastrophe events over the last 12 months, specifically the Japanese tsunami, New Zealand earthquake, and flooding in Thailand and Australia, the global construction market continues to remain largely unaffected. While the full extent of all of these incidents is still yet to be fully quantified, the market view is that many of the insured losses relating to the incidents are well within the Construction market’s modelled expectations.

The 2012 treaty renewal season centred on the availability and cost of “Nat Cat” capacity for many carriers. To date this has had negligible impact on insurance terms and conditions, but it is feasible that the increased cost of capacity will affect the profitability of those carriers who continue to deliver marginal returns to reinsurers over the next 12 months. This is by no means the start of a hardening Construction market, but should maintain underwriter focus on the careful management and an accumulation of such exposures across their Construction portfolio.

The diversity of construction risks and relatively low loss ratio compared to other classes, means terms and conditions remain largely unaffected. Increased competition amongst carriers for projects which engage recognised levels of loss control and risk management remains high.

With the exception of those projects in the most exposed natural catastrophe areas, the civil engineering sector has remained insulated from significant market softening largely due to the relatively limited pool of specialist lead markets in this sector, coupled with a number of significant tunnelling losses over recent years.

Over recent months the severity of Construction losses has become evident in the Power and Metals sector, with a number of large testing and commissioning related (as opposed to natural catastrophe-related) losses in the US and Middle East. Many of these projects have Delay In Start Up (DSU) coverage which will potentially generate significantly larger financial loss exposure to the Construction market than the Material Damage aspects. It is this aspect of cover which is currently receiving the most scrutiny from the major international carriers rather than just the technology, location and natural catastrophe exposure of the project. Despite this, the Construction market generally continues to deliver positive underwriting returns; however to date, there has been some recent notable changes.

We can report that none of the major Construction insurers have ceased underwriting this class during the last 12 months and global underwriting capacity remains stable. Global construction capacity has remained consistent during the first part of 2012 with total capacity estimated to be approximately USD 3 billion (Probable Maximum Loss basis – PML) with insurers rated A (S&P/A.M Best) or above; this subsequently increases to approximately USD 3.6 billion (PML basis) if markets rated BBB (S&P/A.M Best) are included.

Many of the major international insurers continue to develop a decentralised underwriting philosophy and are continuing to develop their specific territorial underwriting expertise by attracting high profile talent so as to maintain their market share and product distribution capabilities. Consequently it is our opinion that “terms and conditions remaining unchanged” will continue to be the case during 2012. It is also feasible that any potential for a hardening market will be mitigated by additional capacity seeking to enter the global market, as financial institutions continue to see the Construction market as an opportunity to deliver enhanced return on capital than the financial sector.

In general as estimated project values continue to increase due to the cost of raw materials, and labour consequently we are seeing Estimated/Probable Maximum Loss scenarios increase (upon which the large majority of construction markets base their participation). Therefore for large scale projects the key international lead markets for these projects remains Munich Re, Swiss Re, Scor, Chartis, Zurich and Allianz, with the notable new additions of Liberty International, CV Starr and more recently Royal & Sun Alliance actively developing their underwriting team who are in Asia and Middle East.
MACRO FACTORS MAY CHANGE MARKET CONDITIONS

It is likely that any market change will be stimulated by forces outside the Construction market itself, and the continued fragile nature of the international financial industry is likely to have the most notable impact. Economic uncertainty, political unrest in the Middle East, the ongoing financial turmoil in the Eurozone and the modest growth displayed in the world’s largest economies will eventually impact insurer’s results, necessitating a review of terms and conditions attached to their insurance product offering. The timing of such changes is very difficult to predict, and in the short term it is not unrealistic to suggest that, for the profitable elements of an insurer’s portfolio, there could be some further price softening before any wholesale changes may materialise.

In summary the global Construction market remains well capitalised and able to meet the increasing capacity demands of its diverse client base, while continuing to deliver an acceptable return on shareholder investment. Terms and conditions are likely to remain largely unaffected over the next 12 months for all but for the most complex natural catastrophe and DSU-exposed projects, which are unable to demonstrate strong levels of quality control and risk mitigation procedures.
In April 2011 we said:

- 2010 continued with a further decline in rates due to over-capacity in the market
- However, losses continued at it looked as if the overall portfolio loss ratio would exceed 100% for the first time
- There has been increased demand for liability and employers liability terrorism products, as well as strikes, riots and civil commotions coverage
- The market is continuing to extend cover to include Control of Well expenses following a terrorism incident
- More detailed security information is now required by the market for areas of high risk
THE EFFECT OF THE ARAB SPRING

The Terrorism market has been brought into sharp focus again during 2011 and 2012, a decade after the last event that re-defined it; the “Arab Spring” has entered the lexicon as a generic term for the uprisings against repressive regimes in North Africa and the Middle East. Since December 2010, the world has seen events such as revolutions in Tunisia and Egypt, a civil war in Libya, civil uprisings in Bahrain, Syria and Yemen, and major protests in Israel, Algeria, Iraq, Jordan, Morocco and Oman. There have also been minor protests in Kuwait, Lebanon, Mauritania, Saudi Arabia, Sudan and Western Sahara. In the wake of the Arab Spring, the Thai riots of March to May 2010, which saw mass demonstrations and political violence in the country, have been pushed to the side in the public consciousness.

The difference between these events and those of 11 September 2001 (9/11) is that while 9/11 was clearly a terrorism event, neither the Arab Spring nor the Thai riots could be classified as such. However, this does not mean that these events are of no relevance to the Terrorism market. This is because it would be wrong to think of the Terrorism market as just providing cover in the event of a terrorist attack: it offers much, much more.

FROM T3/T3A TO LMA3030

As the “All Risks” market has sought to reduce its exposure to such risks, which they struggle to quantify due to their unpredictable nature, the Terrorism and Political Violence market has stepped in to provide broader coverage, moving away from the standard terrorism (T3/T3a) wording to its successor LMA3030 (known as the Lloyd’s Terrorism and Sabotage Only form), and on further to offer coverage for strikes, riots and civil commotion (SRCC), malicious damage; insurrection, revolution and rebellion; coup d’état and mutiny up to full war/civil war (i.e. Political Violence) cover. The market has sought to do this in an open and transparent way, with perils named and defined, as opposed to a standard “All Risks” property form which may provide cover if such perils are not specifically excluded.

CAPACITY RESTRICTIONS

The insurance market has reacted in several ways to the political unrest. Within the “All Risks” market, we have seen insurers significantly reduce their exposure to SRCC in some territories, either in the form of sub-limits, or by outright exclusion. Available Terrorism capacity has also remained static during 2011, with commercial Terrorism capacity in the stand-alone market currently estimated at USD 1.75bn, although Political Violence capacity is more restricted compared to previous years, particularly in the regions/countries which have experienced political unrest. Within the Terrorism and Political Violence market some insurers are reviewing their appetite to continue to underwrite business in certain territories, while Lloyd’s has reclassified Political Violence perils together with War, thereby reducing the aggregate capacity available to each syndicate. This has knock-on implications for the aggregate capacity available in some regions.
RATING INCREASES AND FURTHER LOSSES FOR SOME...

In addition pricing has increased, and we have seen territories that have previously been treated as relatively benign have suffered significant (400%) increases in rating. While this is very much the exception, it does serve to demonstrate the significant upheaval that has occurred during the last year. While we would expect the rates which spiked during 2011 to reduce, it is unlikely that they will settle back to their pre-unrest levels.

There have been some high profile losses within the sector. For example, pipelines are much easier to target than many of the physical assets themselves and present those so inclined with an excellent opportunity to cause severe disruption, especially from a BI perspective. Physical security tends to focus on the main property (refinery, etc.) rather than the pipeline itself. Indeed, one of the biggest recent losses occurred in Pakistan where the PD loss was just USD 2.5 million, but the BI claimed was USD 190 million, due to the fact that the group responsible for the damage refused to let a repair crew into the area. Political risk can arise from terrorist attack, but the events seen recently have brought into sharp focus the broader Political Violence implications for insurance buyers. Control of Well cover remains available, albeit at a price, with one of the biggest losses in the market during 2011 being a USD 28 million Control of Well loss.

BUT NOT OTHERS...

In 2011, the market generally experienced continued rate reductions, except in those areas discussed previously. However, rates are generally flattening and for “higher risk” areas, or those with insufficient or poor quality underwriting information, are increasing due to the significant increased levels of activity globally. Interest has continued to rise on the “other” Terrorism products, being Terrorism Liability, which covers public liability for third party bodily injury, physical damage, debris removal and pollution cleanup, defence costs (T3L); employers liability (T3EL), and Nuclear (NCBR), although the NCBR buyback has been taken up to a lesser extent.
In April 2011 we said:

— Only the offshore sector was experiencing a much tighter approach to underwriting
— The Macondo well loss was still dominating the atmosphere of the market
— Combined on/offshore programmes have become more popular with buyers seeking increased limits following Macondo
— Capacity for 2011 had remained flat, but conditions in various regional markets around the world differed, from a hard market in the US to much softer ones in regions such as the Middle East and Asia Pacific
— We expected the market for combined onshore and offshore risks to shrink further, but relatively benign conditions were continued to be forecast
LIABILITY PORTFOLIO REMAINS IN THE SPOTLIGHT
The twelve months that have passed since the last publication of the EMR have seen a focus on Energy Liabilities that has rarely been greater. In an industry where the higher premiums of property insurances usually attract the majority of the attention of clients and carriers alike, this increase in focus has changed the market landscape.

Essentially, the year has been one of re-evaluation. Liability insurers have looked again at how they underwrite the cover and many buyers have re-evaluated their exposure having been reminded that the decisions on how to manage these issues can have a very significant effect on the stability and future of the company. While the International Energy Liability arena has attracted some possibly unwanted limelight, the question still remains as to whether this factor will have a tangible effect on the condition of the market as a whole. Furthermore, it should be remembered that the liability market, by its nature, takes time to react to events. Maybe now, almost two years on from Macondo and Enbridge, we are starting to see what real change these events may cause to the long-term market climate.

Last year we painted a picture of the continued uncertainties in the market place and the difficulties in recognizing clear and discernable trends. That said, we acknowledged that there were areas where the market showed signs of hardening, namely, the North American and offshore energy markets, where belts were tightened in the aftermath of the succession of losses. As for the International arena the only capacity to show some contraction has been that offered on a combined basis for both onshore and offshore risks together. We highlighted the increased profile of pipeline and storage risks in the minds of energy liability underwriters and the associated requirements for significantly greater levels of risk information. However, despite all these factors the wider International market remained buoyant and we reiterated that only a significant reduction in capacity would bring about a wholesale change in rates.

THREE SPECIFIC AREAS OF FOCUS FOR THE MARKET
In 2012, insurers’ focus has been directed predominantly at three particular areas:

— **Storage and pipelines**, a concern which was highlighted last year which has not lost its intensity – Enbridge and PG & E are still very fresh in the minds of insurers.

— **Offshore Exploration & Production**, of which the most dramatic manifestation was the directive issued by the Lloyd’s Performance Management Director, Tom Bolt. In our EMR newsletter of August last year, we commented on the guidance issued by Mr Bolt’s office and how it sent shock waves through the market. However, as intimated, the reaction from markets, clients and brokers alike has been mixed. The statement has, while initially appearing intransigent, proved to be more malleable in the intervening months. The need to ensure that the proposed changes do not disproportionately disadvantage insurance buyers and the need to maintain Lloyd’s competitive position in the wider insurance market have led to a softening of the position and a view that “best practice” is the full implementation of the recommendations while recognizing that there have to be exceptions. However, what is clear is that the sentiments outlined and the greater scrutiny of Lloyd’s in the signing off of syndicate business plans have had an effect on how the market is behaving towards issues of aggregation, pollution exposures, removal of wreck etc.

— **Hydraulic fracking**, which is a favourite item of conversation for client/insurer meetings (see the Feature Article of this Review). While this activity is yet to produce similar costs to the market compared to the Offshore Exploration & Production losses as described above, it is still an issue that is very much on the minds of buyers and insurers alike. As we show in the Feature Article, the flames of this particular hot topic have been fanned somewhat by some sensationalist press coverage.
GREATER DEMAND FROM THE CLIENT BASE

For clients, this re-evaluation has taken a different form. The reasonably quick succession of events at Macondo and Enbridge had the effect of generating debate regarding the limits purchased. These events have reminded many that the limits available in the market cannot always address every eventuality; as such, we are seeing new placements in the market where cover had not previously been bought, and furthermore we are seeing those who already have cover buying more. Diversification in operations is also generating greater demand for higher limits of liability from many clients. Integrated oil companies based in the areas of the global economy where there is growth (despite the global financial crisis) are refining their approach to liability risk. Many of these companies are investing in offshore work or North American domiciled activities; this development is leading to a greater number inadvertently bringing themselves into contact with the part of the market which is tightening – an arena to which many clients have had little exposure up until recently.

CAPACITY REMAINS FLAT

As can be seen in the chart above, the theoretical maximum capacity in 2012 is broadly unchanged from 2011. We said last year that, inevitably, any real change in the market would only be driven by a reduction in capacity. The only area of change in capacity in 2011 was combined capacity for on and offshore risks together, a trend that has continued. While few markets have withdrawn totally from the arena, more insurers have followed the example set by some in the last year and reduced the amount of capacity they provide for any one risk below their actual available capacity. Furthermore, some insurers now continue their readiness to renew incumbent business in the sector while being extremely reticent to take on new business; this in itself creates a different climate for the new buyer.

None of the markets that withdrew last year from the combined onshore/offshore market have yet returned. However, there is one prime example of a new entrant into this combined field; at 1 January 2012, Catlin set up a specific onshore/offshore combined liability function. This move suggests that there is a view amongst some insurers that, despite the fears of many carriers, a directed approach to this area is still attractive. In summary, the practical capacity for the larger scale risks has reduced in real terms from last year, even though the theoretical figure remains unchanged.
**NORTH AMERICAN RESULTS BEGIN TO AFFECT INTERNATIONAL PORTFOLIO**

Many of the insurers involved in the combined on and offshore cover also set their sights on providing high level excess capacity and are active in the North American market. As a result, the vast majority of the recent high profile losses sit within their scope, and the change in outlook prompted by these losses has been dragged across into their approach to the International portfolio. However, for those clients who neither buy high enough limits to utilize such capacity nor have North American or offshore operations, the market still remains fairly benign. The capacity for such onshore risks which require lower limits of liability remains plentiful and competition is still widespread; furthermore, the aggressiveness of local regional markets remains strong. Where such markets feature local representation of multinational insurers such as ACE, Zurich, Chartis etc. there has been little to no withdrawal of delegated authority or capacity from their respective head offices; meanwhile local budgets and targets for premium volume still drive aggressive underwriting for market share.

**NO MAJOR CHANGES FORECAST...UNLESS SPECIALIST CAPACITY IS REQUIRED**

The climate in the coming year is not showing any great signs of major change. While the effect of the spotlight shone on the class from a management level has had an effect on the overall market atmosphere, the enduring truth of supply and demand dictates that, until capacity contracts to a level where the options for the average buyer become limited, there will be no significant change in rates for the majority of clients.

This being said, the clear trend towards purchasing higher limits among international clients and the diversification of the activities of many clients into the North American and offshore arenas means that the curves of increase in demand and decrease in supply may, for some, converge more quickly than anticipated. So it would seem that, two years on from what many thought would be a market-changing event for the energy liability market, the principle changes are ones of approach and process – the predicted widespread withdrawal of capacity has simply not materialised. For many clients, the market feels little different but for an increasing number the tighter pockets of specialist excess and combined onshore/offshore capacity are having an effect on those who need to access this capacity.

**MARKET MOVEMENTS**

— Glenn McCubbin (formerly of Marsh) has returned to his underwriting roots and, with Derek Rattray, has set up a new primary on and offshore liability energy team at Catlin. He has built a team with some former colleagues from Zurich Global Energy. While Catlin never left the upstream market, this marks a return to downstream liability risks after their withdrawal in 2008.

— Kiln syndicate have set up a new team to write international liabilities run by Chris Jones (formerly of David Constable Syndicate and QBE).

— Mark Davies (formerly of Catlin, D.A. Constable and Novae) has set up a new international liability capability for the Panamanian domiciled Barents Re.
EXCESS US LIABILITIES

In March 2011 we said:

— Worldwide “stand alone” Excess Liability capacity was in the area of USD 1.4 billion, down slightly from levels of the past two or three years, with meaningful realistic capacity somewhat less and reducing
— We noted that a greater number of buyers were utilizing a larger percentage of this capacity
— We questioned whether Excess Liability Energy insurers’ results/loss ratios were going to deteriorate to the levels whereby they would not worry so much about losing market share and therefore require (and achieve) meaningful across the board premium increases
— We did not expect major changes as respects coverage, terms or conditions
**HOW 2011 UNFOLDED**

While predicting future outcomes can be challenging, in terms of forecasting market conditions in 2011 we were correct in a number of instances:

- Notional capacity is now in the area of USD 1.0 billion, with more realistic capacity in the range of USD 750 million to USD 875 million
- Zurich Bermuda’s capacity of up to USD 75 million has now left the market, as has Torus Bermuda’s capacity of up to USD 50 million
- Chartis’ Cat Excess and ACE’s capacities for most of their energy programmes has been reduced from USD 150 million to USD 100 million and other insurers have followed along

Some of the reasons for these reductions in capacity are:

- Most energy insurance buyers do not purchase full market capacity so demand for the stretch is not high (even though post-Macondo many buyers with offshore E&P exposures did purchase additional limits)
- Current trends seem to indicate increased frequency and severity of losses (especially for downstream businesses) which suggests that the current rating levels cannot support higher limits

**NO CHANGE IN THE PRODUCT OFFERED**

With regard to policy terms and conditions we did not experience any noteworthy changes. There were no significant expansions of coverage, nor were there significant restrictions in coverage either. As far as Joint Ventures are concerned, this was an area of continued focus due to insurer clash exposures; however, since most buyers already had some form of scaled limits anyway, this was a relatively insignificant issue.

At this time last year, it was not clear whether insurers’ financial results for their Excess Liability Energy portfolios would deteriorate to the point where they would require and achieve meaningful premium increases. This was because there were a number of potentially mitigating factors which could have thwarted a market adjustment. These factors included but were not limited to:

- More capacity then most energy buyers require (which is still the case)
- Less demand for insurance, given the financial crisis over the past few years
- The fact that no one casualty loss (or other loss) had the wherewithal to turn the market

However, at this point it is fairly clear that for many (if not most) energy programmes the market last year did begin to adjust, mainly in the second half of the year. The question everyone is asking is a simple one: how long will it last?

**THE OUTLOOK FOR 2012**

The forecast for the balance of this year will be influenced by some or all of the following factors:

1. **The current low interest rate environment**, which means insurers must come back to basics – they certainly cannot rely on investment results to get the kind of returns they require.

2. **Natural disasters** – some insurance companies expect extreme weather events such as hurricanes, droughts and floods to continue to increase in frequency and cost. These events can pressure bottom-line results and cause property premiums to increase. However, if these losses become large enough they could have a premium “spill over” effect into other lines of coverage in order to replenish lost capital. To a limited extent this may already be happening to the Excess Liability line of coverage.

3. **Deterioration of combined loss ratios** resulting from greater loss frequency and severity (more losses approaching and exceeding USD 1 billion today then at any time in the past) as well as higher defense costs. Exacerbating this situation is the inability of insurers to generate adequate investment income to bolster results from underwriting (see sidebar for more details).

4. **The Euro zone debt crisis** and the impact on the solvency and financial security of insurance markets, which remains uncertain. The extent of exposure across the insurance sector varies considerably from one insurer to another and the exposure of each will depend on a number of factors, including (but not restricted to) leverage and diversification of underwriting and investment portfolios.

5. **Reductions in Excess Liability energy capacity** potentially allowing insurers to charge more for their capacity simply because there are fewer alternatives.

6. **Possible increases in reinsurance costs**.
RECENT MAJOR LOSS RECAP

Energy liability incidents in the past 18 to 24 months or so which may have contributed to a worsening combined loss ratio include, but are not limited to:

PIPELINE INCIDENTS

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>June 7, 2010</td>
<td>A natural gas pipeline explosion killed three people south of Godley, Texas</td>
</tr>
<tr>
<td>July 26, 2010</td>
<td>A crude pipeline ruptured in the area of Marshall, Michigan and spilled more than 19,000 barrels into the Kalamazoo River. The pipeline was closed and affected some refinery operations across the U.S. Midwest</td>
</tr>
<tr>
<td>September 9, 2010</td>
<td>A pipeline near Romeoville, Illinois released an estimated 6,100 barrels of oil into the surrounding area</td>
</tr>
<tr>
<td>September 9, 2010</td>
<td>A 30” diameter steel natural gas pipeline exploded in flames in the neighborhood of San Bruno, California</td>
</tr>
<tr>
<td>January 18, 2011</td>
<td>A 12” high pressure natural gas pipeline exploded in Philadelphia killing one and injuring six others who were responding to a call of gas odor in a residential area</td>
</tr>
<tr>
<td>February 9, 2011</td>
<td>A natural gas pipeline explosion in Allentown, PA included 5 fatalities and damaged 50 buildings</td>
</tr>
<tr>
<td>April 29, 2011</td>
<td>Roughly 28,000 barrels of crude oil poured out of a pipeline 100 kilometers northeast of Peace River, Calgary, Alberta</td>
</tr>
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OTHER INCIDENTS

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>March 2, 2010</td>
<td>A fire in an asphalt tank under construction killed two workers at a refinery in Artesia, New Mexico</td>
</tr>
<tr>
<td>April 2, 2010</td>
<td>Seven workers died in a blaze at a refinery in Anacortes, Washington, in the worst U.S. refining disaster since 2005</td>
</tr>
<tr>
<td>April 5, 2010</td>
<td>A coal dust explosion at a mine near Montcoal, West Virginia, killed 29 miners in the deadliest U.S. mining disaster since 1970</td>
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A HARDER MARKET IN THE FUTURE?
At this point (March 2012) there is little consensus between underwriters located in London, Bermuda or the USA in terms of premium levels necessary to attain or percentage premium increases necessary to charge at renewal. The only real consensus is that in the long term pricing is not adequate and so rating levels must increase. As a result, it is difficult to read underwriters’ minds and provide buyers with accurate estimates of what total program cost might be.

Normally, we would suggest that programs which do not require full market capacity, that do not have coverage sensitivities and that have flat exposures and clean loss records should fare better because the ability may exist to create competition. However, while it is always good to have alternatives, in the current market environment alternatives may mitigate any premium increases but they are much less likely to avoid them all together. The main reason for this is that current underwriter resolve remains high bearing in mind the events outlined above. Furthermore, there are also relatively few lead umbrella/lead excess markets to compete regardless of level of SIR; the leading insurer sets the premium tone for much of the excess tower.

As for those programs that do require full market capacity, there is generally much less opportunity to create competition to hold down premium increases. As such, we estimate that these programs will likely see premium increases of 15% to 20%, assuming little to no change in exposures and a clean loss record. However if exposures increase, rates and premiums can increase still further; furthermore, if losses are injected into the equation this increase could be even more significant.

As we mentioned last year, one of the relatively few markets that provides many lead umbrellas/lead excess placements continues to assess its book of business in terms of adequacy of premium, attachment point and coverage (occurrence or integrated occurrence) and its portfolio is still not performing as it needs too. As such, this insurer is increasing attachment points, possibly moving clients to “Integrated Occurrence” rather then Occurrence form and continues to require double digit premium increases. This will obviously make it much easier for upper layer participants to require similar increases.

Outside of pricing (i.e. coverage, terms and conditions) we generally expect no other major changes for most. However, fracking and waste water injection wells (see our Feature Article in this year’s Review) continue to be sensitive issues with some underwriters. If they continue to receive bad press and if any this press is substantiated (which to date we do not feel it has been) there is a chance that coverage changes could arise.

A GOOD MARKET PRESENTATION IS ESSENTIAL!
In a softer market environment at times it is easy to become lax when compiling and presenting renewal data to underwriters. However, in the market environment we find ourselves in today, it is extremely important to provide insurers with detailed and accurate underwriting submissions in order to achieve the best renewal results. In addition to the information that would normally be provided to insurers, buyers should consider providing them with the following supplemental information:

— Specimen copies of contracts evidencing favorable indemnification provisions
— Loss Control Reports for refineries, petrochemical plants, pipelines and the like where experience has been favorable

While face to face meetings with underwriters are always encouraged, they are even more critical in a challenging marketplace. It is important that the buyer meets with underwriters since no one knows the relevant exposures or loss information better.

UNDERWRITING ISSUES
Areas that some insurers continue to monitor include the following:

— Global warming/climate change
— Exposures in hurricane prone areas and resultant pollution losses that can occur
— Nanotechnology
— Litigation pending in respect of the Deepwater Horizon event
— Ageing refineries
— Ageing pipelines in general and a concern with regard to what has been built on top of and/or around them
— Environmental and human health concerns as respects hydraulic fracturing and waste water injection wells
If windstorm losses are discounted, 2011 is the worst year for energy losses recorded by our database in recent memory. 

**Source:** Willis Energy Loss Database as at April 3 2012 (figures include both insured and uninsured losses)

### THE TOP 10 NATURAL CATASTROPHE INSURED LOSSES, 2011

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Loss Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthquake/tsunami, Japan</td>
<td>USD 35-40 billion</td>
</tr>
<tr>
<td>Earthquake, New Zealand</td>
<td>USD 13 billion</td>
</tr>
<tr>
<td>Floods, Thailand</td>
<td>USD 10 billion</td>
</tr>
<tr>
<td>Storms and Tornadoes, US (April 22-28)</td>
<td>USD 7.3 billion</td>
</tr>
<tr>
<td>Storms and Tornadoes, US (May 20-27)</td>
<td>USD 6.9 billion</td>
</tr>
<tr>
<td>Hurricane Irene, US Eastern seaboard</td>
<td>USD 5.6 billion</td>
</tr>
<tr>
<td>Storms and Tornadoes, US (April 3-5)</td>
<td>USD 2.0 billion</td>
</tr>
<tr>
<td>Floods, Australia</td>
<td>USD 1.9 billion</td>
</tr>
<tr>
<td>Winter storms and blizzards, US</td>
<td>USD 1.4 billion</td>
</tr>
<tr>
<td>Cyclone Yasi, Australia</td>
<td>USD 1.3 billion</td>
</tr>
</tbody>
</table>

2011 has probably been the worst year ever for insured natural catastrophe losses. However it could have been so much worse for the energy market - two downstream losses from the Tohoku earthquake are the only energy losses recorded from these events.

**Source:** Munich Re
Just how concerned should energy insurers be about hydraulic fracturing?