1.	Good afternoon. My name is Dave Rouse. I am the Regional Response Manager for the Asia-Pacific Region at Oil Spill Response Limited. Before I start, I would like to thank the leadership of the Petroleum Association of Japan for their hospitality and the invitation to speak at this workshop. I was last here two years ago, speaking about the future challenges facing oil spill response management and operations. Two of the main themes in that speech were “change” and “collaboration”. “Change”. The geopolitical changes taking place at a global and regional level, changes in the way we manage our operations, the emergence of new technologies, the ever-increasing expectations from stakeholders – and how these all combine to present new challenges for spill preparedness and response. And “Collaboration”. When we think about change in a spill preparedness and response context, we are all in it together. For example, we know that major spills often catalyse changes that affect the whole industry and whole regions. Working in isolation to understand, manage and react to the impacts of changes just doesn’t make sense. We have all seen the benefits that occur when we work together in true collaboration and combine our different perspectives to come up with novel and efficient ways of optimising our resources. Those two themes feature throughout my presentation this afternoon. I think the first PAJ Oil Spill Symposium was held in 1995 and since then, this series of international conferences has been an outstanding example of innovation and sustained collaboration in action, having brought together a great number experts over the years with a diverse range of perspectives to exchange information and views, in turn strengthening our collective preparedness for oil spills. Which brings me to today and the subject of this workshop - developments in the oil spill response structure in south eastern Asia. For the next half an hour, I’m going to talk to you specifically about **oil spill capability in Asia – the current risks and the future challenges for shipowners and charterers.**

2.	Before I get into the presentation, I wanted to share my thought process about why I chose to talk about his particular aspect, and the perspective I'm coming from. As I was thinking about the workshop subject – developments in response structures – I started thinking about what those structures are, how are they made up and what is it that causes them to evolve, develop and change. As oil spill planners, we know the answer is risk. In simple terms, an evaluation of the likelihood and potential consequence of spill scenarios helps us decide what response structures need to be in put in place in order to mitigate the impact of a spill. So I started thinking about oil spill risk in south eastern Asia, What is the current risk picture? How is it changing? What factors are causing that change? This led me onto thinking about the challenges this changing risk picture will pose and the implications it may have on our response structures in the future. Pulling those threads together, gave me the subject **oil spill capability in Asia – the current risks and the future challenges for shipowners and charterers.**
3.	I've been studying and working in the field of crisis management for 18 years and for the last 12 years I have specialised in oil spill preparedness and response. My personal experience is predominantly in the upstream oil and gas segment of our industry but my presentation incorporates the collective, global experience of OSRL's experts. As you may know OSRL is the largest international industry-funded oil spill preparedness and response cooperative. The organisation was initially founded to provide response services to the shipping industry and over the past 30 plus years we have responded to more than 450 spills globally in all environments.
4.	Today, we have more than 175 Members, including Governments, National Oil and Gas companies, International oil and gas companies, ports and shipping terminals, shipping companies and commodity traders. As a membership organisation, we maintain long term, trusted relationships with regulators and industry associations across the world and have developed partnerships and alliances with many regional and international organisations to ensure the energy industry's capability to respond to oil spills is robust. This exposure to so many parts of the global industry allows us to make connections between things we are seeing in different places, and to share lessons and good practices between and across regions, countries and companies – which I hope to incorporate into my presentation today.

5.	I want to start by talking about risk. We assess oil spill risk in the same way we assess any other type of risk, which I'm sure you are all familiar with. Risk assessment is a versatile tool which can be applied at a very micro level all the way through to a very macro level. Before we start, we need to define the scope of what we are looking at and why. From an oil spill perspective - are we looking at a single vessel or a particular geographical location? Are we looking at an entire shipping route? Are we looking at risk to a province or country? Or are we looking internationally across a whole region? Setting a clear scope ensures that we can compare the relative risk of different events. The first step in any risk assessment is to identify the hazards. What are the events that have the potential to cause harm. Second we need to make an assessment of the likelihood that those events will take place. Here we may use engineering analysis of failure rates, statistics or trends to help us. From an oil spill perspective, we are also thinking in terms of geography – where do spills most frequently occur? and in terms of operations – at what stages of operations do spills most frequently occur, how much is typically spilt and what are the causes? Third we need to analyse and understand the potential consequences which may result if the hazard does occur. From an oil spill perspective, understanding where the oil might go and what might be impacted are two of the key issues to understand. Combing this information allows us to evaluate and characterise the risk of each hazard occurring. We often display this information on a risk matrix. We can use this information for a number of purposes, but one of the most important is to help prioritise efforts in risk reduction – taking steps to prevent the hazardous event from occurring, which has the effect of reducing the likelihood; and taking steps to minimise the impact if the hazardous event does occur – reducing the consequence. The information from an oil spill risk assessment is also of importance to inform the development of response capability – what agreements and arrangements need to be in place, how much resource should be available and where should it be positioned. That's the outline theory, now I'm going to try and build up a picture of oil spill risk in this region.

6.	The scope for this risk picture is going to be very high level and very macro. We are looking at the oil spill risk to vessel owners and charterers in South East Asia. Whilst we are concerned primarily with the risk to vessel owners and charterers, we also need to consider the wider shipping industry and how their activities contribute to the picture.
7.	As we are looking at this from a very macro level, we can say simply that the hazards which could result in oil spills are the vessels, their cargo and their fuel.

8.	Once we visualise the hazards - the vessels - on a map of the region, we can start to look at the likelihood and consequence of oil spills. I'm sure you are very familiar with this image – it shows the main shipping routes and the density of traffic through Maritime South East Asia. Let's start by considering likelihood. From the macro perspective we are taking, I'll talk about a few of the factors which have a bearing on the likelihood of a spill occurring. The most obvious is the volume of vessel traffic in this region and the proximity of the vessels to each other. Geographical features also influence likelihood. For example the Straits of Malacca. At its narrowest point the straits are just 1.5 nautical miles wide and the depth can be as shallow as 10m. It's geographical location makes it a concentration point for vessel traffic in this region – over 100,000 vessels pass through each year – which contributes to increasing the likelihood of a vessel having an incident in this location. Security is another factor – there are a number of areas in the region which have a higher risk of piracy, though it has fallen in recent years. If we continue using the Straits of Malacca as an example - many of you who recall the 2000s will know there was marked increase in piracy in this location in that period. Cooperation by regional navies has largely stemmed this issue, illustrating how the factors that influence likelihood of a spill do not remain static. But piracy threats remain a factor elsewhere in the region. Other dynamic factors include such things as seasonal haze from regional forest fires which can affect visibility, tropical storms, extreme weather events and natural disasters. Whilst statistically speaking, adverse weather is not considered the highest direct cause of large oil spills, it continues to account for a significant proportion of shipping accidents overall. Perhaps the most significant but hardest to predict are human factors. These are cited as contributing to more than of 75% of marine casualties. When we talk about human factors in relation to accidents, we are talking about failures in: • situational awareness – knowing what is really happening • speaking up when necessary • communication – really understanding everyone • complacency – is everything really ok? • Culture – is the safety culture as strong as you think it is? • Fit for duty – is everyone healthy, uninjured and unimpaired by alcohol and drugs • Local practices – efficiency or dangerous shortcuts? • Fatigue – just tired? Or dangerously fatigued? • Distractions – multi-tasking, or dangerously distracted? • Pressure – just busy, or dangerously overloaded? • Capability – is the team really capable and competent? • Teamwork – how well does the team REALLY work together? These human factors are a significant contributor to the overall risk of incidents occurring across all industries – not just shipping.

9.	Now we have established a picture of risk, we can look at ways to reduce it. We can do this in two ways – the first is to take steps to reduce the likelihood of the hazard from occurring through prevention measures. I'm not going to spend long on this – it is fairly widely known the measures that the shipping industry has put in place to reduce the likelihood of incidents. As a snapshot of the effectiveness of the preventative measures, I wanted to share this graph, courtesy of ITOPF, which shows that despite a growth in the amount of crude and other tanker trade over time – shown by the purple line, we have seen a decline in the number of tanker spills – shown by the bars. As we heard earlier, a small number of large spills still account for the majority of oil spilt. Recent data shows collisions are the current most common causes of spill incidents. The industry's continued effort to prevent spills occurring is clearly effective in reducing the likelihood from a risk perspective, but there are two things that we as planners and responders all know – 1) shipping will never be a risk free industry, and even the most effective measures to reduce the likelihood or incidents will never reduce it to zero – spills will still occur. 2) we are all in it together - complacency is the enemy – human nature means we all think an incident could never happen to us! And even if it doesn't, the impact of someone else having a major spill can have wide-reaching, industry changing effects.

10.	The second aspect of risk reduction is preparedness. Effective preparedness for spills helps to reduce the consequences of the incident by enabling effective response. What do I mean by effective response? • Rapid notification of a spill incident to the appropriate authorities • An incident management structure with clear communication lines and decision authorities so that decision makers can gain situational awareness, understand where uncertainties exist and have a framework to determine an effective response strategy that will reduce the impact of a spill on the environment • The mobilisation of expertise and resources to execute the response strategy • An effective logistics infrastructure to underpin the operations, including managing waste effectively; and • Transparent communications with impacted communities and other stakeholders Spill response is complex and high pressure. An effective response requires a collective effort, so to complete our picture of oil spill risk in south east Asia, I'm going to talk about how preparedness in this region from three perspectives 1) Company 2) Oil spill response organisations 3) Government

11.	When building a macro picture of risk in this region, the preparedness levels of shipping companies is where there is the greatest variability and least available information. With some exceptions, the shipping industry has typically followed a philosophy of managing oil spill risk through insurance rather than spill preparedness. As I will cover later in this presentation, I think that is starting to change due to a number of factors. As the shipping industry takes a more proactive approach to spill preparedness as a pillar of risk reduction, there are a number of questions companies need to be able to answer to ensure they are ready to respond: Primarily, every company needs to know their risk, have a plan, and be able to access resources to respond. Assessing the level of preparedness at a company level, means looking beyond just insurance and being able to answer questions such as: • Is there an up to date oil spill risk assessment? • Are there contingency plans which document clear actions to take in order to make the necessary notifications? • Does my organisation have an effective system for managing incidents? • Have the key decision makers and responders in my company received training? • Have we exercised against realistic scenarios? • Does my organisation know what response resources we would need in the event of a spill and do we have contracts or arrangements in place to be able to access them? • How do we know the responding organisations can do what they say they can? • Do we have plans for communicating to our stakeholders and maintaining business continuity?

12.	Next let's consider oil spill response organisations. These companies represent a significant proportion of the capability needed to respond to a spill. On the screen I've shown some of the key organisations in maritime southeast Asia and where they are based. Most OSROs are domestically focussed but as we know spills don't respect territorial boundaries, so it is vital that these organisations can work with other organisations in a response. The first thought that comes to most of our minds when thinking about the oil spill capability maintained by these organisations is stockpiles of equipment and dispersant chemicals and assets such as dedicated spill vessels or aircraft, strategically positioned close to spill hotspots. But equipment – whilst important – is the tip of the iceberg. To understand how these organisations contribute to reducing the potential consequences of a spill, we need to look at capability under three parts. Taking equipment first we need to understand the answers to questions such as: • is the equipment in the stockpile versatile and suitable for a range of response scenarios? • is the quantity sufficient to match the risk? • oil spill equipment tends to sit unused for much of its life, so is there a robust preventative maintenance regime in place to ensure it works when called upon? • is the equipment packaged in such a way that it can be rapidly mobilised, including where necessary, clearing customs? • Is the equipment in the stockpile representative of the latest available technologies? Looking next at people – which experience tells us are the most important factor in a successful response: • Are the responders competent to perform in a range of roles from equipment operation through to providing technical advice and recommendations to decision makers? • Are they experienced in responding to a range of scenarios and working in high-pressure, challenging conditions? • Are there enough of them and is there a robust on-call system to guarantee their availability over a prolonged bases, ensuring safety and fatigue can be managed? • Are there experts in key areas, for example waste management, oiled wildlife response, GIS and response information management, and shoreline assessment? Last, we look at the supporting arrangements in place: • is there a robust safety management system in place? • Are there clear mobilisation protocols, underpinned by effective logistics to get responders and equipment to the location of the spill? • Does the organisation have a robust audit programme to provide assurance they are ready? • Does the organisation maintain arrangements with other response organisations and a network of supporting contractors to be able to cascade additional resources, scale up during a response and provide specialist expertise they may not possess in-house? In this region, the majority of major oil spill response organisations are part of the Regional Industry Technical Advisory Group – RITAG – which was established in 2010 as a platform for

13.	The final perspective in considering oil spill preparedness is Government. The level of oil spill preparedness and response capability varies across different states in maritime South East Asia, but as a starting point, I have shown which countries have ratified the International Convention on Oil Preparedness Response and Cooperation 1990. Ratification of OPRC requires the state to develop of a national system to enable prompt and effective response to oil pollution by enforcing or having in place: • Shipboard oil pollution emergency plan on vessels (or the equivalent Oil pollution emergency plan for offshore facilities) • Incident reporting procedures • Detailed plans for dealing with such incidents including having an equipment stockpile, and regular exercises • Protocols for international collaboration during a major incident. I want to highlight one important point – whilst I have shown the states that have not yet ratified the OPRC convention, that does not mean they do not have plans or arrangements in place. We know spills don't respect political or geographic boundaries and so governments have established cooperative agreements, either regional or bilateral, to tackle cross boundary oil spill incidents. In this region, the main vehicle for such agreements is the ASEAN Regional Cooperative Mechanism for Oil Spill Preparedness and Response which has been in place since 2014. Previously, this mechanism was in development since the Japan Association of Maritime Safety (JAMS) and the Nippon Foundation initiated the ASEAN Association of Southeast Asian Nations Oil Spill Response Action Plan in 1991. A Memorandum of Understanding is in place under this mechanism between Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. The memorandum of understanding was put in place in recognition of the threat posed to the marine and coastal environment of the ASEAN region by oil pollution and the importance of effective preparation and response to pollution incidents at national, sub-regional and regional levels in order to minimise damage from oil spills. A key success that has resulted from this inter-governmental cooperation, is the development and publication of the Regional Oil Spill Contingency Plan which was formally adopted in November 2018. This It provides a mechanism whereby ASEAN Member States can request for, and provide mutual support in response to oil spills, to the extent allowed by their resources On the screen I have shown the sub-regional agreements that are in place. As you can see the names of these agreements are quite long, so I won't read them out! But I will share a quick example of how they can be effective in reducing the consequences of a spill in practice. The Standard Operating Procedure for Joint Oil Spill Combat in the Straits of Malacca and

14.	I've spoken now about all steps of the oil spill risk assessment process, but I want to go back to the macro level picture of oil spill risk in maritime south east Asia that we have created.
15.	At this level it isn't very precise but you can hopefully see how risk and capability are linked. I have one observation on this picture: There is a lot of oil spill response capability distributed across the region. It makes logical sense to strategically position equipment close to areas of highest risk, and to guarantee access to capability through owning it. But maintaining that capability is complex and expensive and the challenge is always to ensure we don't have an over-proliferation of response resources, whilst ensuring we have enough of the right type, at the right time. As we turn our attention in a moment to the challenges facing the industry and how they affect oil spill risk, we should keep in mind opportunities to ensure response capability remains in balance with that risk. This does not have to be by increasing the number and size of stockpiles – it can also be achieved through effective preparedness and pre-planning, leveraging cooperative agreements and robust logistical arrangements so that resources can be cascaded into a response when needed from wherever they exist. Having established a picture of the current risk, let's look forward and try to anticipate the future…
16.	Now I will briefly look at some of the major changes and trends at a global and regional level which may affect oil spill risk. I will suggest how I think they are affecting it, and by doing so, illustrate some of the challenges we will need to address. •
17.	There are interlinked trends which I am going to talk briefly about by way of a few examples: • Regulatory • Commercial • Geopolitical • Technology • Sustainability

18.	**Regulatory.** One of the hot topics right now – the implementation of IMO 2020 requirements for vessels to use marine fuels with a maximum sulphur content of 0.5%. There are wide-ranging implications of this change on cost, compliance and crew. Pressure on cost trickles down and often results in pressure on crew. We saw earlier that this is one of the human factors that can increase the likelihood of an incident occurring. There is also uncertainty about the stability and compatibility of ultra low sulpur fuels with vessel engines. Many I've spoken to in industry are anticipating more mechanical breakdowns, potentially leaving vessels without engine control – if this happens then we can anticipate an increase in the likelihood of incidents from vessels of all types. Currently, whilst there has been some analysis, until there is a spill, responders don't know for certain how ultra low sulphur fuels will actually behave in the marine environment when spilled and what impact there will be on response equipment. In reality, responders are not anticipating significant technical challenges and expect the main implications will be on safety and equipment selection, so it is unlikely this will have a significant bearing on the overall risk picture, but until there is a spill, it remains an area with some uncertainty. Another trend we are observing is in the number of jurisdictions requiring vessels to demonstrate response capability in the form of contracted access to an oil spill response organisation. This is well established in Japan, China, the US, Honduras and Uruguay to pick a few examples. It is conceivable this trend will continue and that vessel owners and charterers who do not already maintain contract coverage with oil spill response organisations will increasingly be required to do so. Whilst there is a financial impact to this on the industry, measures such as this by regulators help to reduce the consequence of spills on the environment when they occur by enabling a response to be rapidly mobilised.

19.	**Commercial** Experts are in consensus that economic power will continue to shift to Asia over the next decade. By 2030, six out of ten of the world's largest are economies expected to be in Asia, and the region's share of world GDP is anticipated to exceed 40%. Shipping will remain the most cost effective means of transporting cargo – be it oil, raw materials, finished products or other resources. Population growth and rising prosperity will continue to draw global shipping trade routes towards Asia. Developments in port infrastructure will link Africa to the Region. Flows of materials from Africa to Asia will increase. The volume of container ships and bulk carriers transitting the shipping lanes of the region in particular will rise. In addition to their cargo, the largest container ships can carry 10,000 tons of bunkers which if spilled can be very significant. We saw from the earlier presentation by ITOPF the implications relatively small amounts of fuel can have on remote environments. China's position as the largest oil importers is expected to continue as the country to addresses growing oil and liquid fuel consumption, build up of strategic reserves and the refinery sector reform allowing independent refiners to import quotas of oil. Japan and South Korea are also expected to remain in the top five global importers oil. What that means in terms of oil spill risk is that not only are we likely to have more oil being transported by sea through this region, but the existing shipping routes and choke points such as the Straits of Malacca will become more congested from container and raw material carrying vessels, indicating a rise in the likelihood of incidents despite rising safety standards. One area that we hope will have positive indications for spill risk reduction is that new and expanding port infrastructure in China, Japan and Korea are anticipated to have better port operations and more up to date charts, which is a factor in managing the likelihood of an incident. For this aspect, one thing we must keep in mind is that it doesn't have to be a tanker that has a spill to affect the industry. We are in it together. (Reference -largest tankers can carry in excess of 400,000 tons of oil)

20.	**Geo-Political** A number of geo-political trends to briefly cover – this is a particularly volatile risk factor but there are some things we are seeing now which we can anticipate will continue in the immediate future. The rise in the number of migrants at sea is anticipated to will continue. Increasing numbers of stowaways has consequences for ship owners, resulting in delays, diversions and pressures on the crew. Pressure on the crew being one of the significant human factors that can impact risk of an incident. At a macro level, we are seeing a global trend of increased nationalism and protectionism affecting policy decisions and trade partnerships. This has knock on impacts to many industries and we have seen volatility in the oil cargo volumes from the US to countries in Asia (Reuters) in the past couple of years. Sanctions and political troubles may also affect supply, as may conflict and rising security concerns on some routes, with increased risk of piracy or terrorism. As we saw last year in the middle East, tankers have become targets for terrorism. As new ports in Africa open, this will give rise to new routes, with the associated risks of security and traffic density. It is also unlikely that disputes over ownership of some territorial waters or military tensions in the Middle East and South China sea will abate. How might this affect oil spill risk? It has the potential to create barriers to the international mobilisation of personnel and equipment which is a fundamental response philosophy for spills from any scenario, but especially shipping spills. Delays in responding worsen the consequences of a spill, and a protectionist response can worsen the impact of spilled oil on the human and ecological environment if decisions are influenced by politics or experts' voices are not heard. Rising protectionism requires stronger partnerships.

21.	**Technology** You will all be well aware of the many promises and predictions about how technology is going to radically change the shipping industry. We have seen technology's role in improving safety standards on board ships, and anticipate this to continue to reduce incident rates. Cyber-physical systems are an area of growth which promises to improve cost efficiency, reliability and safety, through the implementation of geo-spatial technology, advanced inter-connected sensors, big data, machine learning, artificial intelligence and augmented reality. Some people predict that over the next ten years, self-steering ships will become standard, the use of sensors will replace the need for towing and that automation will reduce the risk of human error, though fully automated crew-less ships are not yet on the horizon. What is likely in the near term, are advances in engine monitoring, remote maintenance and machine-assisted adjustments to routings based on real-time weather. The successful implementation of these technologies has clear potential to have a beneficial impact on spill risk. But there are also areas for caution in the implementation of technology, and these are largely related to the human factors we discussed earlier. Placing too much trust in technology can lead to over-reliance on it and complacency. Some incidents have been attributed to crew being on their cell phones. If and when technology fails to perform as expected, the crew may not have full situational awareness of what is really happening and may have slower reactions or reduced capability to deal with the situation. When sailing on bigger ships in more crowded waters, the need to effectively manage the human-technology interface is clear, but complex. The shipping industry is a traditional one and humans by nature are generally slow to adapt to change, particularly when it impacts them personally or is seen as a threat. Addressing the changes in human behaviour needed to interact with autonomous systems on ships will be significant, and especially important in high risk and complex operations. In addition to the benefits that technology will bring to reduce spill risk, and the importance needed to ensure human factors can be addressed alongside technology implementation to ensure these benefits are realised, there is a darker side… As vessels incorporate more technology and safety systems reliant on technology, cyber attacks and incidents resulting from them are set to become more prominent. We have seen the disruption caused by cyber attacks on the Port of Rotterdam and on Maersk – resulting in pressure exerted elsewhere in their organisations and systems until the recovery. In future will we see cyber attacks on technology laden vessels, which could leave a vessel adrift without power or worse? It is important to ensure that cybersecurity and cyber-resilience maintain pace with the adoption of other technologies to ensure existing and emerging cyber threats from criminals, terrorists and enemy nation states do not create new and unpredictable risk.

22.	**Sustainability** It is interesting how shipping's crucial role in world trade goes largely unseen by the wider public. Brand recognition of shipping companies and related organisations – despite their immense size and value – is generally low. The maritime industry continues to take steps to reduce its impact on the environment but is still perceived by many in society as being largely reactive to legislation, rather than proactive in pursuit of corporate social responsibility. The rise of the socially and environmentally conscious consumer will continue to impact governments and corporations and gain media attention. In turn many people anticipate rising environmental concerns of investors and shareholders to create higher expectations for environmental performance on the shipping industry. One example of this is the Poseidon Principles framework. This framework was developed by global shipping banks – Citi, Societe Generale and DNB, together with industry representatives and expert support. The framework is an agreement between currently 17 signatory financial institutions representing approximately 30% of global ship financing who are committed to improving the role of maritime finance in tackling shipping's climate impacts. Whilst the focus of the framework is on reducing greenhouse gas emissions, there is recognition within the group that the continued success of the maritime sector is linked to the wellbeing of society and the environment, and that the signatory banks are starting to use investment levers to influence the environmental focus of companies they provide finance to. The Poseidon Principles are intended to evolve over time to include other issues where the collective influence of financial institutions can help improve the contribution the industry and its lenders can make to society and the environment. The final point on sustainability is that the response to spills, when they happen will continue to attract even greater media attention and scrutiny from an increasingly activist public - the louder and stronger voices of communities whether they are directly impacted, or on the other side of the planet, will be increasingly difficult to predict. This was captured neatly in this quote from International Salvage Union (ISU) President, Mr Richard Janssen. He said "Zero tolerance of large marine spills has been established for some time, but we have yet to see the reaction to a major incident in this era of Extinction Rebellion." Whilst there are clearly costs associated with investing in spill preparedness, in the future there may be greater costs in not doing so – if that even remains an option. But with greater environmental and social focus, we can expect improved spill preparedness across the industry, thus reducing risk and future proofing our organisations to ensure they remain relevant, competitive and sustainable.

23.	I'd like to conclude with a few final thoughts. I've covered a lot in the last forty minutes or so. I hope that the perspective I've shared about the current risk and future challenges for the shipping industry in maritime south east Asia has been interesting, relevant and enabled you to "join some dots". I also hope I've provoked some thought. When we consider risk, we are of course dealing with uncertainty. As we built up a high level picture of the current oil spill risk for south east Asia, we have been able to consider some of the obvious and perhaps less obvious factors that influence the risk today. We have also seen how through company, response organisation and governmental preparedness, many need to collaborate to contribute to reducing the risk. We live and work in a world that is increasing volatile, uncertain, complex and ambiguous. The only constant is change. It is clear there are numerous interlinked trends which will bring about changes that impact our globe, region and industry. We can't affect the trends but we can anticipate them and try to understand what they mean for our business and in particular how they may beneficially and adversely affect the risk of oil spills occurring. In closing: As we consider the risk of oil spills in the future, we know the issues are shared - I do believe that preparedness through continued collaboration will equip us well to navigate the challenges ahead. Thank you very much.