U.S. CHEMICAL SAFETY AND HAZARD
INVESTIGATION BOARD

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PUBLIC HEARING
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REGULATORY APPROACHES TO OFFSHORE OIL AND GAS SAFETY

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WEDNESDAY
DECEMBER 15, 2010

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The U.S. Chemical Safety Board met in the Embassy Suites Ballroom, 1250 22nd Street NW, Washington, D.C., at 9:00 a.m, Rafael Moure-Eraso, Chairman, presiding.

PRESENT
RAFAEL MOURE-ERASO, Ph.D., Chairman
JOHN S. BRESLAND, Board Member

MARK GRIFFON, Board Member
WILLIAM B. WARK, Board Member
WILLIAM E. WRIGHT, Board Member

ALSO PRESENT

OLE PREBEN BERGET, Vice President Operations
USA and Mexico E&P, Statoil
JOHN CLEGG, retired CEO, Australian National Offshore Petroleum Safety Authority
ROY ERLING FURRE, Representative, Norwegian Union of Energy Workers, SAFE
FRITZ GUENTHER, Chief Steward, USW Local 4959, Alaska

DON HOLSTROM, Lead Investigator for Deepwater Horizon Investigation, Director, CSB Western Regional

ANDREW HOPKINS, CSB Consultant, Australia National University
BILL HOYLE, Senior Investigator, CSB
AMANDA JOHNSON, ESQ., Investigator, CSB
JOE LEIMKUHLER, Offshore Well Delivery Manager, Shell Oil
CHERYL MacKENZIE, Investigator, CSB
ERIK MILITO, Director of Upstream and Industry Operations, American Petroleum Institute
MAGNE OGNEDAL, Director-General, Norwegian Petroleum Safety Authority (via telephone)
DR. ROBIN PITBLADO, Director of HSE Risk Management Services, DNV
DR. GERALD POJE, former CSB Board Member
ARTHUR SCHWARTZ, CAE, Deputy Executive Director and General Counsel, National Society of Professional Engineers
WILLIAM SEMBER, Vice President, ABS Consulting
ALAN SPACKMAN, Vice President, Offshore Technical and Regulatory Affairs, International Association of Drilling Contractors
DAN TILLEMA, PE, Investigator, CSB
GLENN TRIMMER, Secretary-Treasurer, USW Local 4959, Alaska
IAN WHEWELL, retired Director of Offshore Division, United Kingdom Health and Safety Executive
MIKE WRIGHT, Health, Safety and Environment Director, United Steelworkers Union

I N D E X

P R O C E E D I N G S

MR. MOURE-ERASO: Okay. This is the official good morning. And welcome to the U.S. Chemical and Hazard Investigation Board for the Public Hearing entitled, Regulatory Approaches to Offshore Oil and Gas Safety.

My name is Rafael Moure-Eraso. And I am the Chairperson and Chief Executive Officer of the CSB. I would like to introduce my fellow board members with me at the table this morning. First, John Bresland. He's a long time board member and a former Chairperson of the board. Mark Griffon was appointed by the president early this year at the same time that I was. William Wark, that corner over there and William Wright that are now serving their fifth years as board members.

Before we proceed farther I'd like to point out some safety information. Please take a moment to note the locations of the exits from this meeting room. There are four

over here. In case of any emergency please follow the exit signs. I also ask that you mute your cell phones so that these proceedings are not disturbed. Thank you very much.

Let me begin by saying for those perhaps not familiar with our agency that this is the Chemical Safety Board. The Chemical Safety Board is an independent, non-regulatory federal agency charged by Congress with investigating major chemical accidents unreported to them to the public. Our mission is to conduct full root cause investigations and then to issue and make public reports and safety recommendations, all aimed at preventing similar events from occurring in the future.

CSB investigations examine all aspects of chemical accidents. These include the regulatory systems in place at the time of an incident, physical causes related to equipment design, industry standards and

safety management systems. That is certainly what we are engaged in as our investigation as the Deepwater Horizon tragedy unfolds.

At this time please allow me to go over today's agenda. We will first hear from the CSB lead investigators, Mr. Don Holstrom. Mr. Holstrom will give us a brief overview of the status of the CSB investigation.

Next, Dr. Andrew Hopkins, an internationally recognized expert on industrial safety and accident analysis, will provide an overview of international regulatory approaches to offshore drilling.

Following Dr. Hopkins we will here from our first panel, experts on how offshore drilling is managed and regulated overseas. Following their presentations our board members and investigators will ask questions of the panelists. Additionally, if members of the audience have questions, please feel free to e-mail them on your BlackBerrys or other devices to question@CSB.gov. That is

question, singular as in one question@CSB.gov.

We will also collect any written questions you might have. If you are watching our webcast you can submit questions for consideration through the webcast interface. We will have questions and answers period after each of our three panels. As you can see from the agenda, there will also be multiple opportunities for questions and comments.

Following the Regulator's Panel and before the lunch break Mr. Holstrom and I will be available to talk to the media. Also, you can interview our panelists if they wish to do so. The media, however, will take place here in this room.

After lunch we will feature two panels. One will consist of representatives from industry and the third and final panel of the day will consist of national and international union leaders.

Today the CSB is here in an

investigative capacity. Our goal is to gather as much information as possible on the safety practice, management and regulation of offshore oil and gas operations, not only in the United States but in other countries, as well. These countries have mature regulatory regimes covering offshore drilling. And we would like to listen to their experience and learn from them.

Offshore rig accidents have been devastated -- has had devastating consequences around the world. The catastrophic Deepwater Horizon accident took the lives of 11 workers and created environmental havoc, hurt the economies of the area and disrupted the pursuit of oil in our own backyard.

In 1980 the Alexander Kielland, a Norwegian offshore oil rig, capsized when a leg support brace failed. 123 workers were killed. In 1998 a United Kingdom offshore production platform named Piper Alpha produced an explosion and ensuing fire in which 167

workers were killed. These are terrible tragedies. I believe that with these tragedies come an obligation by all of us to critically examine offshore drilling practices, make them safer and more reliable and create safer workplaces.

The CSB's mission is to critically examine the Deepwater Horizon accident in order to issue meaningful recommendations aimed at preventing future offshore accidents in the U.S. waters.

Offshore drilling represents a substantial fraction of domestic oil and gas production and is of tremendous economic and strategic importance to the United States. Clearly, it is imperative we examine ways to ensure the utmost safety of operations in offshore drilling, offshore operations that are managed in Europe and Australia or not.

And so what can we learn from them? What are the various views on how offshore drilling should be regulated? That is our

purpose today. And we are grateful to the participants who are joining us today, especially those who have traveled to get here at a very busy time of the year.

We will be hearing from international experts on the safety practice and policies, uses in the United Kingdom, Norway and Australia. It is important to remember that safety and prevention involves more than regulation. It requires the involvement and cooperation of industry, as well as input and perspectives from unions and workers.

The CSB comes to this investigation with a special perspective. First, while several agencies are investigating the accident and we respect their work, the CSB is the only independent federal agency looking into the accident.

As Congressional committee leaders note, the CSB conducted an extensive, comprehensive investigation of the March, 2005

explosion at the BP Texas City Refinery. This accident killed 15 workers and injured 180 others. It caused the greatest loss of life of any U.S. workplace disaster since 1990. The CSB's extensive final report determined that the Texas City disaster was caused by organizational and safety deficiencies at all levels of the BP organization. This investigation is summarized in an hour-long video named Anatomy of a Disaster that was produced by the CSB.

I would like to ask the other board members if they have any opening statements that they would like to share at this time. Thank you.

Mr. Bresland?

MR. BRESLAND: Thank you, Dr. Moure.

Just a brief statement. I just would like to add my thanks to the visitors who are here today from all parts of the world. We really appreciate your coming on this somewhat chilly day here in Washington,

D.C., for those of you who have been outside. I certainly look forward to hearing from you, to hearing your expertise in this area.

MR. MOURE-ERASO: Mr. Griffon?

MR. GRIFFON: Yes. I also would thank everyone for showing up today and particularly, the panelists for their participation today. I look forward to gaining a perspective on safety on offshore drilling and production operations and I'm particularly interested in what the panelists feel has been effective and what hasn't worked over the years and in the various areas where they regulate. So that will be very interesting to discuss today and look forward to your input. Thank you.

MR. MOURE-ERASO: Thank you, Mark.

Mr. Wark?

MR. WARK: Yes. I, too would like to thank everyone for coming today. I also would -- and I do look forward to hearing from the panel. I for one don't have a great deal

of background in the area we're discussing right now and this will be very helpful. My colleague, Bill Wright, and I flew out to Thunder Horse back a couple Mays ago and it was a real eye opener for me in that regard.

And I also would like to thank the staff for all the hard work you folks have done to pull this together. Thanks.

MR. MOURE-ERASO: Mr. Wright?

MR. WRIGHT: Thank you, Mr. Chairman.

I would just like to echo the sentiments expressed by my peers and thank the panelists and the staff for putting this on. And look forward to the presentations. Thank you.

MR. MOURE-ERASO: Thank you.

Please allow me to introduce Mr. Don Holstrom. Mr. Holstrom joined the CSB in 1999 and currently directs a regional office in Denver, Colorado. Mr. Holstrom has 30 years of experience in the petroleum industry and

accident investigation. He has led a number of major investigations for the CSB, including the 2005 BP Texas City explosion investigation. The 2007 Xcel Energy fire and the 2010 Kleen Energy explosion. He studied biology at Stanford and holds a law degree from the University of Colorado.

Mr. Holstrom.

MR. HOLSTROM: Thank you, Chairman Rafael Moure-Eraso.

The Deepwater Horizon investigation team also welcomes the noted speakers and guests at the CSB's public meeting regulatory approaches to offshore oil and gas safety.

We also -- I also would like to thank the many staff members who have worked really hard to not only put this hearing together, but also have worked very hard in this investigation for the last number of months. Greatly appreciate their dedication.

This hearing is an opportunity for the CSB and the public to understand many of

the important regulatory issues and proposals that are being discussed to help prevent future catastrophes like the Deepwater incident. Today we are ensuring that a diversity of voices on this important topic are being heard, regulators from other jurisdictions, industry and trade associations and unions representing workers in the oil industry. Some of these prospective will be aired publicly for the first time in the wake of the Deepwater Horizon accident.

While this investigation and accident is the first offshore explosion and fire investigation for the CSB, our agency is very familiar with major accidents in the oil industry, including those in refining, exploration and production and fuel storage.

Since 1999 the Chemical Safety Board has investigated 30 major accidents in the oil sector. Since 2007 after the CSB issued its BP Texas City Refinery investigation report the agency gathered data on 140 significant

oil industry accidents, nearly 50 of which occurred in the oil refining sector.

The accident at the BP Texas City Refinery in 2005 and the important lessons from that terrible tragedy were an historic opportunity for industry and government to implement effective changes to prevent industry catastrophes from reoccurring.

At the Texas City Refinery a distillation tower overfilled and flammable liquid was released from the disposal system that led to a massive vapor cloud and an explosion that killed 15 workers that were near or in occupied trailers that were sided close to the hazardous process areas. 180 workers were injured in the accident.

And the CSB Texas City Investigation Report identified a number of causes and recommendations that were directed at the oil industry as a whole, not just BP. Those industry recommendations included the importance of specifically focusing on major

accident prevent or process safety by improving management systems and organizational performance rather than solely focusing on personal safety measures designed to prevent slips, trips and falls. Major accident prevention requires improvement of safety management systems such as design and engineering, mechanical integrity and effective hazard evaluation processes that are not related to worker behavior.

We found the industry focus on personal injury rates, if the primary if not the sole measure of measuring safety performance gave a false picture of the health and safety systems necessary to prevent a catastrophic accident.

The CSB recommended that the American Petroleum Institute and the United Steelworkers publish safety performance indicators, both leading and lagging indicators to prevent major accidents that go beyond measuring recordable injury rates. The

CSB report emphasized that these process safety metrics must drive performance and be included in company goals, performance contracts and reward systems such as bonuses. We found that that was not the case in Texas City and safety performance was severely impaired.

As a result, the CSB report emphasized that previous accidents should not just be studied as a matter of interest, but that key lessons from other divisions of the same company, other industrial sectors and other jurisdictions, including other countries must be implemented. Preventable catastrophic accidents need not be repeated in the same company, the same industry or in another country where those companies are operating.

The CSB report also recommended that OSHA implement an ongoing major accident prevention program with a sufficient cadre of competent, technically-qualified personnel to conduct comprehensive inspections to prevent

catastrophic accidents. A competent regulator needs to have expertise comparable to those in the regulated community, especially in a highly technical industry. Again, these recommendation were directed at industry and government, not just BP.

Similar findings were determined by a panel of experts formed by BP as a result of a recommendation from the CSB to examine the safety culture of all of BP's North American refineries. The panel headed by former Secretary of State James Baker, III found a number of safety cultural deficiencies at all of BP's U.S. refineries. When the findings were announced Secretary Baker noted that he believed that the lessons from the panel's report were applicable to all the oil industry. Again, not just BP.

Despite significant progress not all the lessons of Texas City and CSB investigations have been effectively implemented by the oil industry. Rafael

Moure-Eraso and John Bresland, the current and past chairmen of CSB, have noted a serious problem with the frequency of oil sector accidents. Over half of the current open investigations at the Chemical Safety Board are in the oil industry, which however, represents only a small portion of the industrial sites that are included within the CSB jurisdiction.

OSHA, as a result of the Texas City accident and CSB recommendations implemented a national emphasis program in the oil refining sector and found the results deeply troubling with serious problems in the implementation of process safety. OSHA has noted that the status quo is not working.

In the Deepwater Horizon investigation we are alert to examining the key lessons and recommendation from previous CSB accident investigations to determine whether industry is implementing needed changes.

The CSB team has identified several emerging key issues concerning how safety was managed in the Deepwater Horizon. These include the lack of a separate and distinct safety focus on preventing major accidents. Key safety metrics, performance metrics, primarily addressed personal safety. And performance contracts, safety programs and reward systems focused on personal safety indicators. Consequently, we believe that many of the key lessons and recommendations from Texas City are important inquiries in the Deepwater Horizon accident investigation.

A number of the questions will be asked today about regulatory systems. We'll address these issues. For example, does a regulatory system or proposal focus on major accident prevention separate and distinct from personal injury incidents such as slips, trips and falls? Does the scheme utilize key safety indicators to prevent major accidents that drive safety performance? It should be noted

that the American Petroleum Institute guidance on key safety performance indicators developed as a result of the CSB Texas City recommendations do not exclusively apply to offshore.

Do the regulations address whether metrics are included in managers' performance contracts and bonus schemes? In fact, the importance of process safety indicators was highlighted not only in the Texas City investigation but in BP's own report on three serious incidents at their UK Grangemouth Refinery back in 2000.

This raises the importance of whether the regulatory system or proposal requires the key lessons from major accidents be implemented as opposed to a purely voluntary approach. In the Texas City accident there was a lengthy history of previous near misses but the warning signs were overlooked.

The CSB identified that OSHA out of

the Texas City accident investigation had only a half-dozen or so technically trained inspectors and had conducted no planned comprehensive inspections of oil refineries in the previous ten years prior to the accident. Department of Interior and other reports identify similar problems with the numbers, level of competence and low rate of comprehensive inspections by offshore regulators. In light of these findings it is important for us to inquire about the level of competence, consistent enforcement and regulatory effectiveness of other regulatory systems.

Safety and regulatory systems must constantly adapt to be effective. It is not acceptable for safety change to be driven only by repeated disasters. The answer to these questions and others today is vitally important for prevention and we are excited to have such an esteemed group of experts here today. What you say here today will aid in

the prevention of accidents such as the Deepwater Horizon and we greatly appreciate your contribution.

Thank you, Chairman Moure-Eraso.

MR. MOURE-ERASO: Thank you very much, Don.

I would like now to introduce Professor Andrew Hopkins of the Australian National University. Dr. Hopkins is a sociologist and an international renowned author in major accident prevention. Dr. Hopkins is serving as a consultant to the Chemical Safety Board Deepwater Horizon team. We asked Dr. Hopkins to provide an overview of international regulatory approaches for offshore operations, including those such as the safety case.

Dr. Hopkins?

DR. HOPKINS: Thank you very much, Chairman, and good morning, ladies and gentlemen. I want to put -- I want to make a few general comments just to put safety case

regime -- the safety case regime into perspective, into some kind of international perspective.

So to start with I want to characterize the U.S. safety regimes -- they're plural, many of them, safety regimes -- as essentially prescriptive in nature. Now, prescription has its strengths and weaknesses. Certainly, prescription is very important for small business. Small businesses frequently say, Tell us what to do and we'll do it. So prescription is very important in those contexts. I think also in certain other industries where the risks are well understood, such as the construction industry, prescription may well be very appropriate.

But for major hazard industries the weaknesses, I think, of prescription outweigh the strengths. The problem is that where technology is complex and constantly evolving the detail in prescription can never be

sufficient to keep up with the -- with technological changes. I think this was highlighted in the report of the Piper Alpha accident. This is the accident that's already been referred to off the coast of Scotland in 1998, a real game-changing accident in the UK when 167 people died.

Another problem with prescriptive regulations is that they generate disputes, constant disputes, about whether they actually apply or not in particular situations. And I think that was highlighted -- has been highlighted by OSHA's experience in this country with BP following the Texas City accident when there have been numerous disputes about the extent to which certain regulations actually apply. So this, I think, leads to the importance of safety case in an industry like the oil and gas industry, and particularly offshore.

The alterative then in the present context is the safety case approach. And the

safety case approach goes back to an accident that happened in Italy in Seveso in 1976 when there was a major gas release that affected the health of hundreds of people. And following that accident the European Commission issued a directive in 1982, the so-called Seveso Directive to member countries that they should enact what we now know as safety case regimes.

The UK responded in 1984 with safety case regulations onshore and then following the Piper Alpha accident in 1988, shortly after that we had safety case regulations offshore in the UK.

Norway is not a member of the EU but it's also moved in the same direction towards safety case regulation. And a major impetus for that was the Norwegian semi-submersible drilling rig accident in 1980, the Alexander Kielland, which capsized and killed 123 people as our Chair has already mentioned.

In Australia, which is one of the

countries of interest today, safety case was enacted offshore in the wake of the Piper Alpha disaster and onshore the first effective safety case regime in the country was enacted in the State of Victoria following a gas plant accident at Longford in 1998. So that is some of the international context of the safety case movement, if you like.

What are some of the elements of the safety case regime? What is a safety case regime? Well, the first point is that the operator must provide a detailed description of the hazardous facility. That's a baseline statement. Secondly, they must identify all potential major hazards and major accident events. They have to think carefully about what could go wrong on the site from a major accident point of view. They then have to carry out systematic assessment of the nature of such events and their consequences. They then need to put in place control systems to safeguard against such events. They need to

monitor such controls to ensure that they really are working. And they need to embed that control system in a comprehensive safety management system.

So there's a certain logic to this whole approach, the safety case approach, which starts with a -- will focus on major accident hazards and moving through to identifying the controls which are necessary to deal with those and then to ensuring that those controls remain in place. There's an elegance -- I would use the word elegance. There's an elegance to this system.

I'm -- I should make the point that it doesn't necessarily do away with rules, prescriptive rules. But they are often contained within standards which are called up by the safety case. The controls that I spoke about will be contained in standards. And operators need to specify in the safety case what are the standards which they are going to comply with in their safety case. There is

also a very important role for the workforce in the design of the safety case and in ensuring the continued operation of the safety case. We'll hear more about that later today.

That sequence I have on the screen is actually a very familiar sequence. It's the sequence which is involved in the U.S. Process Safety Management Standard which was passed in 1992 in this country and which governs safety in general, particularly the oil industry onshore.

So you might ask where does safety case go beyond the Process Safety Management Standard. And the answer is this, that it's a case, an argument submitted to the regulator. So the operator has to go through this process, work out how it's going to achieve these goals and submit a case to the regulators testifying just how it is going to do this. And the regulator must then approve or accept or in some way acknowledge that safety case. So it is really a licensing

regime. The operators need to have this approval or this acceptance by the regulator before they can do business.

And that's a very important point. And it goes back to the Seveso Directive. If you look at the language of the Seveso Directive it says this, that the operator must prove to the competent authority that it has gone through this process and can manage major hazards effectively. So this -- the word there is prove. So this puts a high obligation, if you like on the operator to demonstrate to the regulator that it really does have these risks under control. And this is where safety case goes beyond the Process Safety Management Standard.

And once that case has been accepted it is then up to the regulator to audit against that case, to ensure that the company or the operator is complying with that case, which itself demands, I think, a high level of resourcing for the regulator which I will come

back to.

Okay. How do they audit safety cases then and how do they judge the adequacy of a safety case? The regulator must fundamentally ask the question, Are the risks involved -- have they been reduced as low as reasonable practicable. That's the language which is used. Or alternatively, Have the risks -- Have you ensured safety so far as reasonably practical. That's another equivalent statement.

Now, there is a precise legislative basis for this in many -- in some countries, particularly the UK and in Australia. In the UK, for example, UK Health and Safety At Work Act specifies general duties and those general duties include this statement, It shall be the duty of every employer to ensure so far as reasonably practicable the health, safety and welfare at work of all his employees. So that is fundamental. It's contained within the umbrella overarching statute, this notion of

a low as low as reasonably practical. And I should note this is very different from the General Duty Clause which exists in the OSHA Act.

So before approving a safety case regime the regulator must ask, Are the risks as low as reasonably practicable. So that then raises the question, What does this mean, What does it mean to be as low as reasonably practicable. The actual test which increasingly regulators are applying is, Are you following good industry practice. That has to be defined in various ways. But if you are following good industry practice then you will judge to be -- to have reduced your risks as low as reasonably practicable. I'm sure we'll hear a lot more about that today. But that is a starting point.

Employers may want to argue that they have reduced the risks as low as reasonably practicable even if they are not complying with good industry standards. But

if an employer goes to court trying to make that argument they're not very likely to succeed.

So I guess what follows from this is if we are to introduce a safety case regime in the U.S. it will need some kind of umbrella regulation specifying the requirement that risks be reduced as low as reasonably practicable.

I want to just finish with the point that this requires a highly competent and well resourced and independent regulator. Without a well resourced regulator safety case is no better than any alternative. Indeed, in some cases it can be worse. So any decision to introduce a safety case regime must involve a commitment to ensure proper funding. And this doesn't necessarily mean government funding. It could involve and industry levy. And I think we may hear today that some other safety case regimes are funded by industry levy, they're therefore offline, as far as budget is

concerned and there are certain benefits involved in doing that. But that's a matter of detail for later.

I do want to leave you with this final proposition, though, that a safety case regime is worthless unless the regulator is properly funded. Thank you.

MR. MOURE-ERASO: Thank you, Mr. Hopkins.

We will now hear from our first panel of experts. I would like to remind the audience that you should e-mail through your BlackBerrys any questions that you might have after the end of the panel. You should send it to question@csb.gov, and we will be receiving those questions after the panel.

So this is the Regulatory Panel. Our panelists include Mr. Ian Whewell, the recently retired director of the Offshore Division of the United Kingdom Health and Safety Executive Hazards Installations Directorate. Also, we have Mr. Magne Ognedal,

the current director general of the Norwegian Petroleum Safety Authority. He's joining us via a telephone conference line. And we also have Mr. John Clegg, retired chief executive officer of the Australian National Offshore Petroleum Authority.

Mr. Whewell, please proceed with your statement.

MR. WHEWELL: As we've already heard, in 1988 the Piper Alpha offshore installation was involved in a dramatic fire and explosion, and the incident had a traumatic effect on the oil industry and throughout the UK. And as a result an inquiry was set up by the government so that they could -- to consider what lessons could be learned. And Lord Cullen, who chaired the inquiry, produced in 1990 a report with 106 recommendations for improvements to health and safety on the UK continental shelf. And the government accepted all those recommendations.

But as we've heard, an important

change was that any new offshore regulations were to be risk based and objective or goal setting, which was a change from the then existing prescriptive offshore regulations.

One of the key recommendations was the operator of every installation should prepare a safety case, which as we've heard, described the arrangements in place on the installation for identifying, managing and controlling major accident risks. This requirement was felt to be so important that it was actually introduced before all the other regulatory changes were made.

Lord Cullen also recommended that the responsibility for regulating offshore safety be transferred from the Department of Energy, which also had responsibilities for different field developments and licensing, to the Health and Safety Executive. The HSE is the principal UK safety -- health and safety regulator, which at the time had extensive experience of regulating major hazard

industries, such as nuclear and onshore petrochemical and chemical.

The safety case regulations were developed very rapidly and came into course in 1993 and subsequently, further supporting regulations relating to amongst other things, prevention of fire and explosion emergency response and the design and construction of installation and wells were introduced.

In parallel the new offshore division of the Health and Safety Executive underwent a dramatic expansion and recruited large numbers of specialists, industry experts together with specialists in a range of similar fields. This involved huge resources being put into training them as regulators and to develop appropriate industry expertise.

The importance of recruiting appropriate expertise or providing extensive training to create such expertise should not be underestimated. At its peak the offshore division had well over 300 staff to deal with

the implementation of new regulations and the assessment of safety cases. As we've heard, adequate resourcing to support assessment, investigation, audit and review and inspection and intervention is vital to ensure the effectiveness of new safety regimes and broader regulatory regimes.

Since that time the importance of the safety case is a key requirement in the UK for offshore legislation has not diminished. The value of a safety case and this goal-setting type approach is widely recognized.

Since their introduction the new offshore regulations have been successful in reducing major hazard risks on the UKCS and in ensuring that installation operators properly manage those risks. However, on the basis of ten years experience a review of HSC in 2004 concluded that changes were necessary to the safety case regulations to improve efficiency and effectiveness and to take into account major changes in the pattern of activity that

was taking place on the UKCS, mainly a result of extending the life of many installations.

We've already heard some of the basic requirements for a safety case. And certainly, on the UKCS all operating installations must have safety case accepted by the regulator. And for drilling installations that safety case must be submitted three months before the drilling installation enters UK waters.

We've heard that the primary requirements to demonstrate that major hazard risk are being properly controlled and the safety case must contain details of the safety management systems, the audit arrangements ensuring that they're adequate and that must make sure that all major accidents have been properly identified and then those -- the risks associated with those accidents have been evaluated and measures taken to control the risks, as we've heard, as low as reasonably practicable.

Safety cases have to be kept up to date. And where major revisions of the safety case occurred these were required on the original regulations be submitted to HSC for acceptance three months before any changes were made. And all combined operations -- that's operations between fixed and mobile installations, drilling rigs -- were required to have separate safety cases. And finally, that the safety case should be revised and resubmitted for acceptance every three years. These were the original requirements.

For the case to be effective it must provide a framework in major hazard risk are effectively managed and controlled. The requirements should complement the principals of good safety management but provide the stimulus to undertake this management in a structured way. Lord Cullen took the view that safety case actually was not a document primarily for the regulator, but a good discipline for all operators of offshore

installations. However, once the document had been prepared Lord Cullen saw value in the regulator forming a view as to whether the case had indeed satisfactorily addressed the effective management and control of major accident hazards.

The changes introduced in 2005 now better meet those objectives. And I'll briefly outline the changes we made. To meet the general goal-setting requirements of UK legislation the requirements for the contents of a safety case have now been -- reference the supporting offshore regulations, which as I've described actually followed the original safety case and therefore, were not referenced in it.

And to avoid any suggestion that acceptance of a safety case transfers responsibility from the duty holder to the regulator or in any way gives permission, the basis for the regulator's acceptance of a safety case has been revised and clarified.

The new guidance for acceptance makes absolutely clear that the regulator should review the case to determine the validity of the approach described as being capable if it's implemented of achieving the necessary degree of risk control. However, the acceptance itself wouldn't confirm the outcomes of that approach which could only be achieved by subsequently regulatory intervention. So actually inspecting on the installation.

The changes also provide more flexibility in the contents of a safety case, which facilitate the preparation and updating of the documents. With the clarification of the purpose and to the basics of acceptance fuel resources are being used in the processes of assessment, both by the regulator and industry. For HSE this was important -- this was an important efficiency gain enabling a move of resources from examination of effective -- what was a paper document to

active verification of the claims made in that document.

The timing of a design safety case, now simply called design notification, has been changed to a much earlier, more basic submission to improve impact and ensure maximum benefit of both the regulator and the potential operator by ensuring a meaningful dialogue will be begin at the earliest possible stage. In addition, the link between design and the operational safety case has been strengthened by requiring the operational case to specifically address those matters raised by the regulator during design discussions. The HSE still takes the view, however, that specific acceptance of the design or concept is not an appropriate role for a regulator.

The safety cases are no longer required to be resubmitted for acceptance by HSE every three years. The current safety case, once accepted, continues -- the safety

case, once accepted, continues to be current but with greater emphasis on keeping it up to date. Major revisions of the case arising from changes on the installation or to operations are required to be submitted for acceptance before the changes can take place. And the scope of duty to comply with the safety case has also been extended to all revisions, not just those ones accepted by the regulator.

This makes it clear that the document is intended to be living and current. More importantly, if it's current, it should be a key reference for management and the workforce. It's also critical that there's continuous improvement and controls and measures in place take into account new knowledge and changes in technology.

Now, as a result of the changes, every five years the duty holder is required to carry a thorough review of the case for safety in the light of new knowledge and

changes on the installation.

Finally, HSE formed the view that submission and acceptance of separate cases for all combined operations was not cost beneficial. Safety cases for installations must now contain as much information as possible about such potential operations. However, if the combined operation has not been properly covered in the safety case, a revision to one or both safety cases is required. The revision must be formally accepted by the regulator. This ensures that the risks -- any unique risks or proposals that may involve new technology or a change in existing good practice are properly examined.

As a result of these changes I believe the UK regime now gives flexibility to meet the health and safety challenges of a dynamic and technically advanced offshore industry and gives public and regulatory reassurance that high hazard risks are being properly managed. Thank you very much for

your attention.

MR. MOURE-ERASO: Thank you very much, Mr. Whewell.

Our next panelist is Mr. Ognedal that is going to join us via phone. Mr. Ognedal is from the Norwegian Petroleum Safety Authority. He will be coming in, I believe.

Mr. Ognedal, can you hear us?

(No response.)

MR. MOURE-ERASO: We can see you.

(No response.)

MR. MOURE-ERASO: Mr. Ognedal?

(No response.)

MR. MOURE-ERASO: Probably when we connect with Mr. Ognedal -- we can proceed with the panel, and we'll get him at the end of the presentation of Mr. Clegg. So I want to introduce now Mr. Clegg from the Australian National Offshore Petroleum Authority.

So, Mr. Clegg, why don't you proceed.

MR. CLEGG: Thank you, Mr.

Chairman. And I've been asked to make it clear that so these are my views and not those of the Australian government. I've been asked to cover four areas. And that's the use of the safety case; reducing risks to as low as reasonably practicable, so that's ALARP; employee involvement practices; and measurement of safety performance. So not an easy job in ten minutes, but I will try.

So first of all, the use of the safety case. Legislation giving effect to the safety case regime for offshore petroleum activities in Australian waters was put in place in 1992 following the Piper Alpha disaster in the North Sea in 1988. Now, that's very important because I think Australia may be unique in the fact that they didn't wait for their own offshore major accident to happen before they implemented a significant regime change. So I think they should be commended for that. Thank you.

So in that regime all offshore

petroleum facilities required a safety case by 1996. Although the majority of the facilities were in Commonwealth waters, legislation was administered by the states on behalf of the Commonwealth. The safety case was an addition to much of the existing prescriptive legislation.

Now, that's also an important point I'd like to make, because some believe that when duty-of-care regimes are brought in, all prescription will go. And that often is not the way. They have been brought in over and above all existing prescription, and I believe that is effectively what happened in Australia.

So it was found after awhile that the new duty-of-care regime, the safety case regime was not functioning very well. And so the Australian government -- Commonwealth government -- had an international review done in 1996. And that found significant issues. The organizations affected were given four

years to improve. And I believe there were few improvements over that time.

And so the Commonwealth government then instituted a further international review. And they found in 2000 there was too much legislation, boundaries were unclear, there was overlapping legislation and application was inconsistent, state regulators lacked regulatory skills, capacity and consistency and did not have a clear view of their role.

The Commonwealth did not have sufficient resources, technical expertise, credibility and authority to drive the necessary changes. The review team then made two central recommendations. A safety case regime's framework of legal documents should be restructured and simplified and the regulatory system should also be restructured. In January 2005 these findings were implemented. A simplified set of legislation comprising one act and four sets of

regulations revoking many acts and hundreds of regulations was brought in and a single national regulatory authority, the National Offshore Petroleum Safety Authority, or NOPSA, was established.

The principles underlying this were an enhanced and continuing improvement of safety outcomes in the Australian offshore petroleum industry is a priority for governments, industry and workforce, a consistent national approach to offshore safety regulation in both Commonwealth and state waters is essential for the most cost-effective delivery of safety outcomes. Also, the safety case approach is the most appropriate form of regulation to deliver world class safety by developing appropriate behavior within the industry. And that is key. That is the critical issue.

And also, efficient and effective safety regulation requires -- and I'll just list these -- a legislative framework that is

clear and enforceable and that requires operators to discharge their responsibilities for safety, competent and experienced personnel forming a critical mass of appropriate skills within the regulator, structure and governance of the regulatory agency that demonstrates independence, transparency, openness and cost efficiency, an independent approach in implementing legislative responsibilities and in dealings with industry. And also, there should be a grade performance criteria.

Furthermore, the industry and its workforce must be empowered to identify and report potential hazards and to ensure control measures or implement them. Approval processes must be streamlined to ensure no undue delay to projects. So those are strengths of safety case regime.

What about some of the weaknesses? The employer treats the whole process as a necessary evil to get a tick in the box and

the regulator to operate, i.e., they see it as an impediment to operation. The employer treats it as a one-off event -- it's only a piece of paper, isn't it -- and not as part of an ongoing process of continuous improvement. And that is a big issue. A number of operators feel this is just a matter about producing a document. It is not. It's about the process of ensuring continuous improvement. It's just that that has to be documented.

The safety case is treated as a secret document. The employer dedicates a process to or overuses contractors. And particularly, NOPSA was set up when we experienced quite a bit of that. But I'm greatly relieved that the processes we put in place and inspectors we had meant that that was quickly identified in the first run through of the case and we would then reject it straight away.

Initially, we tried to work with

industry to improve their safety cases. We did that for about 18 months. But we found that in the end the operators were just passing it over to the regulator and using the regulator as a free consultant. So we stopped that. And we just moved straight through rejection. And I think in the first year after that we rejected half-dozen or so safety cases. And that certainly brought the attention of the industry to the need to do a better job.

We also found the workforce was not being involved where they should be. And the regulator provides poor quality challenge, such as criticism of ourselves, and does not use the safety case to hold employer to account. So my experience over many years operating the safety case regime is that not only sometimes does the industry just use it as a paper document, which gets the tick in the box and they put it on the shelf, but sometimes a regulator when they receive it

will also just put it on the shelf and don't use it. And the whole regime therefore, is into disrepute. The regulator must use the safety case. The industry must see that a regulator is using it and holding them to account for the claims made in that case.

So in conclusion on this aspect, the safety case regime is not a silver bullet. It needs continuous commitment by the government, the employer, the workforce and the regulatory. If any of those four pillars are weak or missing then the regime falls. No doubt about it.

So let me move on to the second item I was asked to address, reducing risk to ALARP. Risk may reduced to as low as reasonably practicable by following a rigorous process of hazard identification and risk minimization using appropriate mix of decision-making tools.

Having identified the hazards and risks the process should follow a hierarchy of

elimination, minimization, prevention, control, mitigation and emergency response. The design of each of those elements should in preferred order be based on passive systems, then after they're active and operation and finally, external systems. Each system should have clearly stated, meaningful and measurable performance standards.

In deciding the mix of these elements some decision-making tools can be used. And these are in ascending order of risk and uncertainty, codes and standards, good practice, engineering judgment, qualitative risk assessment, quantitative risk assessment -- so QRA -- company values and societal values.

Some of the main issues we've experienced in ALARP demonstrations relate to poor hazard analysis and risk assessment, poor links between hazards, risks and controls, poor understanding of the performance of control systems and use of the process to

justify existing controls rather than to seek the opportunity to improve.

So now let me move on to employee involvement practices. These apply at three levels. There are responsibilities on the employer, the employee and the regulator. The employer is required to ensure the workforce is competent and provide information and training, consult with and ensure effective participation with workforce in a development or revision of the safety case and this process must be documented.

And certainly, in the early days in assessing safety cases the first question we would ask back on receiving a case for assessment is, Please prove to us that you've involved the workforce. And it was absolutely amazing the flurry of activity and the withdrawal of safety cases to rework or re-engineer the process.

Consult with and ensure -- oh, sorry -- got that one. Established work

groups, if requested by the workforce, facilitate election of health and safety representatives such as yourselves, provide training for those health and safety reps, and establish health and safety committees.

Responsibilities on the employees are that they should cooperate with others, establish designated work groups to select health and safety reps and once elected, has powers to inspect, investigate, issue provisional improvement notices, refer a matter to a regulator and accompany regulators on an inspection, so quite wide-ranging task.

Moving on to the regulator, the regulator is required to check employer/workforce consultation during assessment of safety case -- and I've touched on that -- consult with health and safety reps and workforce during inspections -- and we do -- record and investigate complaints by the workforce, assist industry and workforce in running annual, one-day health and safety rep

workshops and conferences.

They run bimonthly meetings with the employer's health and safety reps and other members of the workforce to address topical issues and matters of concern, they meet regularly with trade unions and they facilitate and audit formal training courses for health and safety reps.

So what are some of the main challenges and issues we have experienced there? Quite a few employers are reluctant to support health and safety rep regime. There's a lack of employee involvement in the preparation of safety cases. There's limited regulator resources to investigate complaints and incidents, so all we can do is take a cut of those and investigate, I think, probably about 10 percent.

Some difficult relationships with union representatives where employment issues are mixed with health and safety matters. And that is an ongoing tension, because many

health and safety issues do have a -- are mixed up with employment issues, as well as trying to separate the two can be very difficult.

So now let me move on finally, to performance measurement. A review of the health and safety performance of individual companies and of the industry as a whole by the regulator is obtained by collecting data from four main areas. And these are, in ascending order of usefulness, lagging indicators. And there is a regulatory requirement to report death, injury, fires and explosions, hydrocarbon releases, well kicks, collisions, unscheduled activation of the Emergency Response Plan, and damage to safety and critical equipment.

Then we collect leading indicators from regulatory activities such as promotion activities, advice, safety case assessment, inspection, audit and investigation. We also collect leading indicators from national

programs such as facility integrity.

We had serious concerns about the maintenance of equipment offshore, so we put in place a national program that we shared with the industry for obtaining improvements in the area. And, in fact, we tied up with such programs that the UK were running, as well, so we could share data and information and benchmark. Also, lifting operations. We found that was a major area of serious personal risk. And emergency response.

And leading indicators are also obtained from a new area that we just moved into, which is undertaking annual safety cultural surveys carried out across the industry.

So what are some of the main issues we've experienced there? We are certain there is significant underreporting and poor reporting of lagging indicators. There's a significant amount of wrong classification of incidents and lack of useful benchmarking

data. There's a lack of meaningful reporting up through the management chain in companies of health and safety performance. And there's poor reporting of health and safety data in company annual reports.

I'm always amazed that if you pick up a company -- the average company annual report, you'll find there are pages on the environment and half-a-page on health and safety.

So in conclusion, I've outlined the development and use of safety cases in offshore Australian petroleum operations. I've also given a flavor of the processes we expect to see used and demonstrating risks have been reduced to ALARP and the measure to ensure involvement of the workforce and how we coordinate on health and safety performance. Thank you.

MR. MOURE-ERASO: Thank you, Mr. Clegg.

I wonder if we could call Mr.

Ognedal from --

MR. OGNEDAL: Yes?

MR. MOURE-ERASO: Mr. Ognedal, are you on the line?

MR. OGNEDAL: Yes, I am on the line.

MR. MOURE-ERASO: Yes. So please proceed with your statement.

MR. OGNEDAL: Yes. I taught a number of issues that have been [interference] regulations, and they were created in 2004, because the government, the Norwegian government, they decided to split the Norwegian petroleum [interference], thereby taking [interference] --

MR. MOURE-ERASO: Mr. Ognedal, could you hold it for a second? We're having trouble hearing you clearly. They are making some adjustments here.

MR. OGNEDAL: Okay.

MR. MOURE-ERASO: How are we doing now? Is it okay now?

MR. OGNEDAL: [interference].

MR. MOURE-ERASO: Let's wait for a minute. Somebody's going to adjust here the speakers.

Mr. Ognedal, what we are going to do is to try to redial -- hang up and redial so that we can see if we can a better transmission line.

(Pause.)

MR. MOURE-ERASO: Okay. Let's proceed now, Mr. Ognedal.

MR. OGNEDAL: Yes. Should I start again?

MR. MOURE-ERASO: Yes. It's a lot better now. Please continue.

MR. OGNEDAL: Okay. So the Petroleum Safety Authority Norway, as I said, was created in 2004 as a result of a government decision to split the Norwegian Petroleum Directorate in two parts and thereby separating the safety function out from a possible conflict with economic issues. So that was a decision to reduce political risk,

as I see it.

The central issue in the entity Norwegian Petroleum Directorate was the basis for creating the new PSA. The PSA at the time also caught responsibility not for overlooking safety in the offshore activity, but also on the inshore associated plants and refineries, et cetera. So it was a big addition to portfolio.

We are an agency today consisting of about 160 people where 100 people are professionals. And they are basically all engineers from -- with university degrees. And that is the -- sort of competence that we need in our system. And the way we go about things is based on the regulations in force. They are risk based and they are goal setting in the full, and they -- there's also guidance. And guidance refers to acceptable codes and standards. But they are not legally binding. It's the regulations that are legally binding.

So these regulations contain more or less everything that already has been talked about at your hearing, all the principles that should be addressed, risk and all of this. So I won't repeat that. But the difference between us and the -- what I've heard my old colleagues Ian and John talk about -- is that we do not require a safety case being a document, being submitted to us. It shall be available in the industry, and when we need it for purpose, we ask for it.

And then how do we go about enforcing the regulations? Well, we perform audits and verifications. So we don't have inspectors in -- as staff members. So we do audits and verifications based on the risk approach, not the calendar approach; it's a risk approach. But we use our resources to address areas where we feel it's important to try and make a difference.

And then one of the things -- as an illustration, one of the things we have been

using quite a bit of the resources on is to find out how company management handles major risks. That is -- that's been sort of a priority for many years now. So it's a management approach, really. What do they do to manage major risk?

And then our regulations -- they apply to the offshore activity, but also where relevant, to the onshore activity. So it's a comprehensive set of regulations. And then onshore activity and offshore activity, they are tied together to a large extent, at least in Norway, by pipelines, cables, control rooms, et cetera, so we try to look at the totality.

The focus on major risk, major accident prevention. That is -- we use, would guess, about 60 percent of our resources on that problem area. And individual risk the other 40. So it's a balanced approach, but the bigger slice, more resources on to major accident prevention.

Lessons learned? When we -- well, we should all learn. We haven't put a requirement into the regulations that the industry should learn. But certainly, when talking to the industry we are always asking the question, how do they go about being curious, what has happened other places, have they evaluated it, et cetera. So it's more influence and questioning technique we are using on that point.

Well, risk management, risk analysis, risk assessment, et cetera? It's all in our regulations. Then, of course, we check compliance with that. Management systems? Well, that's part of the regulations. We have a dedicated management regulation that the industry has to comply with and there are regulations, as they are formed and written, they give the flexibility so that we can really use the principle of continuous improvement and to take into use new methods, equipment, et cetera that will

improve the safety situation.

And when I talk about safety it's basically three elements. It's prevention of harm to people. It's prevention of harm to the external environment. And it's prevention to economic values. So it's all of those three. And that varies from country to country, what the content of the safety term is.

We monitor the industry. And we collect a lot of the data, indicators that we use. And we produce a yearly risk report that is public. And in that report we use for major accidents, I think it's round about 23 different indicators. And we try and develop to see is there a negative trend, a positive trend, what is the situation. And based on that it helps us setting up priorities for our work.

Employee involvement? Well, you know, in Norway there's a long tradition for cooperation between industry, employees and

the regulator. And that is a natural part of the Norwegian working life culture. And we, as the regulator, of course, use that. So we have several forums where the three parties are together.

One is the forum dealing with the development of regulations. So in the process of developing new or adjusted regulations the three parties participate in that development, but the regulator makes the decision. But they participate, come with their views, suggestions, all of this. And well, to us, it's working very well indeed.

Another forum is the safety forum. I chair that. And their all representatives of the unions and the -- yes, employer organizations are present. And we are working issues continuously in that meeting. The system -- I'm sure that Roy Erling Furre, who will speak later on today, he will touch on this forum.

That was sort of brief comments to

the points that you wanted me to address.

MR. MOURE-ERASO: Thank you, Mr. Ognedal. Would you please stay on the line for the discussion that we have following this?

So thank all of you. And I would like now to start the discussion. We're going to start with questions from the board members to the panelists. And what we will do is a first round of questions from the panelists. And then we will ask our investigative team or investigators for having a round of questions. And if time permits we'll come back to the board members and to investigators. So I'll be watching at the time.

So if we could start on this side of the table, please? Mr. Griffon, if you have some questions?

MR. GRIFFON: Yes. I think my -- I'd like to start off, since everyone that presented has some form of a safety case approach, I was curious whether you have over

the years collected any information and data, any metrics that demonstrate whether the safety case approach is more effective than, you know, previous or actually, the current United States model of a more prescriptive approach.

And I don't know if you have that kind of information, but I'm very curious. I definitely heard some suggestions that people challenge that fact, that the safety case approach, while it may sound go, whereas the information to prove that it is actually improving safety. I wonder if -- that would be to all the panelists.

MR. CLEGG: I think the real test of the answer to that question is to ask the industry on their view. And in Australia there is a requirement for a five-year external review of the operations at the Safety Authority. And that was carried out a little while ago. And it might be three-year review, anyway -- but Magne, who we just heard

from, and some people from Australia -- experts from Australia -- formed that independent duty and came out to Australia and carried out extensive consultation with the industry and regulators from government.

And their overall view of the industry was that they felt that the safety case regime had improved health and safety. And so that the regulatory regime that had been put in place was effective. Obviously, there was room for improvement. But it was generally working, and the industry felt that it had made a gain. We do have crude metrics in place, of course; typically lagging indicators.

So we do have crude indicators in place, mainly lagging indicators, which show that individual harm is at a fairly low level compared to international benchmarks and is running along very steady. It's not increasing, not decreasing. We have a very crude indicator like hydrocarbon releases.

Generally -- and while they aren't broken out deaths, injury, hydrocarbon releases, activation of the emergency plans rate, they're generally reducing except, interestingly, for the gas releases. They have been increasing over the years. And certainly, the implementation of our regime didn't seem to alter that very much. Now, that is a very important indicator.

And that is why we put in place a national program to go out to all of the industry and check their maintenance ratings and to ask question sets, which included lots of leading indicators, as well as lagging indicators. And that mirrored a UK initiative, as well; we could benchmark against that. And certainly, using that we found we got an improvement in maintenance regime, but strangely gas releases didn't reduce.

But personal injury, we find most personal injury was in the area of lifting

operations. So we had a national campaign on that and certainly, we drove down more of the personal injuries of lifting operations like that 60 percent. So it's a complex metric. It's difficult to penetrate. But overall, I believe industry and the government feel that it is an appropriate regime and it is working.

MR. MOURE-ERASO: Thank you very much.

So we continue with Mr. Bresland, and then we'll come back the other way around.

MR. OGNEDAL: I can comment a little bit around the question prescriptive versus -- hello?

MR. MOURE-ERASO: Yes, yes. We are listening.

MR. OGNEDAL: Okay. In the '70s we had the prescriptive regulations and an inspection approach towards the industry. We held that it didn't work. And there were many reasons for that. One of them, we took on responsibility from industry by telling

industry what was sufficient to do. The other important point that was that the maintenance of prescriptive regulations was -- the maintenance need was very high and demanding on our resources. It wasn't effective.

So based on those two and other reasons, we decided to change it all and formulate all of that change within a new set of regulations, a new way of doing things. We created new competence, et cetera. That change was implemented in '85.

After that we've seen that the regulator, we, have a much better impact on industry than we had before. There's no -- in my mind there's no question about that. So it was a correct move to go to goal setting, audit inspection and create a new set of regulations for the management risks, all of that.

MR. MOURE-ERASO: Ian?

MR. WHEWELL: Yes. If I could just respond on the -- I think to talk about safety

case regime or safety case in isolation is -- does create a sort of slightly false impression. You do need a total regime to back it and you do need a goal-setting and risk-based regime. I think I would quote from two areas, not necessarily metrics.

But I'd quote -- I mean, certainly, the original report on Piper Alpha was absolutely clear that many of the problems that arose on the Piper Alpha installation and the lack of regulator control arose from the prescriptive nature of the regulations and the nature of inspection that was carried out. Inspections were not risk based. They were -- and the duty holder was not looking at risk-based controls. It was simply complying with basic standards without any real consideration of prioritizing risks. That was the first point I'd make.

Second point, there was an independent report carried out by Aberdeen University for HSC in 1999 reviewing the

regulations but primarily the safety case regulations. And that report concluded that there had been a considerable reduction -- overall reduction -- in risk. In other words, the risk was being better managed on the UKCS as a result of the introduction of the regulations.

It's very difficult to compare one regime in one country with another because nothing is exactly the same. And the culture may be somewhat different. But certainly, comparing within the UK I'm confident that there's sufficient evidence to show that moving, as Magne has said, from the prescriptive approach to a goal-setting, objective-setting approach has considerable -- has made considerable improvements and reduced risks. And certainly, that last point that Magne made, I think, is very relevant. The regulator has much more impact under that type of regime than simply a ticked box, black and white, go/no go situation with prescription.

MR. CLEGG: Could I just also just add just quickly? In a goal-setting regime, in fact, prescription hasn't disappeared. What's happened, it's gone out of the legislation and into the standards -- codes and standards. And the safety case requires the company to state the standards that it's going to use. Once it's stated those then it has to comply with them. So that's where the prescription's gone. It hasn't disappeared; it's still there.

MR. MOURE-ERASO: Thank you.

I move to Mr. Bresland now.

MR. BRESLAND: Thank you, Mr. Chairman.

Our organization, the Chemical Safety Board, is one of several organizations that's doing an investigation of the accident in the Gulf of Mexico. And I'm sure that the three panelists have been watching pretty closely the other investigations that are taking place. And I'm sure you've read some

of the reports from there.

Based on your expertise and knowledge, had there been a safety case program in place in the Gulf of Mexico what would have been done differently that could have prevented this accident? I mean, my sense is that there were issues in this particular incident in which the companies did not do the -- what they were supposed to do; the equipment didn't work as it was supposed to work. What would have been different with a safety case that would -- that you think might have prevented this accident?

MR. WHEWELL: The -- as John's already said, the safety case isn't a silver bullet. What's -- what -- expectations created in a safety case regime is that risks are properly evaluated before those risks are undertaken and the control measures are in place.

From what I've read, risks were taken which look as though they haven't been

properly evaluated before decisions were made. And in the framework of the safety case regime, the expectation would be, certainly in terms of Macondo, the nature of the well would have required very particular consideration of decision making and very particular consideration for that particular -- for that operation because of the high temperature, high pressure nature of the well and other particular problems with the reservoir.

So my view is that whilst I can't say and nobody can say if a safety case regime had been in place that the incident wouldn't have occurred, what I can say is that with a safety case regime in place I think the risks would have been much more effectively evaluated, the decision-making process would then have been guided by that evaluation of the risks and that may well have altered the decisions that were made at the time, many of which were clearly with hindsight incorrect.

MR. MOURE-ERASO: Thank you, Mr.

Whewell.

Mr. Clegg?

MR. CLEGG: I would just add that the safety case regime requires a competent regulator and I would expect in those circumstances that the regulatory would have provided expert challenge to the way that well had been managed. So that would have provided a high level of control.

MR. MOURE-ERASO: Mr. Ognedal, do you have any comment?

MR. OGNEDAL: Yes. Just a -- with any regime, the competence of the operator, the contractor, the organization that is onshore and offshore, how they cooperate, these factors are anyway crucial if one is going to have sort of a good management system, risk assessment system, et cetera, et cetera. But those practices have to be in place in my mind regardless of what kind of regulatory system one has.

MR. MOURE-ERASO: Thank you.

So I believe this is my turn. I would like to ask a question to a panelist. I am interested on the issue of the independence of the safety agency in your countries, specifically you both have mentioned in -- I remember in Australia and in Norway that there was a clear separation between the functions of the agency in which the economic aspects or the promotion aspects of energy were separated from the regulatory aspects. And my question is what kind of advantage you saw in the separation and what were the kind of problems and difficulties that you found when the same agency have both responsibilities of promoting the industry and regulating the industry.

MR. CLEGG: Can I start? So on behalf of Australia, when NOPSA was set up in 2005 it was purposefully set up as a totally independent authority dealing only with health and safety matters. The independence was assured by making CEO responsible to the

Minister for Energy, a Commonwealth minister down in Canberra and there was an advisory board so the governance came through in that manner.

And the board was, I think, seven members. And they were all individual experts in their own areas. And although they came from a mix of trade unions, industry and academia they represented just their own views on the board and not the industry or the unions they came from. And they were there to provide advice to the minister and to the CEO on operational strategy. So the governance was assured through there. The independence of the Authority was assured through the CEO reporting direct to the minister. And we were totally levied on the industry so we were well funded.

And the policy -- so the regulations still lived with government down in Canberra and nominally the Authority was part of a government department but, very unusually, the

CEO did not report to the secretary; as I say, he reported direct to the minister.

Now, just having a focus on health and safety meant exactly that: We were entirely focused. We were not driven in other directions like dealing with the environment or commercial development, and so we were able to operate just in that bubble, and hence we were more effective by being able to do so.

MR. MOURE-ERASO: Thank you, Mr. Clegg.

Mr. Whewell, do you have a opinion?

MR. WHEWELL: Well, the separation occurred, of course, after Piper Alpha, and again, that was highlighted in the report -- in the inquiry, of the tensions that can occur and it was believed did occur within the Department of Energy at the time, because clearly, the -- there was -- there were difficulties in the various departments; one wanting developments to be undertaken quickly to achieve effective access to the oil, and

the safety department wanting to make sure those developments were carried out safely.

And I think any government department has responsibilities for both. However well the Chinese walls or similar systems are thought to upgrade, those tensions will exist, and separating them eliminates that risk.

MR. MOURE-ERASO: Thank you.

Mr. Ognedal?

MR. OGNEDAL: Yes. I'll mention that the Petroleum Safety Authority was sort of a result of a result of a split of the old Norwegian Petroleum administration. So now we, as an organization, report to the Ministry of Labor, and they have nothing to do with the Ministry of Oil and Energy, so that's a split from the top and all the way down: separation. After 2004 we in the PSA have been able to focus on our mission in life, and that is to try and participate in making the petroleum activity in Norway

onshore and offshore safe.

And we are not, say, influenced by other consideration in the organization, so it has helped us. It has also make it clear that we were the safety regulator and, you know, were having a good dialog and impact on industry. So it became easier to use resources only on the mission that we were given after the split.

MR. MOURE-ERASO: Thank you, Mr. Ognedal.

So, Mr. Wright?

MR. WRIGHT: Thank you, Mr. Chairman.

I guess one of my first take-aways from what you have all said, including Professor Hopkins, is that the safety case scheme or construct will not work if it's underfunded or underresourced. And that the process itself is iterative in nature and that you have multiple time lines that you assess the process for improvement.

So I have a couple of questions with that as background.

First, do you think your country's safety regime, hybrid safety case scheme is adequately resourced and if not, why not? And secondly, whether or not there is any perceived shift in liability to the government having that role?

MR. WHEWELL: I'll start on that. Any organization can always feel it can do better with more resources. So every government regulator is constrained by financial aspects. Having said that, the offshore regulatory authority in the UK actually has continued to be well resourced.

Our major obstacle is the ability to recruit. And salaries are a big issue because we compete with a very powerful, very well-paid industry. And that is an issue, I think, for any government. But in terms of willingness to ensure recruitment, I understand -- and bear in mind I left the

Department a year ago -- that even in the current climate offshore inspectors are still being recruited by the health and safety executive, which illustrates, I think, the importance attached to that.

As a separate issue -- and this has already been mentioned by John -- we are not funded by a levy from the industry, but we do recover our costs for activities in relation to major -- to the offshore industry and therefore to a certain extent that cushions the offshore regulatory body in the UK from the pressures that come on in times of economic constraint.

MR. CLEGG: The situation in Australia is that the regulatory authority is levied directly on the industry. That's a bit slicker and more efficient process than a fees basis, which happens in the UK. And NOPSA is well funded through that. The money comes direct to NOPSA; it doesn't go via government, so there's not a handling charge removed from

the money as it arrives at us. So we are well funded. I have to emphasize that.

And the way of retaining those funds is very efficient. Industry doesn't like it. They feel that, yes, perhaps they should pay some of it but they feel there should be some appropriation from government because there's a societal benefit, as well. But government has resisted that pressure. So funding's good.

Our real problem -- and it's always going to be a continuing problem -- is getting the right people, even though the CEO can decide the salaries. So that's another advantage. I don't believe that is the case in the UK.

The CEO is in complete charge and are paid more or less comparable salaries in some areas. Some that I couldn't. Particularly well operations. They are hugely paid. But we offer other social benefits from being government employee. I could more or

less match industry. I came in just under.

But I still had a problem in getting the right people with the managerial skills, the technical skills, the interpersonal skills. Those three I can't do anything about when I have to recruit those from industry.

As regards regulatory skills, I can bump those off, so I can try and pick them up as regulators. But I have to have someone who comes to me with those three sets of skills. So they have to have about five or ten years experience in major hazard industry, preferably offshore petroleum and they have to have been middle or senior managers. And they have to, as I say, have these brilliant interpersonal skills. Now, those people are well sought after in industry, as well as a regulator.

Now, in Australia initially I was quite successful in getting people. But, in fact, I recruit continuously world wide. Continuously. And what I find -- what I was

finding was that after I'd given them a year, 18 months training as a regulator they were snapped back up by industry. It was particularly as it was a new regulator on the block, a new, reinforced safety case regime, they wanted to know how that regulator thought and operated. So they were being continuously poached.

And it was not unusual for one of my inspectors to get an interest from a duty holder almost monthly. And monthly that they would up the ante, keep increasing the offer, keep increasing the offer and eventually there would be an offer the individual could not refuse. So I have a continual training line, as well. So I have to put in place a very comprehensive training system. Very expensive. Very expensive to set up. Very expensive to run. So I have to put a regulator in place that can cope with continuous change with personnel. Serious changes.

MR. WRIGHT: I don't think anybody answered the second part of that question. In terms of perceived liability?

MR. CLEGG: Okay. Once or twice where we prosecuted the company has initially tried to involve the regulator and said, Oh, look, we've got an accepted safety case so the government feels we're safe. And tried to sort of share blame that way.

MR. WRIGHT: Right.

MR. CLEGG: But it was never pursued. And generally, as the industry got a little bit more sophisticated then we didn't hear that at all.

MR. WHEWELL: Yes. If I can just address that. I apologize for --

MR. CLEGG: No, that's fine.

MR. WHEWELL: -- earlier. I tried to cover that in my presentation. And that was one of the key changes we did make because there was a continual risk that acceptance would be regarded as permission and agreement

that the safety case represented a safe installation. And although we continually publicly made clear that an accepted safety case did not guaranty a safe installation, merely guaranteed that the document said the company was doing certain things.

We've now clarified that still further. More importantly, we've clarified our assessor's approach so they are absolutely clear that their job is to verify the claims made and say, Well, if they -- say if those claims are substantiated after inspection, then the installation will be safe. But we can't verify that until we inspect. So the document represents if you like, the initial position, the claim of safe operation. And that's what we accept, and therefore under no circumstances is the responsibility passed back to the regulator in our approach.

MR. WRIGHT: Thank you.

MR. MOURE-ERASO: Thank you.

Mr. Ognedal, do you have some

statements to make?

MR. OGNEDAL: Yes. Very quickly. You know, when they talk of resources and so on, you know, like Ian said, we can all basically use the resources as the regulator. But the challenge here -- the day-to-day challenge is to do a good job with what we have. And resource management is a discussion between us and the ministry.

When it comes to the personnel situation, you know, recruitment, that is a challenge. We are competing with the industry. And that also is reflected in the salaries that we offer. But we also offer a lot of other things that is attractive to people. So it's a combined package that we try to use to recruit the right people into the organization.

When it comes to reliability, I cannot see that any company operating in Norway can believe that they have a commission or anything like that or a guarantee from the

regulator, you know, because the responsibility -- who is responsible for what is clearly laid out in th legislation.

We, as the regulator, have the responsibility of setting the framework, the regulations and also supervise compliance within those regulations. So the industry, they cannot bid on anything that we are doing or saying or anything like that; they also are responsible.

MR. WRIGHT: Thank you.

MR. MOURE-ERASO: Okay. Mr. Wark?

MR. WARK: Yes. Thank you, Mr. Chairman.

Shortly after the accident, the blowout I read an article -- I think it may have been the Post -- which indicated that Exxon ran into a similar situation in the Gulf where they were drilling and that they decided because of the -- I believe they were talking about the high pressure and temperature readings -- to cap the well and abandon it.

I have two questions. One is -- and actually, let me go back and say I see three take-aways from the three main investigative reports I'm reading from. And one of them deals with managerial conclusions. And it says, Individuals should be trained to repeatedly question data, raise concerns and double check assumptions. In other words, maintain a healthy sense of vulnerability.

And my question is in your countries are you aware of similar incidents where a company was drilling and got these bad ratings and decided to abandon the well, cap it off and go someplace else?

And the second part of that would be how does a regulator scheme in your country ensure that there's a specific focus on preventing these catastrophic accidents?

MR. WHEWELL: The first question I can answer fairly simply. No, I'm not aware specifically of a situation where a well was capped off because the company concluded risks

were so great that it could not be operated safely. But that may be a result of perhaps water depth we operate in and the nature of some of the reservoirs.

I'm sorry. Could you just clarify the second part of the question? I'm not fully --

MR. WARK: Well, I was wondering primarily if this is something that happens fairly frequently under your regulatory scheme or if it's something that is rare or that you're aware of. And --

MR. WHEWELL: Well, I would think it's rare. I mean, we have a requirement in our legislation and it's actually part of the safety case regulations, although it's not of the safety case itself, for the well design to be submitted to the regulator.

And that well design is examined by our well specialist on the basis of their knowledge of reservoirs and the particular area that the drilling's taking place and the

nature of the well.

And based on their detailed technical knowledge, they will then look further at design and talk to the competent person who is also required to certify the well design. So there's an independent competent person required to certify the well design independent of the company. And we then overview that decision-making process, as well. So there's a sort of double-check on well design.

And certainly, that -- whilst that doesn't guaranty that people will do what they're supposed to do on the day, it does give some support to making sure that the initial risks arising from the well have been properly evaluated and the design, if carried out as intended, will work.

MR. CLEGG: Similar situation in Australia, but different in some ways. Well operations and management is not the responsibility of the safety regulator to

oversight. It's the responsibility of the states. But since the blowout on the Montara in the Timor Sea, a recommendation has been made to transfer those responsibilities to the safety authority, where there is a requirement, however, in our legislation to report well kicks. And to my knowledge those are very few and far between.

MR. MOURE-ERASO: Mr. Ognedal?

MR. OGNEDAL: Yes. In Norway I know that there are some drilling activities that have been stopped and the well shut down, and the reasons could be technical and technical in such a nature that it's too risky to continue, so it has happened.

When we talk about the other issues, say, You know, what happened, you know, when drilling is going on, that's, you know, part of the management system. That's also a part dealing with management of change; there's a problem that crops up and you need to resolve it, you need maybe to do some changes to the

program. And, of course, when doing things like that that you have to go through the process again of risk evaluation and so on based on the principles of management of change.

MR. MOURE-ERASO: Thank you, Mr. Ognedal.

So we continue our proceeding with the questions from the Investigator Panel.

So, Mr. Holstrom?

MR. HOLSTROM: The first question I have concerns the standards that the various regulatory regimes rely on, how they're accepted and if there's ever a determination on the adequacy of those standards that are submitted as part of either a safety case or evaluated by the regulator. And related to that in particular are the risk evaluations. For example, if it's as low as reasonably practical or some other formulation are those applied to the safety standards that are presented?

CSB has a history of noting that certain safety standards have gaps and can need -- can use improvement and in some cases there's a lack of standards. For example, the CSB out of its own investigation in about the year 2000 made a recommendation to API to develop safety system standards for oil and gas production onshore, which were implemented by API that didn't exist before and those weren't in place.

So how do you deal with either non-existent standards or standards that may have gaps? Is there an evaluation process? And do you apply the same risk-base approach that you apply evaluation -- in evaluating the safety case or the activities of those you're regulating to the standards themselves?

MR. WHEWELL: I'll take that to start with. I mean, the basis for decision making on whether all reasonably practical steps have been taken starts with the question as to whether a standard exists. If a

standard exists that then becomes the base for the decision making. But it doesn't mean that we accept that standard as being good enough.

The next question that's asked by the assessor is, What is currently -- current good industry practice. In other words, if things have moved on -- and they often do from standards -- technologies as developed, we look at good industry practice and say, Well, what is industry actually doing. We then look at the best industry practice. So we look from our knowledge and experience and technical -- from our technical experts and say, What are the best companies doing, Can they do better. And certainly, in terms of new installations, for example, we would expect that account would be taken, the best industry practice if the cost benefits meant that that was feasible.

So we work through that hierarchy, really of standards. And there are gaps. And we fill those gaps, as I say, looking at the

experience of our own specialists, looking at the way industry deals with these issues, looking worldwide at standards. But sometimes we have to set our own base standards. We set our own minimum standard as a regulator. One could suggest that's prescription.

But quite honestly, we learn from experience as a regulator. And if in our view an incident has occurred as a result of a deficiency in approach then we would expect the industry to address that deficiency and we'd set that as below our base standard and insist on improvements. So standards very much are the basis, but we move on from there to try -- and that's the advantage of the goal-setting approach.

MR. CLEGG: In Australia it's a similar approach. And running through the argument that the duty holder makes for achieving ALARP is, as Ian has said, codes and standards, good practice, not QRA. In the old days in the UK there was a regulatory

requirement for industry to undertake QRA.

And on this Ian says otherwise. I personally felt that was starting to override almost good practice, proposed some standards and arguments who have been made for some very strange engineering standards. And I believe that regulation has been revoked.

So the argument should be develop some cogent standards and good practice. After that you do move to engineering judgment, as Ian has said, and qualitative risk assessment. Use QRA as appropriate but not as the main thing. And then you move up to company values and societal risks where it becomes more and more difficult. So that is sort of the progressive implementation of the tools.

But, yes, there are holes in the tools and that is exactly why we need to employ expert regulators. They should know and understand the full range of codes and standards and good practice in their

particular specialist areas. They should know and understand where the gaps are and what's the judgment that those standards are based on. And if they're not happy with those or the way those standards are beginning to fly then they require the duty holder to demonstrate how they've dealt with those weaknesses.

And that's why you need a regulator that can provide expert challenge. We are at the moment, I believe, attempting to quantify all this within the regulator. But that will be a long, lengthy process.

MR. MOURE-ERASO: Thank you.

Mr. Ognedal?

MR. OGNEDAL: Yes. We -- as I said initially, we refer to standards in our guidance to the regulations. And when we refer to the standard, we have evaluated the standard and decided that this is an acceptable standard to use.

We also participate in

standardization work where we feel it's important to participate, and when there are lack of standards and we see that there should be a standardized approach, like, for instance, to -- related to the question, you know, What is safe, like extension of the facilities, we work to develop, say, a practice or more a standard on the issue.

Best practice is also very important. That's your key standard, not necessarily. Best practice -- there's a quote in Norway, [speaking Norwegian], that there's a challenge of the creating some best practice document on specific issues. And I think there's a number of best practices that have been developed over the years. Thank you.

MR. MOURE-ERASO: Mr. Hoyle?

MR. HOYLE: Thank you. CSB investigations have found that disasters are almost always preceded by other less-serious incidents -- near misses -- that provided warning of a disaster to come and also

provided the opportunity to prevent such disasters.

In the U.S. safety regulatory regime there's no duty to learn lessons from serious incidents and there's no duty to share lessons with other companies from your incidents and there's no duty to change operations or improve operations based on the lessons of incidents. How does your regulatory regimes address this problem?

MR. WHEWELL: In the UK similarly, there's no specific requirement to learn from incidents. But as far as we're concerned, a management system that doesn't include an ability to learn from incidents is not adequate. So we tackle it in terms of whether the management system is adequate.

That having been said, we spend considerable amount of time pressing the industry to share data between companies and indeed, making sure wherever possible that even within companies they're sharing data.

The oil industry is -- does seem to have particular difficulties in sharing information even on something as critical as safety. I found it over many years a mystery as to why something as simple as safety isn't shared. There's no great commercial advantage in not sharing safety data.

In the UK we persuaded the trade association to set up an accident database for sharing information. And that is populated and can be accessed by companies. And we've also moved in recent years to more active sharing without our safety forum that we operate with the industry, trade unions and HSE where if there are incidents where it's felt lessons can be learned these are shared in open forum and actually published on the site. And that's the set changing safety site for UK companies.

And there is a considerable amount of information on there about incidents that have occurred and also, sharing good and best

practice. In other words, where people have solved safety problems, they've put those on the site. But I won't pretend that that site is comprehensive or we've solved the problem of actually getting really good sharing of information in the UK.

MR. CLEGG: The lawyers do not like their companies sharing accident, incident safety data. It's a big impediment.

In Australia, though, we can require the company to issue a safety log. If they're hesitant and delay or it's inadequate, then the regulator will issue its own safety log. Their main trade association, APPEA, also maintains a database similar to the one that Ian has described in the UK. But again, that is not comprehensive.

But this is another major role for the regulator. We pan the whole of the world for significant events, be they onshore and offshore and we share the learnings from those events with the industry ourselves. We do

that on a one-to-one basis.

But we also do it through the -- what we know as the CO's Newsletter, which comes out monthly. And there we share issues, our topical issues of the day which cover the Australian industry. And, as I say, it also reviews what's happened internationally and what the learnings are and we put in place the links for the industry to access that information.

When we go out on our inspections or we deal with management back in the office, we will review those learnings and ask how the industry or the company is responding to them.

MR. MOURE-ERASO: Thank you.

Mr. Ognedal?

MR. OGNEDAL: Yes. In Norway, you know, everything that is not a company secret nor information about an individual is basically public. So everything, for instance, we as the regulator do is available to everybody.

And we actively put all our supervisors' report, investigation reports onto our web site. And there -- that is -- the purpose of all of that is simply to give to the industry and other people information about what we have found and thereby participate in sharing.

In the safety program, for instance, where the three parties meet together, we present always the serious incidents that have happened since the last meeting. And the industry will be -- operations organization in Norway, they have now digested reports from off of well control that they -- well, they are sharing that between the members, and they use it as sort of a training facility, facilitate training in a way, because they present it in such a way, ask questions, what should have been done that wasn't done, and they also indicate the possible answers once you get out in the chain of industry.

So it's very open, so information is

available to everybody. And the trick is that the people should be apprised about all of it and ask the question, What can we learn from these reports and this information?

MR. MOURE-ERASO: Thank you.

Mr. Tillema?

MR. TILLEMA: Yes. Thank you. One of the areas I'm -- I have a lot of passion around is the idea of continuous improvement, which I was pleased to hear got mentioned a few times today. So I guess my question would be when a company goes out and assesses a hazard and they come up with a safety case to identify how that hazard's going to be mitigated and if you're using industry standards as the model to determine if you're as low as reasonably practical, how does that standard -- if it stays flat -- how is that going to drive continuous improvement. So why wouldn't the idea of when you renew a safety case requiring reduced risk or raising the bar for performance, how do you address that?

MR. CLEGG: I can answer on behalf of Australia. I really do need to reenforce the point that codes and standards is the baseline and not the only line. On top of that there is good practice, engineering judgment, qualitative risk assessment, quantitative risk assessment, company values and societal values.

Now, we expect to see an application of all of those. And, in fact, you can test really whether a company seriously believes in continuous improvement by seeing how it contributes to society in those areas.

Is it open? Is it transparent? Does it share? Does it send representatives to standards-making bodies? And is it open with the regulator? And does it take part in producing technical papers for discussion and improvement within the industry and worldwide? So you can get a feel for the company like that by applying various tests.

But there a regulatory requirement

which supports all that, which is that the safety management system must be properly implemented, and it must include facilities and ways of obtaining continuous improvement. So it's underpinned by regulatory requirement.

MR. TILLEMA: And does that system ensure that ten years from now these risks will be lower than they are now?

MR. CLEGG: It certainly provides the basis for moving in that direction where prescription would not.

MR. TILLEMA: Thank you.

MR. MOURE-ERASO: Mr. Ognedal?

MR. OGNEDAL: I think, you know, the situation is that some of the standards, they are not being maintained as properly as they should be, so that's a problem there.

And we may compensate for that by addressing issues in our guidance, and what we try also to do is to be on top of everyone and remove standards from the guidance. If they are getting too old or experience shows that

they are not achieving the safety record we are after, we can take them off the list of acceptable standards. And that happens.

And there's a challenge there related to this, because there are many accidents in the petroleum industry. And though many of these accidents are old equipment -- they look at standards differently. And operators, as has been mentioned by John and Ian, have the duty of seeking continuous improvement. And that means that they cannot be static when it comes to the use of standards. They have to do a little bit more than that. Thank you.

MR. MOURE-ERASO: Thank you.

Mr. Whewell?

MR. WHEWELL: Yes. I probably can't add a great deal to those comments, as John as set out. I think that in answering your question in ten years time how confident are we that standards will be better in a goal-setting regime than in a standards-based

prescription regime, I'm absolutely confident, because I know the changes that have taken place in the North Sea as a result of the regulator pressing for improvements that have been identified in good practice in companies developing improved ways of achieving the objectives and making it clear that our expectation of the regulator is as a regulator that other people will adopt those improvements progressively on the cost-benefit basis.

So I've seen considerable improvements. And certainly, I mean, control of drill flow equipment is a good example -- better automation and so on -- that is partly driven by economics but nonetheless, wouldn't have taken place if we hadn't had the legislation to require -- to the continue improvement approach to require companies to progressively upgrade their equipment and take advantage of the knowledge of improved approaches.

MR. TILLEMA: Thank you.

MR. MOURE-ERASO: Dr. MacKenzie?

DR. MacKENZIE: Recognizing the time, I'll just have a quick question for the panelists regarding personnel resources you spoke a little bit about. I'm interested to hear from you about the number of inspectors required to conduct a thorough inspection of a drilling rig. There's a September 1 letter to the Secretary of Interior regarding a review by an oversight committee of MMS -- the former MMS -- and BOEMRE. And one of the major issues they pointed to was a lack of resources, a lack of personnel where they only had one inspector able to do an inspection sometimes and then the difficulties of being able to look at every rig. And I was just wondering if you could speak to that very quickly.

MR. WHEWELL: Yes, briefly. I mean, certainly, in terms of our audit or primary interventions they would usually be carried

out on the basis of the risk analysis of where we put our resources for that intervention. Which means you can't do everything. You've got to target.

But what we would do is we would probably have a three-day inspection with three to four inspectors in various disciplines with areas identified prior to the visit as being a priority and needing review and needing to be properly looked at. And that visit would then be carried out fairly comprehensively, picking up additional items on routes and talking to the offshore workforce, which as John has said, is a primary source of information for us. And feeding back on that. So it's that level of intervention.

But I won't pretend that will deal with everything all in one go. And that's the value of the safety case. It enables you to identify and prioritize some of the key areas where if the risks are not properly controlled

on that particular installation there may be a higher risk and therefore, that we can bring in the specialists who've identified that as a result of their assessment of the safety case. And then they can look into that and satisfy themselves that the risk controls are as stated in the case.

MR. CLEGG: In Australia it's identical situation. But there are certain elements I'd just like to share with you. We don't go offshore unannounced. And, in fact, we make a positive move to involve onshore management in what we're going to do. So we use the safety case. We brief ourselves on what's in there and what the main issues are and how the management believe they control those. We will then, prior to a visit, select a few of those and we'll share those with senior management and ask for a meeting with them and ask them to present at that meeting those managers who've had an input to those areas of the safety case.

DR. MacKENZIE: Do you --

MR. CLEGG: The reaction to that has been interesting. So suddenly they're having to take the safety case off the shelf. They're saying, Oh, the regulator is using a safety case, oh, heck, perhaps we ought to use it, as well. And also, that involves in the offshore order for inspection.

Previously, I believe, under the regime the inspector would just go off and do something. And even if the management were aware of an inspection often they wouldn't be -- they would just keep their heads down and hope nothing came of it, but now they're involved in the process.

So then we take all that offshore and we audit against what the management thinks is going on, we audit against what is stated in the safety case, because they're sometimes a bit different. And management are then waiting for us to come back onshore and tell them how it's gone. And so they get

involved in the process; they get some ownership of that inspection, and that is most important.

DR. MacKENZIE: Thank you.

MR. MOURE-ERASO: Mr. Ognedal?

MR. OGNEDAL: Yes. Typical audit combined with a verification, we will use a team, three, four people, that would spend a fortnight planning -- detailed planning and then go in normally to the office of the company and interview the management there, et cetera.

And then they will go offshore and may spend a couple of days, three days looking at the effectiveness of the maintenance management system, as an example. And then these three, four people come back to the office and they spend normally a week creating the report.

DR. MacKENZIE: Thank you.

MR. MOURE-ERASO: Thank you.

I think that we're going to proceed,

you know, with asking the audience that if they want to have questions to please put it in the e-mail for us so that we can read. And as I said before, we are going to have another bite of the apple for the board if there is somebody that needs to give a question.

MR. GRIFFON: Yes. I just -- this is actually a follow-up to my first question, so if you can remember about 40 minutes ago. I just come back to whether the safety case approach or your different regimes has improved safety in offshore drilling. A couple things have struck me throughout this discussion.

One, the idea -- the notion came up of the paper exercise, that it cannot become just a paper exercise and be put on the shelf, I think, as you said, Mr. Clegg. And I certainly agree with that. And I guess the other thing that I heard during earlier discussions -- I forget who said it -- but in response to whether it was a more effective

approach, someone said that the industry felt that it was working much better.

And I guess my question to follow up on that is do the workers or worker representatives, unions to the extent they're represented in their various countries, what is their response to the -- this sort of new approach, the safety case approach, whether it's being effectively implemented in the offshore locations.

And also, just the second part of that is what requirements do your regulations have, as far as worker involvement in the planning, in the auditing and all aspects, I guess, of the safety case approach.

MR. WHEWELL: I -- it's difficult to speak for the trade unions. But I can probably give you examples of where we have received considerable support from the trade unions in our approach. And that's where situations are sufficiently bad that our view is that the installation isn't complying with

its safety case which effectively means that they are operating illegally. The installation usually will shut down voluntarily rather than have the regulator shut it down, which obviously, we have the power to do either by withdrawing the safety case or issuing a prohibition notice.

But in those circumstances -- and they've occurred -- I think that the -- certainly, in the UK with our changed approach and strengthening as a result of the updating of the regulations, we have been much firmer. And this certainly has received a lot of support from the trade unions that can now see that the safety case is being used as a means of ensuring that safety's being properly managed on the installation and has clear evidence, in terms of the correspondence that they have access to in our -- to the companies that we're using the safety case and indeed, failures in safety management systems to take companies to task. And I think that's greatly

appreciated by the trade unions who clearly have members on some of these installations which give them great concern.

MR. GRIFFON: Thank you.

MR. CLEGG: In Australia the unions appreciate the strength of the duty-of-care approach compared with prescription. That's it. Basically, they do. However, having said that, they are concerned that it places a lot of power in the hands of the operator. That's their view.

And their view is that in order to control that you need to have a very expert and properly resourced regulator to hold the operator's feet to the fire. So they are very supportive of having that expert, well resourced regulator in place because they know and understand that is key to the successful operation of a duty of care, safety case based regime.

To answer your question of worker involvement, there are regulations that

require the workers to be involved in the process of producing the safety case. And for any new workers that come on board where you have already the safety case in place and they are -- the operator's required to share that safety case content with the new workers and explain how it is used on the installation and what their contribution should be to that process.

MR. MOURE-ERASO: Mr. Ognedal?

MR. OGNEDAL: Now, in the -- as I indicated, in Norway, you know, they clearly don't -- they welcome representatives shall be involved in all aspects of the safety world. So that is laid down in regulations as set forth. When it comes to our regulations, et cetera, my impression is that they -- also, the workforce is in general happy with the situation. But they say and I certainly agree that the regulations, they are demanding -- yes. I know. I agree with that. In some cases they indicate that it would be valuable

with a little bit more prescription in certain areas. So that is my general fix of the situation.

MR. GRIFFON: Thank you.

MR. MOURE-ERASO: Thank you.

Mr. Bresland?

MR. BRESLAND: This is a UK-based question or UK-focused question. After Piper Alpha you went from your previous regulatory construction to the safety case program and you hired -- eventually hired 300 people, as I recall you said. How long did it take you to get from, you know, Point A to Point B in doing that?

MR. WHEWELL: The regulations -- the safety case regulations came into force in '93 -- or at least, they were published in '93 and came into force shortly afterwards. HSE took -- was passed responsibility in 1991. John can confirm that. So effectively there were two years during -- twice of the regulations becoming active and the rest of

the regulatory package being produced for the division to actually set up its systems and procedures. And there's no doubt that that took a considerable amount of planning and resource to actually be prepared to go on Day 1 when the safety cases started being submitted.

Prior to that the industry did submit some sort of test safety case to enable the regulator to modify and improve the systems and ensure that they were working and get a better understanding of the issues arising from the safety case, which was obviously at the time totally new to the industry. Although there were onshore safety cases the framework was slightly different. And, of course, the acceptance put far more pressure on the company because they're required to have it accepted within a certain period of time with the regulations coming into force.

So a tremendous amount of work went

in. Huge amount of work in the training. But -- and I think when John set up NOPSA he would have had similar problems of actually setting up the systems and procedures. And unless those systems and procedures are in place and they are properly monitored and properly managed then a safety case based regime won't work effectively.

The assessment process must be very, very carefully controlled. The assessment work must be very carefully managed and overseen. Technical decisions and legal decisions need to be very carefully managed and overseen. It is a complex process that does require a considerable range of skills and considerable resources.

But once the system is up and running and the hump, is you like, is over -- I mean, we currently have approximately 160 staff in the division, which is -- with 100 to 110 professional inspection and engineers and specialists in the division.

And that is, if you like, an ongoing status quo level that, should there be any major changes to legislation which required us to do something significantly different those resources might not be adequate. But that is a status quo level. But that gives you a feeling of the initial need for a very high level of recruitment to actually achieve the point where everybody has an accepted safety case.

MR. BRESLAND: Thank you.

MR. CLEGG: If I could give an Australian perspective on that -- you might find that helpful -- our regime is very similar to the UK.

But when I arrived in Australia in June 2004, I had a bucket of money and I had a bucket of revised and more focused legislation. And that was it. There was just me. So -- and I had to be up and running as a regulator six months later on the 1st of January 2005. So I had six months to build

the regulator.

Well, obviously, I didn't achieve that in six months, but I did meet that deadline in some fashion. And, yes, I had all those challenges and more Ian has just described.

I was on a five-year contract, so I believed -- just -- I always thought it would take five years to build that competent regulator with all the systems, processes, people in place, training schemes, enterprise document record management systems, fitted out the offices and got the electronics and computer systems and everything that goes with a modern, sophisticated regulator.

I thought that would take at least five years. And when I left my fixed-year contract five years later, we were there or thereabouts. But I accept that continuous improvement is needed, just as it is for the industry. So they still work at it. But it took me five years from nothing.

MR. MOURE-ERASO: Mr. Ognedal?

MR. OGNEDAL: Yes. Well, the things we went through, you know, to establish the PSA, get the regulations in place covering the eventual responsibility, we got -- you know, we did that in one year.

MR. MOURE-ERASO: Thank you.

So it is my turn. So in the interest of time I cede my time to my gentleman from -- my fellow member here.

So go ahead.

MR. WRIGHT: Thank you, Mr. Chairman.

I don't recall who stated this tenet. But one of the basic tenets was developing appropriate behavior with respect to risk and risk taking as part of the safety case scheme, if you will. And my question is are you familiar with any safety case failures? And if so, why did they occur? Did the system break down or was it the inability of those people to display appropriate risk

behavior?

MR. WHEWELL: I'm not quite sure what you mean by safety case failure. I mean, we have situations where we have a safety case submitted which just does not adequately demonstrate that safety is being effectively managed, which would mean that the company would need to go away and either make sure that the documents reflected realty if in fact they were managing it effectively or, conversely, sort out the management of -- on the installation to ensure that the systems were in place.

Certainly, we've had situations as I've described where on audit and intervention we have discovered a complete failure of management systems as described in the safety case. And in those circumstances, clearly, as I say, the company has very little alternative but to shut the installation down. So, I mean, that I would view as a failure. And it does occur.

And without adequate and competent intervention that doesn't get discovered. And that's the important corollary to safety cases: These can't exist in isolation. They must exist with a good supporting regime and a good regulator -- with a competent regulator with sufficient resources to back up that safety case.

MR. WRIGHT: Thank you.

MR. CLEGG: In Australia it's not unusual to reject safety cases because they are such a poor quality; they haven't made adequate demonstrations.

And in my five years there I think we moved to withdraw accepted safety cases on three occasions. We never actually had to go that route. We went through many months of trying to get the company to improve. And it's normally due to systemic failures in the safety management system. That's what gives us serious cause for concern.

One of the worst was a drilling

company. And as a result of that I think they doubled their staff in Australia and they ensured that the Australian branch adopted and properly implemented the company's worldwide standards, because they had been a bit thin.

So -- and on those three occasions we tried for months to get them to improve, and they hadn't, so I gave them notice of withdrawal. And, of course, I went straight up the management chain to the management director, and on all occasions in three days those managing directors, on each occasion, were in my office, not at my request. And they come from around the world.

You shut down a drilling rig or an operating facility, that is costing millions of pounds, dollars. And that's what does it.

And I would just say, to finish, that's why it's very important, I feel, if you have a safety case regime in place, you must give the operator -- sorry -- you must give the regulator the ability to accept or reject

that safety case. If I didn't have that power, I wouldn't have got all these improvements.

MR. MOURE-ERASO: Thank you.

Mr. Ognedal?

MR. OGNEDAL: I have nothing to add.

MR. MOURE-ERASO: Okay.

Mr. Wart, do you have an additional question?

MR. WARK: No follow-up.

MR. MOURE-ERASO: Okay.

There is any questions from the Investigator Panel?

MR. HOLSTROM: We have a couple of questions that have been posed by the audience.

MR. MOURE-ERASO: Yes. But you have one of your own before I move to those?

MR. HOLSTROM: Oh, no. Go ahead.

MR. MOURE-ERASO: Okay. We'll -- okay.

We have a couple of questions from

the audience. The first one is a person that doesn't have a BlackBerry, which is fine, you know. It says -- he wrote it down. It says, During the actual drilling there are no inspectors on site. I assume in the regimes that we are describing. And another is, What stopped companies for trying to avoid safety case goals?

MR. WHEWELL: It's absolutely right. I mean, one of the issues with the regulator is that even if we can get up offshore once a year with a comprehensive inspection of any installation it is only a snapshot in time. Which is why it's important that the visit is well planned, well executed and the key areas are dealt with.

What's to stop a company not complying with a safety case? The short answer is nothing, but the risk that the installation will be shut down on discovery. And the -- I think it's a brave operator that intentionally goes outside the safety case

because the eyes and ears of the regulator -- certainly in the UK and I suspect in Australia and Norway -- are on the installation.

They are the -- there's the workforce on the installation. They are aware of the key standards that the safety case sets. And certainly, we have a system for the workforce contacting us if they have any safety concerns and certainly, if there's any suggestion that the company is not -- intentionally not complying with the safety case. That would be viewed extremely seriously and we would carry out a very thorough investigation into that.

But the question is absolutely right. We can't, as a regulator, be there all the time. But any company that intentionally flaunts the law, as in any case where intentional legal failure is identified, it's viewed by certainly, us and the courts in the UK as particularly serious than unintentional breaching of the law.

MR. CLEGG: I would say that the whole basis of the duty of care safety case based regime is to improve the safety culture of the whole of the company, both offshore and onshore. And it is that safety culture that prevents that sort of occurrence that the questioner has asked about. That's the main barrier that's in place.

Also, in Australia if we know that we have a difficult drilling operator, we will tie our inspections to the time of maximum activity. So that is when he's drilling, so we will be offshore when he is drilling.

MR. MOURE-ERASO: Mr. Ognedal?

MR. OGNEDAL: I think that, as I said, we are risk based, so we may decide to go offshore if there's a special well being drilled that is very risky, et cetera. So we decide based on the risk picture that we see.

We cannot be offshore all the time; we have not resources for that, but we may be offshore on one installation every month and

forget about other installations for a couple of years. It's because we are of the opinion that those installations we don't need to visit because they are adhering to the management system in place, and they are doing things right.

As a baseline, I think also -- well, if we talk about the safety case approach, you know, the baseline is that once the company tell you something, you believe it.

So there's a certain element of trust between the company and the regulator, and the worst thing a company can do here in Norway is to breach that trust. So then there will be heavy reactions. Thank you.

MR. MOURE-ERASO: Thank you.

I have another question from the audience. It says, Mr. Griffon from the CSB already questions whether safety case is actually better improving safety over the prescriptive approach in the U.S.

So the Montara blowout near

Australia last year seems to defy the notion that safety case, even when it is blended with regulations and standards is sufficient to prevent devastating OSHA accidents. What would be the response to this? This is probably to Mr. Clegg.

MR. CLEGG: All right. Thank you.

Very good question. In fact, well operations in Australia currently is not under the purview of the Safety Authority; it's under the purview of the state regulators.

And hence the Montara inquiry report makes virtually no mention of the Safety Authority at all but is very critical of the role played by the state regulator, in that they were underfunded, they were generally underresourced, they didn't have the competencies. I believe it also says that they accepted what were clearly schlocky well operation management plans and also didn't inspect and audit as they should have done.

A consequence of that is there is a

recommendation that well operations, well design, well operations and well management should be brought within the purview of NOPSA. And I believe that will occur fairly shortly. And then they will be subject to the duty of care regime.

MR. MOURE-ERASO: Any comments from any members of the panel?

(No response.)

MR. MOURE-ERASO: Okay. I have another question. Here it says, There is -- there are indexes of near-misses reporting systems. For example, in the United States there is a NASA Near-Miss Digest for the airline industry. And for the IAFC from firefighting. There is a large database covering the benefits for districts of systems and with actual accidents and injuries. Is there something similar or something like this is being used in your regimes? Digest or near-misses and use of them.

MR. WHEWELL: There is no formal

near-miss reporting arrangements in -- on the UKCS. But we would expect every company to have a near-miss reporting and investigation process as part of their management system because you only learn from things that go wrong. And if they -- if it's a near-miss you're fortunate that it hasn't gone wrong seriously. So every company should have a near-miss reporting arrangement within the company. But there's no formal requirements for near-miss reporting.

In terms of -- I mean, we do require gas -- oil and gas hydrocarbon releases to be reported on the UKCS, which was a requirement after the Piper Alpha inquiry. And we have a very, very comprehensive database of release which actually enables a -- after many, many years of collecting this data, a very full analysis of plant and equipment failures enables companies to target that. And that, in many cases, the oil and gas releases may be of a relatively minor nature at the time which

might be viewed as a near miss but actually, there's a lot that can be learned from that database. And companies use that database for evaluating plant and equipment design options.

MR. CLEGG: A similar situation in Australia. But by regulation we do require the reporting of certain lagging indicators. And some of these may be considered to be near misses. And they include hydrocarbon releases, well kicks, unscheduled activation of the Emergency Response Plan and damage to safety-critical equipment.

MR. MOURE-ERASO: Mr. Ognedal?

MR. OGNEDAL: In our regulations we have required reporting of quite a few types of incidents. I'll mention some: a loss of well control, ships on collision course, trolling loads that didn't hurt anybody, and so on. So that's quite a list that we are asking industry to report to us. And we collect all of this information and use it together with other information in developing

the risk picture I talked about. Thank you.

MR. MOURE-ERASO: Thank you.

I have another question here. In the U.S. MSHA, the Mine Safety and Health Administration, conducts a major internal review of its regulatory scope and competence after a major mining disaster that was published and that we know about. And the question is, Do any of these regulations -- regulators do as well after a major offshore failure. I mean, is that a question for us or for the panel? To the panel, yes.

MR. CLEGG: Okay. I can answer on behalf of Australia. Often when there was a really serious incident, of course, there is effectively a public inquiry, much as CSB undertakes, which looks at questions of fact. And that will, of course, also look at the effectiveness and involvement of the regulator. The regulator, of course, also undertakes his own investigation but he's unlikely to be too critical of himself. So

it's useful to have that check and balance, of course.

Additionally, we have a legal requirement every three years -- that's my recollection -- for the minister to put together an independent review of the regulator, an independent review of NOPSA. And first time that was done that was an international panel and that consulted widely with industry and the unions and the workforce and the stakeholders as to the effectiveness of the regulatory regime and the way in which it was being implemented by the regulator. And that came up with a number of useful findings so we could use those to continuously improve.

MR. WHEWELL: Yes. In the UK, as John said, if the incident were serious enough there would be a public inquiry, but that's a decision for the government.

But HSE has its own -- because of the size of the organization and the divisions

in it, it has the ability to investigate other parts of its own organization. And if there is a serious incident, then the major investigation plan is activated within HSE and certainly, the actions of the regulator of that particular area.

And if it were an offshore incident, the offshore regulator would be investigated by other parts of HSE with often an independent panel member called in by HSE to ensure some, say, degree of independence of that review.

And we learn lessons from that review as to how we might have acted as that part of HSE, how we might have acted better. And they look at our systems and procedures, so we look critically at our own actions, as well as looking critically at company actions if we have a serious incident.

MR. MOURE-ERASO: Mr. Ognedal?

MR. OGNEDAL: In our case we are evaluated every three years on a routine

basis. And these evaluations are very valuable, because they always identify the areas where we can improve as the regulator, so that is very useful to us.

In case of a serious, very serious catastrophe or something the government can sit down a special commission. And a commission like that will, of course, also look into the role of the regulator and what the regulator has done and what it's not done. So we would be evaluated in a process like that.

MR. MOURE-ERASO: Thank you.

I have another question. It is, Do your systems have a way to drive or encourage adoption of inherently safety technologies and if so, how.

MR. WHEWELL: The answer to the question is yes because that's the fundamental -- one of the fundamentals of the ALARP approach. Inherently safer technologies or elimination of risk is a key point on the

hierarchy of risk control. And certainly, that -- there will be great emphasis on technologies that -- of that type that effectively eliminate the risk. So we will be -- the expectation would be that they -- and if such technologies were cost beneficial -- in other words, the cost of adopting the technology didn't grossly outweigh the benefits then we would expect that technology to be adopted.

MR. MOURE-ERASO: Mr. Ognedal?

MR. OGNEDAL: Well, I'm not into that, to what he has just said.

MR. MOURE-ERASO: Yes. The question was if the --

VOICE: He said he had nothing to offer.

MR. MOURE-ERASO: Okay. All right. Thank you.

There's another short one that says, When you conduct your inspections are workers interviewed privately by the inspectors.

MR. CF: In Australia, yes. When we go offshore the first significant thing we do is to get together with representatives of the workforce for a couple of hours. We share with them why we are on the facility, what we're doing, what our expectations are and how we intend to go about our business. We ask them to share with us all of the good things and what are not so good things.

And it's important, you know, not to be negative. We don't carry out negative inspections. We carry out positive inspections. And that means we look for the good things, as well as the not so good things. And we commend the workforce and the operator for what they do well. And that is very important. Because that builds the relationship. And then having taken their comments on board, we will build those into our inspection as we can. And then we invite one or two of them, if they wish to come along with us, on our inspections.

Now, we also stay offshore for three or four nights. And that is very important. Because as I said, our inspections are planned, their shared with management. Some people say, Oh, you should carry out spot inspections, not tell anyone. And, in fact, if you stay on board for three or four nights then you get under the skin of the organization.

Make sure you eat with the people. Don't sit near a little group in the corner somewhere. We spread out, we engage them at all levels. And it's amazing what comes out of the woodwork, that most important aspect of the inspection process.

MR. WHEWELL: Yes. And that's exactly the same in the UK. And just to conclude the visit, we always close out the visit with a meeting with the representatives of the workforce and inform them what we've found. And that is confirmed in a copy of the correspondence relating to our visit. So they

are kept fully informed and they are interviewed separately.

MR. MOURE-ERASO: Mr. Ognedal?

MR. OGNEDAL: Yes. In our case it is very similar. We always engage with the workforce offshore. And normally, it's the safety delegate. And talk to them, of course. And they are invited to participate in our activity on the facility.

MR. MOURE-ERASO: Okay.

Another question is, Are there safety cases made publicly available via a regulatory -- regulator's web site and are the results of safety case inspections and outcomes made public.

MR. WHEWELL: In the UK there isn't a database. There isn't a web site for safety cases. They're not confidential documents, which means that any member of the workforce can gain access to it, which means that trade unions can gain access to it. We don't normally provide full copies of safety cases.

We would expect companies to do that.

So the second part of the question was?

MR. MOURE-ERASO: If the results of the inspections are made public.

MR. WHEWELL: Again, the results of the inspections are made available to the workforce. Under Freedom of Information we provide information on our inspections and investigations, but on demand. So they are made public but not pro-actively.

MR. CLEGG: And it's actually exactly the same in Australia.

MR. MOURE-ERASO: And in Norway, Mr. Ognedal?

MR. OGNEDAL: Yes. In Norway, as I said, more or less everything is publicly available. Some of it we make available pro-actively, put it on our web site. Other things are made available when people ask for it.

MR. MOURE-ERASO: Thank you.

Is there any questions that have come from the audience to you that you want to present?

(No response.)

MR. MOURE-ERASO: No? Okay.

So that conclude our first panel. We'd like to thank you very much for being with us, especially thank you to Mr. Ognedal from Norway.

And we are going to proceed now for lunch. Lunch is on your own. And we would like to ask you to promptly come here at 1:00 so we can continue with the panels.

MR. OGNEDAL: Thank you. Bye now.

MR. MOURE-ERASO: If there's nothing else, we'll close.

Thank you, Mr. Ognedal. Goodbye.

(Whereupon, at 12:00 p.m., the hearing was adjourned, to reconvene this same day, December 15, 2010, at 1:14 p.m.)

A F T E R N O O N S E S S I O N

MR. MOURE-ERASO: Okay. I believe we are ready to start back. Thank you for coming back. Before getting started, I would like to inform you that we were asked about the participation or not of the Department of Interior in our hearing.

We have invited them to participate, and they let us know that they would prefer to have discussion with us about regulation on a one-to-one basis between the agencies. We did invite them.

The -- this afternoon's program in the hearing will start with our Industry Panel. It will be the same format that we had this morning. We're going to ask the panel members to make their presentations and we will have questions.

So with us today we have Mr. Erik Milito, who serves as the Director of Upstream and Industry Operations for the American Petroleum Institute. We have Mr. Joe

Leimkuhler from the Offshore Well Delivery Manager for the Shell Oil Company. We have Ole Preben Berget, the Vice-President of Operation for the U.S. and Mexico of Statoil. We have Mr. Alan Spackman, Vice-President of Offshore Technical and Regulatory Affairs for the International Association of Drilling Contractors.

We have Dr. Robin Pitblado, Director of Safety and Health and Environment from Risk Management Services for Det Norske Veritas, and Mr. William Sember from ABSW Consulting.

I would like to ask first for Mr. Milito of the American Petroleum Institute to present his statement, please.

MR. MILITO: Good afternoon, Mr. Chairman, members of the staff, the Board. My name is Eric Milito, and I am the Upstream Director for the American Petroleum Institute.

API is more than 450 member companies which represent all sectors of America's oil and natural gas industry. Our

industry supports 9.2 million American jobs, including 170,000 in the Gulf of Mexico related to offshore development business and provides most of the energy our nation needs to power our economy and way of life.

Our industry's top priority has always been to provide energy in a safe, technologically sound and environmentally responsible manner. We look forward to working with the CSB and to considering recommendations that may help the industry continue its efforts to enhance offshore safety after the tragic accident in the Gulf.

Over the decades an enormous amount of work by regulators and operators has gone into staying safe offshore. Emphasis on safety has increased. Trend lines showing incidents and volumes spilled have gone down. The Gulf accident obviously cast a shadow over what has been achieved and has required a look at all that has been done on safety, to review ways to improve operations. We welcome that

reassessment and have been conducting that review. But what has been done, what is already in place to improve safety, including recent changes following the accident is considerable. So we must all assess what's been done and continue to build on it.

Safety has always been a priority for this industry. For 90 years the industry has developed and continuously improved best practices through API Standards Program, which is accredited by the American National Standards Institute, the authority on U.S. standard setting and the same organization that accredits programs at several national laboratories.

API standards are developed collaboratively by industry experts, technical experts from government and other interested stakeholders. These experts have created some 240 exploration and production standards, many of which address offshore operations and 80 of which are referenced in the Bureau of Ocean

Energy Management Regulation and Enforcement Regulations.

Offshore standards cover everything from blowout preventers to comprehensive guidelines for offshore safety programs. In 2001 API published Recommended Practice T-2, qualification programs for offshore personnel who work with safety devices. This provides guidelines for the qualification of personnel engaging in installation, inspection, testing and maintenance of surface and sub-service devices that are used to ensure safety and prevent pollution on offshore platforms. API also has the Training Provider Certification Program in which we certify schools that deliver training to individuals in accordance with our standards, including the Recommended Practice T-2.

All API standards are reviewed and approved periodically or in light of circumstances calling for immediate action, such as the incident in the Gulf. In

addition, API's Monogram Program provides for the consistent and reliable manufacture of equipment and materials used in the offshore across the industry. We will conduct nearly 2,500 audits this year to verify that manufacturers are complying with API quality and manufacturing standards.

Since the accident the industry has looked at every aspect of safety and taken significant steps to improve operations. Industry task forces staffed by the world's leading experts have conducted a top-to-bottom review of offshore drilling procedures, from operations to emergency response to oil spill containment and blowout response capabilities. The task forces provided their recommendations to the government which has used them to help produce new safety regulations.

One of the primary recommendations of the task forces is the development and integration of safety systems and critical documents for the lease operator and the

drilling contractor. Operators now use API guidance, Recommended Practice 75 to prepare safety and environmental management programs. The task forces also recommended the adoption of a safety case which is a comprehensive and structured set of safety documents to ensure the safety of a specific vessel or piece of equipment. And the safety case has already been discussed again and will be discussed further by Dr. Spackman in a bit.

The safety case is recommended to be integrated, a bridge, with the lease operator safety management system through what is being called a well construction interface document. API and the International Association of Drilling Contractors are working jointly to develop guidelines for the interface document and will be providing this document to the Department of the Interior for consideration. We are also looking to further enhance safety through the creation of a new industry Deepwater Safety Oversight Program.

To get to understand what happened in the Gulf accident we're all looking to find and rectify every possible safety shortcoming. This is as it should be, but we must also recognize the strengths of the existing system that has helped prevent incidents for over 60 years in the Gulf. This system, expanded and improved over the years, provides a solid foundation to further enhance safety.

This concludes my statement. Thank you.

MR. MOURE-ERASO: Thank you, Mr. Milito.

The next person is Mr. Leimkuhler from the Shell Oil Company.

MR. LEIMKUHLER: Good afternoon. Thank you, Mr. Chairman. And it's -- it is indeed a pleasure to be here today and discuss with you how Shell utilizes a safety case in the offshore Gulf of Mexico in our well operations. So I have a presentation. I don't know if it's going to be displayed.

MR. MOURE-ERASO: Sure. There you go.

MR. LEIMKUHLER: So Shell has been -- thank you.

Shell has been using an HSE case since 2002 for our operations globally, including in the Gulf of Mexico and the U.S. A precautionary statement from our legal team, basically: Do not buy Shell stock based upon what I tell you today.

(General laughter.)

MR. LEIMKUHLER: Okay. So what's the objective of a safety case? The four objectives of a safety case that Shell requires our drilling contractors to have -- and the first one is to demonstrate that the HSC management arrangements, the programs are there in place to ensure what -- the specification and conduct of the well drilling operations are fit for purpose and safe.

The second one is to demonstrate that you've foreseen all the major -- what we

call top hazards -- they've been identified and you have in place suitable, viable barriers and controls so that the risk to people, the asset environment and even the company reputation is minimized. Demonstrate that we've got good evacuation protocol for these offshore structures so that in the event of an incident we can get everyone off safely. And then demonstrate a method of continuous improvement for the management of those hazards in the workplace.

In Shell there's -- we require this for our drilling contractors to hold it. There are seven parts to a Shell safety case. There's the introduction, the overview, the structure, the case, an overview of the drilling contractor's safety management system, the critical activities that need to be in place to ensure the barriers and controls are viable and who's responsible for them, the description of the rig itself, it's capability overview and its HSE critical

systems.

The part that I find the most valuable is truly Part 5. It's the assessment of major hazards that we do in what's called the Bowties. We demonstrate clearly that the major hazards are managed using effective barriers and controls so that we contain and manage our hazards. And then the remedial action tracking. If the case has any gaps or low-rated barriers do you have a plan to address those? And then an overall statement of fitness, where management actually signs off on the case and accepts it.

To me the most valuable portion is really the critical activities, Parts 3 and 5. Do you have the right controls and barriers in place as you drill your wells, as you construct them in your operations? And do people know their role in maintaining those barriers? That, in my mind, is operationally the key to risk reduction.

So taking a little bit further what

Eric had described, regardless of where you operate, you need certain components to put it all together. I already mentioned the drilling contractor safety management system and the safety case.

At Shell we have our own management system; we have our own design standards. We have an operational plan that we use to execute the well. And then for each well we have a specific risk register saying, What's unique about this well that we need to be concerned with.

We have what's called a bridging document that makes sure everything comes together. So you can synchronize the management systems of the two companies. The HSE critical activities are clearly identified. And you even address the interface hazards of the two companies working together.

Eric discussed one of the things that API's working on. So the Joint Industry

Task Force On Operating Procedures has recommended a well construction interface document. It is a bridging document that brings all those same components but it's actually specific to each well. So I encourage you to take a good look at that. It's a very good piece of work.

In my view the HSE case "Bowties" is the heart of hazard assessment. So a Bowtie is a way of looking at risk. So if you take a look at a top event and you map out all the pathways that that hazard could be released and a top event occurs do you have good viable barriers? Shell requires at least two rated, verified barriers in place to address the pathways that hazard could turn into an event.

And then should the event occur what controls do you have in place to make sure the consequences are not realized, so that they're mitigated? So the barrier is designed to stop the top event from happening. For well control they're designed to keep the fluids in

place until you want to produce the oil and gas. If the event were to occur the controls are used to mitigate that top event so that we may keep the consequences to the absolute minimum.

The best practice is to design your well and conduct your operations so that sufficient barriers are in place to reduce even the use of controls. For each barrier and control to be valid an effectiveness assessment has to be conducted. The assessment results in identified critical activities and tasks that the staff have to carry out to maintain the effectiveness of that barrier and control.

The key is that each position has got critical tasks mapped to it in the case and folks understand what their role is. All the way down to the roustabout measuring mud weight to the crane operator running the crane, they understand what their role is and what the key tasks are to make sure that top

hazard associated with their job doesn't occur.

The goal is for each individual, Can I link the case concepts to what I do? I call that operationalizing the safety case. It's what you do to ensure the HSE case is not in binders gathering dust on the shelf.

And for that to happen what we've learned over the years is two things have to happen. The rig crews have to be involved in drafting a VHSE case where they know, understand, and agree that major hazards are addressed and actually participate in the developing of the barriers and controls, identification and even the evaluation whether that's a viable barrier.

Do they fully realize that everyone has a role to maintain the barriers and controls at their job? What they do actually ties into major events that could impact the operation. You need to keep the case evergreen, ensure that the materials are

available to the crews at a level they can use and understand. Can you personalize the Bowtie?

So one of the things we learned after Macondo was our crews were struggling relating to the Bowtie. So we developed some materials that they can relate a Bowtie-type hazard analysis to things they do in their lives. So have -- they have developed Bowties for taking the family to Disney, they've built Bowties for going hunting. So we -- they relate that whole entire concept of barriers and controls in making sure they are safe.

Another thing you need to is ensure audits are effective to ensure that you've got a proper utilization of the case and it's effective to the people doing the actual work -- it's relevant -- excuse me -- to the people doing the actual work on an offshore. And then also, use the case as a reminder that safety is paramount and you can't balance HSE and cost performance.

There's been a lot of talk and discussion about the role and the need to perform well but also perform safely. And I've heard a lot of dialogue that there's -- it's presented as a balance. And if you look at cost and safety or performance as a balancing act I feel that's the wrong way to look at it. Because it implies that we can only optimize one at the expense of the other. In our opinion that's not the way to look at it.

HSE is a core value for us. As a business, unlike some organizations, our priorities change over time. Business conditions change, priorities change. So therefore, we don't identify HSE as a core -- as a priority. Rather, it's a core value. It's something that doesn't change. And the right way to look at it between safety and performance is overall culture within which you operate there is a frame. And that frame is defined by your systems, your standards and

the overall culture that you and that drilling contractor have developed. That's your working environment. And it's defined by all the standards that you agree upon through the safety case that you're going to deploy to manage those hazards.

It could be the pressure control manual of your well design. Are the folks competent? Do you have a way to measure that and assess it? Are they fit for duty? Do you have listing and hoisting standards. There's a tremendous amount that make up a good, competent program. But all of them define an operating environment within which it's safe to perform your operations. And you use all those pieces of the puzzle to make sure you define the frame so that your folks have got a safe arena within which to operate and perform their business to the expectations that you have.

So in summary, the HSE case, it really strengthens the barriers within your

HSE systems. On the well design standpoint you really want to focus on working on what we call the prevention side of the Bowtie. Does your well design and procedures have the right barriers in place to make sure your top events are never released. And in the event that they are, are you -- have emergency response plans on the recovery side of the Bowtie, have you got things in place to ensure you never have to experience the maximum consequences?

At the end of the day the HSE case in my mind helps strengthen the aspects of your safety management system, whether they are barriers and controls to make sure that top event doesn't pass through all those elements and actually occur. So an HSE case -- it doesn't eliminate all of them. But it strengthens each of those so that the holes are just a little bit smaller and therefore, the likelihood of an event passing through each of those barriers successfully to the point where the event occurs is lessened.

The HSE case is a great tool but it's not the only tool to ensure proper management of major hazards. Thank you.

MR. MOURE-ERASO: Thank you very much, Mr. Leimkuhler.

The next person is Mr. Burget.

MR. PREBEN BERGET: Okay. Thank you, Mr. Chairman, Board members and staff.

Thank you for the invitation to this important public hearing on behalf of Statoil. Safety is an important subject. It is in all of our interest to learn from the Macondo incident and other incidents to build a safer and stronger operating environment.

In my introduction I will cover three main topics, give a short overview of Statoil and describe our efforts to ensure a safe and reliable operations and finally, highlight the few differences between U.S. and Norwegian regulatory environment, which is where we are coming form.

Statoil is not a household name in

the U.S. And let me start by saying a few words about my company. We have 20,000 employees in 34 countries. Our U.S. subsidiaries represent a significant and growing presence. Going forward, we have produced close to two million barrel oil equivalents per day and around three-quarters of that is coming from the Norwegian Continental Shelf. We are among the world's largest offshore operators and drill around 100 offshore wells a year, mainly in Norway on the Norwegian continental shelf.

We are the second largest exporter of natural gas to Europe. We also take part in three of the world's large-scale carbon capture and storage projects. We also like to claim that we are one of Norway's biggest hotel chains. In Norway we have about 5,000 beds on our offshore platforms, all with a sea view.

Statoil started in 1972 with operations exclusively in Norway. Since then

the company has been listed on the New York Stock Exchange and in Oslo. And today we operate worldwide. We currently produce around 500,000 barrels outside of Norway and our international production is ramping up from fields in Brazil, the Caspian, North and West Africa, North America. In Canada we are set to start up production from our SAGD oil sands project. We operate exploration wells offshore the East Coast of Canada, and in deepwater Egypt, Indonesia and East Africa. Our ambition is to build a high-quality portfolio of operated and non-operated projects outside Norway.

North America is Statoil's most important international growth area. And in the U.S. upstream alone, through our US companies, we have invested around 14 billion U.S. dollars since 2001. The investments are split between offshore and onshore assets. Onshore we've made significant entries both into the Marcellus and Eagle Ford shales,

teaming up with Chesapeake and Talisman, respectively. We are also set to operate in the Eagle Ford within two to three years.

Statoil USA has built up a material position of leases, discoveries and producing fields. We are currently one of the biggest leaseholders in deepwater in the Gulf of Mexico. And we have two new-build deepwater rigs under contract for a Statoil to start drilling. The main contributors to our current production of around $60,000 a day are Tahiti Thunder Rock and the Independence Hub, which are all partner-operated by others. We also have Strong Partner operated product portfolio under development, brought in Jack St. Malo, Big Foot and Caesar Tonga. And finally, we also partner in

in several prominent discoveries like Julia, Knotty Head, Vito and Heidelberg.

Statoil is eager to get back to safe and compliant drilling in the Gulf and we currently have three drilling permit

applications awaiting BOEMRE approval. And we believe it is important that the regulators are given the funds and resources necessary to perform their duties in a new environment.

Now a little bit about our efforts to secure safe and efficient operations. In recent years Statoil has spent significant resources to improve our safety and environmental performance. We have a systematic approach to dealing with risk and incidents. We split the focus based on the incident potential. And examples of causes for high potential incidents are loss of well control, barriers against the reservoir. oil and gas leakages from production plants or pipelines and logistics incidents related to transport of personnel, equipment or hydrocarbons. In the U.S. you would probably call a lot of these supposed safety cases or operational safety.

All incidents are recorded and followed up and the actual severity evaluated.

As is the case in the U.S., Norwegian regulations, rules and management systems are shaped by culture, incident circumstances and experiences. North Sea incidents have been a major factor in the development of our offshore safety regimes. It is mentioned that a helicopter accident in 1973 was part of the reason why we gave put in a requirement for survival suits. We had a blowout in 1977 on the Ekofisk that led authorities to increase a requirement to well barriers towards the reservoir.

And it's already been mentioned, that tragic accident in 1980 where 123 people lost their lives on the Alexander Kielland rig. And this was -- resulting in additional structural strength requirements. We also had a blowout of an uncontrolled well situation on -- in 2004 on The Snorre A platform, which led to our focus on compliance and leadership, which I will return to shortly.

There are also more recent incidents

and near-misses that demonstrate that despite a positive trend on HSE challenges remain and need to be addressed. A key area identified for improvement is assessment and understanding of risk. Based on these experiences and learnings from past incidents, we have identified four areas for articular attention to improve our HSE performance.

And leadership and compliance is the first one. The second is improved understanding and management of risk. Third one, technical integrity -- or process safety in U.S. terms -- and understanding of the technical barriers. And the fourth one, more effective work processes. On the leadership and compliance side our thought is that normalization of deviation is often identified as an important underlying cause of incidents.

What this means is that with time compliance with requirements have been changed based on employee perception. For example, activities are carried out in accordance with

the believed compliance requirements versus all the details outlined in a procedure or requirement. To improve Statoil has increased the emphasis on leadership and how leaders can enable their teams to do the right things. We have an extensive leadership and compliance training program associated with our work processes. So far we have trained 1,500 leaders to find a practical approach to the leadership role, being a communicator, role model and coach for their team. The training started with the executive management and has cascaded to the whole organization.

Then understanding of risk. We are now using serious incidents frequency, including both accidents with serious damage/loss and incidents with serious potential as metrics to monitor our safety performance. In addition, actual gas leaks are a prime indicator of how we are doing with respect to potential major incidents.

Over the last ten years we have

increased the focus on understanding the risk through job safety analysis and our understanding of the risk potential. We have trained all our personnel in safe behavior using case studies and real incidents to ensure the right learning environment.

Then there is technical integrity. We regularly conduct analysis of the state of our onshore and offshore facilities. The status of the plants is compared with design criteria, barriers, revised regulatory requirements and internal requirements. The gaps are recorded as findings and are sorted and followed up by each unit. The critical findings are given priority and corrected immediately, while the rest of the findings are corrected according to their importance.

The progress of closing the findings are closely monitored by means of dashboards for each system or installation's key performance indicators. This is repeated at all levels of the organization, all the way to

the CEO.

And finally, effective work processes. We have found that our procedures and requirements often are complex and could be improved for the personnel out in the field. Therefore, we have launched several initiatives to harmonize and simplify our work processes.

Statoil currently has an ongoing effort to review what we can learn from Macondo. We must use such a tragic incident -- accident as a source of learning and improvement. We are carefully monitoring developments based on publicly available information.

Following conclusions and recommendations from the ongoing investigation, government and industry will be better equipped to make any additional improvements in offshore safety. The aim must be to identify improvements within drilling, containment, emergency response, and

environmental recovery.

There are no quick fixes to improving safety and we must be open to learn from other companies, other industries and from Academia. We have taken an active part in the joint industry task forces established in May. Last year we organized a workshop on High Reliability Operations with the Center for Catastrophic Risk Management at the Haas School of Business, Berkeley. We have also reached out to companies and regulators in the nuclear industry to discuss the potential of HRO to take our HSE performance to the next level. Additional joint workshops are planned in the U.S. and in Norway.

Then finally, over to the comments on the regulations in the U.S. and Norway. Over the last few months, Norwegian regulations have been frequently referred to in the debate following the Gulf incident. There is, of course, no one-size-fits-all when it comes to offshore regimes and regulations.

Norwegian regulations are born and have grown from a set of specific circumstances and experiences.

Norway and the U.S. have their unique social, cultural and political features that have worked to shape national regulations into what they are today. Differences between regimes are sources of learning and improvement across geographies, not of normative debates about better or worse. We leave it to the Norwegian Petroleum Safety Authority to address and elaborate on the regulations as such.

Let me share with you three reflections from an operator's perspective that perhaps can serve to highlight some of the key features on the Norwegian Continental Shelf. First, the extensive appropriate cooperation between companies, regulators, and employees. This is a fundamental building block in the HSE work. There are rights and obligations on the company, regulator and

employee side of this cooperation. The relation between the three parties has been developed over many years throughout the Norwegian industry. A high level of trust and good communication are keys to maximizing the benefits from it.

Second, the so-called see to requirement. The party responsible shall ensure that HSE requirements are complied with. The responsible party has to verify that the contractors also comply with the authority guidelines. This has led us to follow some of our vendors very closely if there are limitations in their internal management system. This requirement also reduces the staffing needs on the regulator side.

Finally, there is considerable focus on sound HSE culture. This sounds obvious and common sense but it is very demanding to implement on a daily basis. The best way to build a strong HSE culture is through

application of high standards and the best industry practices. So we are also very much for that.

We are humble to the fact that Norwegian solutions do not necessarily work everywhere. Each petroleum province has its unique features that must be catered for in the way offshore activities are regulated. Statoil has learned from its U.S. peers and the U.S. safety regulators and looks forward to continue doing so.

Each company and industry brings their own set of experiences and practices to the table. My hope for today is that the exchange of knowledge, information and experiences will produce mutual learning and improvement. That will help in meeting the ultimate objective we all share, safe, reliable and compliant operations.

Thank you.

MR. MOURE-ERASO: Thank you, Mr. Berget.

The next person is Mr. Spackman for IADC.

MR. SPACKMAN: Thank you, Mr. Chairman, members of the Board. May I have the slides, please?

MR. MOURE-ERASO: Slides?

MR. SPACKMAN: Yes. Thank you.

MR. MOURE-ERASO: There you are.

MR. SPACKMAN: What I'm going to primarily address today is the IADC UKHSE case guidelines. The IADC UKHSE case guidelines have been developed over a period of almost 20 years. When I first joined IADC almost 20 years ago my first assignment was to go to Aberdeen to assist our members in working in the North Sea to implement safety case requirements within the North Sea region, specifically with the UKHSE. A result of these 20 years of work as a best practice guidance on HSE case development aimed specifically at mobile offshore drilling units.

Contrary to what Dr. Hopkins indicated this morning, IADC's view is that the HSE case for a unit exists primarily for that unit and the safety of its workforce. It is not -- while it may serve to satisfy a regulator or a client it exists for the unit and its workforce.

Secondly, our guidance -- guidelines were developed to assist the acceptance of safety cases where they are required in various jurisdictions. And there's significant differences in jurisdictions as to what they require. Some require safety only to be addressed. Some require only major hazards to be addressed. Some look at environment. Some place regulatory responsibility with different individuals, employers, leaseholders, et cetera. So there is a difference.

And finally, we're -- we aim to reduce proliferation of differing requirements by offering a guideline that can be picked up

by a regulator such as the one in Cuba to apply a safety case should they decide to use that regime.

In developing our HSE case, we were looking firstly to a robust management system, understanding that a robust management system must underlie the safety case.

We looked around and what we chose was the International Safety Management Code that had been developed by the International Maritime Organization and would be mandatory for many of our members operated drill ships.

And for the rest of our safety case we have used amalgamation of requirements from national regulation and oil company best practices for hazard identification and control.

Joe had gone over the Shell requirements. They are reflected entirely within the IADC HSE case guidelines, because Shell was one of the major companies requiring an HSE case that we looked to to assure that

our document would be robust.

Why do we see that HSE case ought to be used in the U.S.? Well, firstly, after the Macondo incident a joint industry task force came together and, both from the equipment side and from the procedure side, made the recommendation that the HSE case ought to be adopted.

Secondly, that adoption was mirrored by the Secretary of Interior's report to the President in May. And finally, it's IADC's view that the SEMS rule put out by BOEMRE in October actually requires a safety case. It requires a hazard analysis. It requires a job safety analysis that's both the major hazards and the workplace hazards. It applies to mobile offshore drilling units and it adopts a complete safety management system in the terms of RP 75.

To enhance the HSE case guidelines as developed by IADC, API and IADC are developing a well construction interface

document guidance which should be out shortly.

It takes the traditional bridging arrangement between the safety management systems of the contractor and the oil company operator and adds to them an agreement that would be covered on the well basis of design, the well execution plan and critical risk assessments.

This type of approach is also being suggested by IADC -- as the regulations are changing in Australia -- to be adopted there, as well.

IADC has completed a gap analysis of API RP 75, as well as the BOEMRE's safety case or SEMS final rule. And those results are available on IADC's web site.

We found only minor gaps, particularly with pre-startup review, which is a special case of verification of critical elements. Those recommendations for changes to the IADC safety case guidelines based on that gap analysis are being developed and will

be put forward for acceptance by our HSE case users group in this fall at -- when it meets in Aberdeen -- or in Amsterdam.

Looking at major hazards. We have a mined map here for you. One of the challenges for a MODU is that many of these major hazards are not under the exclusive regulatory jurisdiction of the coastal state oil regulator in many jurisdictions.

And in the U.S., indeed many of these are prescriptively covered by regulations of the U.S. Coast Guard. So we see a strong need for either Coast Guard and MMS or BOEMRE cooperation or a significant duplicative strengthening of BOEMRE's capacity to work on risk analysis and mitigation.

On the low end, on the workplace hazards largely without any regulatory intervention, IADC's members working in the Gulf of Mexico have had significant improvement over the years, and we don't see, except in the area of lifting and hoisting, a

major need for improvement.

I would like to address the issue of deconfliction of jurisdiction. I have mentioned the Coast Guard and MMS. This is a picture of a North Sea installation at night from a the view of a helicopter.

One of the major hazards is a helicopter incident. And one of those incidents has been demonstrated in the North Sea not that long ago was the problem of visual identification of the helo deck by the helicopter pilot.

In this picture you'll see the helo deck looks -- is quite identifiable by the green lights. The standard, however, until recently -- the green lighting became a standard from the International Civil Aviation Organization in 2009 based on research done by the -- in the UK by the Civil Aviation Authority there. The green lighting standard for helo decks was adopted by the IMO for the MODU code last year. And it's now a flag

statement requirement.

However, many coastal states, including the U.S. have differing standards and require prescriptively lights that still alternate yellow, which is very difficult to see in that type of environment and blue, which attenuates in fog.

Workplace safety on the OCS is a joint regulatory requirement or obligation for both the bureau and the Coast Guard. And we would like to emphasize that. The Coast Guard needs to be involved. We have made the following recommendations to BOEMRE, that the agency needs to assess its resource limitations in developing its approach to implementation of HSE case, that it needs to establish a means for an ongoing dialogue with industry for it SEMS implementation and to establish a multi-year implementation road map that recognizes the complexity of the task of safety case implementation.

Similarly, we've made

recommendations to U.S. Coast Guard. We've asked them to assess their agency commitment to their operations under the authority of the Outer Continental Shelf Lands Act, to establish a dialogue with BOEMRE on hazards analysis with particular reference to those matters that are traditionally under U.S. Coast Guard jurisdiction and to update the internet agency Memorandum of Understanding to reflect any revised jurisdictional boundaries.

Finally, IADC remains committed to working with industry stakeholders to facilitate the well control interface document and HSE case understanding and implementation and to engaging with BOEMRE and the Coast Guard to facilitate mutual understanding of SEMS and HSE case expectations. Thank you.

MR. MOURE-ERASO: Thank you very much, Professor Spackman.

The next person is Mr. Pitblado from DNV.

DR. PITBLADO: Thank you very much,

Mr. Chairman. I also have some slides. Thank you.

What I will be presenting this afternoon is our view that it's possible to achieve a step change improvement in major accident performance. And by that I mean a factor of ten improvement over what we're doing today globally. The key points here is we have this vision that a step change can be attained. The regulations -- and we've heard this before -- should be a mixture or a blend or prescription and performance. The decision making should be risk based. And there need to be clear roles for regulator and industry. So those are the key points of what I'll present.

It's a little bit busy slide. But what it shows is that -- and we've heard this several times before -- that occupational safety has improved by a factor of ten over the last 20 years. Although you will see very big differences between the best performers

and poorer performers. But everyone is improving. But the overall is a factor of ten improvement. I would say that my first job, which was with Shell 30, 40 years ago, I was told from my first day that safety was the most important thing. And we all thought we were doing a terrific job. And we heard from Joe and the whole industry performance is we have gotten ten times better than when I joined, even though we thought we were doing a terrific job. And I think we can also do ten times better on major accidents.

I'll give you -- the bottom slide shows major leaks as reported by the HSE in their hydrocarbon leak database. And you see those are down by a factor of ten on the biggest leaks. Some of the smaller leak categories don't do as well. And also, there's been some tick upwards in the last year or so. And maybe that's indicating a floor has been reached.

But I would say if you look at the

middle one there are safety case regulations in the EU for onshore plants. And when you look at the MARS database major accident reporting system there's been on improvement at all in major accidents. We have a similar result here in the USA with the RMP-Star database maintained by EPA. No major improvement on onshore major accidents.

Now, this is not something cast in stone. The aviation industry has achieved major improvements on airplane crashes. But they still actually have a fairly poor occupational safety record around airports, apron accidents with vehicles crashing into planes, occupational accidents in baggage handling. So it's not inherent that occupational safety is easy to work on and major accidents are difficult. It depends where you put the effort and how much effort you put in.

Okay. This spells out some of the approaches that we think are necessary. I

mentioned this blend of prescription and performance. And we've heard that from the regulators. There is no pure performance-based regulation. It does need to be a blend. All the main major accidents in the last few years have highlighted technical, human and organizational factors. And most of the responses tend to be technical. I do include in our proposal here addressing the human and organizational piece, as well, to act on those lessons we've learned.

You'll see that I've got a slide highlighting that -- we show a holistic model which is risks, controls and conditions. There's the conditions of the controls. And I'll show how they link together. Roles and responsibilities again, defined and clear to all.

And then something that we haven't heard too much about which is shared performance monitoring, which is the collection of near real time barrier status,

making that available to offshore staff, onshore staff, regulators, others through modern ICT systems. And you may have heard of this in Norway called integrated operations. But it's quite an interesting idea.

A busy slide. And I won't say all these words. But we also agree that the regulators need to build adequate specialist manpower. And we've heard several opinions of how much effort that might take and how long. But we do think that you can overgrow the regulator, that the industry does actually have a lot of talent and by having a safety case style of approach you don't need as large a regulator because you aren't going to be doing as many inspections. And again, we heard that from Magne a few hours ago where they only do yearly inspections, in-depth but yearly. And OSHA also, with its NEP program also only did a few inspections, but in-depth.

All right. I think one of the lessons from the North Sea is that both the

North Sea in the UK and onshore run a safety case regime. But I showed you in the North Sea they haven't had major accidents. They've had challenges but they haven't had major disasters since Piper Alpha and Alexander Kielland. Whereas, onshore there continue to be serious accidents. And so they both have a safety case regime but there's a difference.

And I think the difference is in the North Sea much stronger focus on safety barriers than you see in the onshore regime. Onshore regime is more around safety management systems which mimics OSHA 1910 and RMP. So I think there's a lesson there that this extra attention to barriers with -- they call them safety critical elements, performance standards and written schemes to keep all those functional -- that's not part of the onshore regime. And yet -- so we see big improvements offshore, we don't see big improvements onshore although they both run a safety case regime. So it's not safety case

per se, it's how you implement it.

I do want to say something about the safety case regulatory regime. And I think it's already been said to some degree. A piece of paper doesn't make you safer. Okay? And it's not that people have a piece of paper with lies in it. But when we write a safety case it's often years before the activity occurs. So it's often the way we want our safety regime to be and in practice it doesn't happen that way. So we need to convert it into a more barrier-based model which defines those barriers and makes sure those are operated.

And we think there's a difference between design stage and operations stage. Design time -- there's a lot of quantitative things you have to decided. Separation, firewalls, blast walls, firewater requirements, drainage requirements, ventilation rates. Those are quantitative things. You need a quantitative study to do

that. and we think QRA is best practice. We like the NORSOK standards at 13. We think it's probably the best standard out there for that.

During operations that quantitative study is not useful. All right. It's got numbers like 5.2 times 10 to the minus six. That does not help people operate more safely. They need a completely different risk model. And that's the model I think we heard from Shell. The Bowtie model we think is an excellent model. Good basis for improving safety, highlights the barriers, clearly indicates responsibility. You can link it to performance standards and you can also link it to accident investigation.

Okay. How do you address technical, human and organizational factors? As I said, we've heard that in all the main recent accidents. Purely technical assessments do not address all the important failure modes. And we heard from Texas City that occupational

safety culture is not the same as process safety culture. I spoke to an oil major and they described -- they have much greater concern about whether an operator strains his back opening a big valve than whatever happens from the fluid that flows through that valve. And that's a difference, you might say, between a occupational culture and a process safety culture.

And on the organizational side we've got this issue around mindfulness of risk, how you escalate decisions on difficult problems before a decision has happened. Those are our key issues that need to be addressed. And we think they need to be.

A lot has been said around SEMS. We think SEMS is very similar to OSHA 1910 and also very similar to the onshore safety case regime, the Seveso. They have not improved safety. I don't think SEMS is enough. I think you need to go the extra step. We heard from Shell. You need this barrier model with

performance standards and clear responsibilities. And that's not guaranteed from SEMS. This is the model we suggest, risk controls and condition with performance monitoring, of course, and all that. All those pieces are important. And we think that a safety case can communicate that in a transparent way.

This is just to highlight some of the risk models. And I won't go through this in too much detail. But the figure on the left shows an oil spill covering basically all the coast of Norway after three months. There are risk models out there that can do these difficult tasks. And there's no amount of judgment that can deal with this. No one has the experience of a huge oil spill lasting for months. You need a model to do that and to take the decisions as the amount of mitigation systems you're going to put in place.

On the right-hand side there that's a design decision. On the right-hand side it

shows the Bowtie model we heard from Shell. We think it's a good model. And it's much more clear to communicate. IADC uses this model, too. And we think it's an excellent way to go forward. The roles and responsibilities. I think that's -- there appear to be some issues here. And I think the IADC work on the interface document is going to make that a lot clearer. And I think I'll just leave it at that.

What I wanted to say a bit more about just before I finish is this idea of the shared performance monitoring and decision making. As it says there, the best risk model is only a theory if it isn't implemented. The Bowtie model does set out the objective but you need to monitor that in some way. And we think there are some ICT tools. We call it People Process Plant Performance Perspective, five Ps. But the idea would be to know that the status of your barriers in near real time, share that possibly with tools like

Sharepoint, include shore-based people, as well as offshore people. And when you have a difficult decision, just as we've discovered in aviation and other industries, team work leads to a better solution than a small number of people who have a financial incentive on one decision compared to another.

And we think there are tools like -- you may have heard -- OLF gave some presentations here in the U.S. on what they call integrated operations, which is decision-room approach where you use IT tools to share the information on the status of the barriers, what the decision needs to be taken and then several different people at different geographic locations can all contribute to an enhanced decision. So that's what we think would be helpful.

And so I'll just conclude here then that the role of the regulator -- it would be to develop suitable regulations which allow a fully risk-based approach, again, a blend a

prescription performance. We think a safety case approach is correct but it will be different at design and operations. And it's asking too much of a single-risk model to do both. Because it can't do both successfully. So we think it will be quantitative at design stage and qualitative in operations. And we think the regulator should set a target of a factor of ten improvement. It can be done. And the regulator should make a clear statement that's what it expects.

That then is a key role for the regulator. We haven't heard too much about that but it is setting the high standard which the industry can then have something to work towards. And then the industry, of course, has to do its piece to try and achieve that. But it's already done it for occupational safety. The aviation industry has done it for major accidents. We think it can be done and we think it's economically possible. Because very tool I've presented here is done by

somebody somewhere today. So it's not theoretical. So that -- those were the key points. And I think I've finished. Thank you.

MR. MOURE-ERASO: Thank you very much, Dr. Pitblado.

We have -- our next speaker is Mr. Sember from ABS.

MR. SEMBER: Thank you, Chairman, members of the Board, Investigative Panel.

I think much has been covered today already. This has been very informative. What I'm going to cover is just what we look at, some of the approaches to safety. And what I was going to start with was just ABS, who are we and why are we even here. We're a classification society headquartered in Houston, Texas. And we've got 4,000 employees worldwide, 300 engineers and surveyors here in the Gulf of Mexico.

And we've been involved in the offshore oil industry since 1947. That was

the year the first well was drilled offshore on a floating facility. It was very basic, taking a barge, mounting some onshore drilling equipment and drilling the first well. But even then that was a barrier and a challenge at that time.

I can remember a few years ago -- what seems like a few years ago -- that 500 feet of water was deepwater. And we've certainly gone way past that. And with that, developing our rules and standards and capabilities of being able to work in those areas.

Another interesting thing is we do have delegated authority as class societies do from maritime administrations around the world to do certain activities on their behalf, along with that, involved with safety regulations worldwide. Classing a drilling unit that's going to operate in the North Sea, either in a Norwegian sector and the UK sector or in various other countries around the world

requires certain additional requirements above class on the statutory side that might have to be taken care of. So understanding and knowing all of the different safety regimes is a requirement that class societies have to keep up with. Looking and saying which is better or worse, I think what we've heard today is certainly a valid approach in moving offshore.

Now, we have been a market leader. And I only say this because the majority of the drilling units, certainly jack-ups and floating systems have been classed by ABS. So our experience has been quite versatile over the years with the different facilities.

Now, this I would just say from the -- looking at the chart on the side -- and this is just a simplistic view of what we look at in drilling. And again, you're looking at a drilling unit. You have drilling facilities on it, as well as then what the well program is. And many cases -- and I think we heard

from Shell of how they handle and the management systems -- but in some cases their regulatory scheme doesn't cover all of those or it might be split among different jurisdictions as to who has control or review of it, if there is any at all by a regulatory agency.

I don't need to really go over the different approaches, looking at prescriptive, structured, precise expectations on one hand. And when you talk about may conflict with new technologies, as we move into deeper waters, harsher environments we have new techniques, innovations. If you have prescriptive requirements that don't accept that change very quickly you have to go through the processes of evaluation, risk identification and proving an equivalent level of safety before you can move ahead. So it can be time consuming but it can offer some changes.

On the goal-setting side certainly it can account for new technologies, looking

at the risks and how you would identify the risks and challenges. It can identify and manage those risks and provide a mitigation as you move ahead. It does require an oversight of the verification agents as you would use it. But it also requires, as we've heard, a certain level of expertise in order to be able to identify and actually evaluate what those risks are and how it's being handled in a management system. And again, the approach should be to promote and achieve an improved industry safety performance.

Now, I'm just going to list here some of the things -- and I think they're just a repeat of what's been said already -- but looking at an effective safety regime, certainly starting with a case of a prescriptive requirement. But identifying the party responsible for offshore safety. Which party is in charge? Who has control? Who is the regulatory body? Where is it split? How are they actually interfacing? Specifying

clear goals for all stakeholders. What has to be done? What are the requirements? Is it a complete safety case? And what's the definition of a safety case as far as it goes? Or is it prescriptive with adding additions to it? Requires the evaluation of the risks and identification of the prevention and mitigation measures.

All these are included. And I think they are, as they've been explained today.

But we have to remember -- and I think it was also stated that prescriptive requirements certainly are the foundation of safety. It has much experience, as far as the design and some of the operational techniques of this. So it's something that has to be maintained. It can't just be disregarded in going into a complete risk evaluation. And you have to employee trained and competent resources. And I think we've heard today that certainly having the right number, the right competencies, the right training, the right

experience are all very necessary. And it's not something that can be achieved very quickly.

Talking about budgets or do you have enough of a budget to handle it, can you find them. There's certainly a high priority for everybody to employ these certain people and personnel.

And again, the safety regime. What it should foster is transparency of operations, timely reporting of incidents or indicators and certainly promoting improvement in the safety culture. And I think going from a prescriptive to a safety culture and a safety regime is very important. But it is going to take time.

I want to back up for a second. A few other things that I would say. And I think Robin mentioned this. Certainly provide time to implement any safety regime. Avoid a paper chase. This isn't just done to satisfy a regulator, to show that you have a piece of

paper that can work. It's to change the safety culture so that you have a way of life in operating in a safety regime. And it can't be done by rules. It has to be done by a combination of all of the stakeholders. The regulatory body, the stakeholders, not only the operator, but a number of other stakeholders who sometimes we overlook.

And we have to create a learning and remembering environment. We have to take into account lessons learned. We have to take into account and use the information that we have at hand. It's not good enough to just get it, track it, make a statistic out of it and then not put it to best use in improving the safety culture.

The last thing I would look at -- and just to put this up -- and many times we think about a safety regime where it's the government, the owner, the operator, maybe a class society. But all of these different pieces have a part or an interest in the

safety regime. I think we have to start -- and we talk about technologies and we talk about engineering -- we have to start with the basics, with marine engineers, naval architects being able to design and come up with the analysis that can be accepted for the new innovations, the deepwater applications and drilling concerns.

The shipyards who have a piece of being able to construct a quality product that meets those requirements, as well as all of the analyses that have been done. Taking from there the operators and managers who are going to take and actually operate it. But you also have some industry groups or interest groups, brokers and insurers who are -- have an influence or an interest or an effect on the actual safety regime that's being developed.

And we can't leave out certainly, the governments, as far as what the regulatory scheme is going to be. When you look at one of these drilling units it's usually designed

to operate in certain areas. It will have a certain flag that might be going to the North Sea where you would have to have certain additional requirements that would be taken into account during the design and construction. If it's going to operate in the U.S. or other areas where you have a fairly identified scheme then you'd have additional requirements that you have to go through.

So this is just an idea to keep into account that it's more than just one or two people that are involved. And certainly, the seafarers and offshore workers have a stake in any offshore safety regime. So these are all -- should -- all of these should be taken into account at least by listening or by seeing what the effect is from their point of view. And that's it. Thank you.

MR. MOURE-ERASO: Thank you very much.

I would like to thank Mr. Sember and also, to thank all the members of the panel.

Now, we start our next line of questions. I would like to say that please don't feel compelled to every member of the panel to answer all of the questions. So, you know, if you feel very strongly that you have to refer to one, do. But, you know, it's not a requirement that there will be six answers to every question. So in the interest of time, probably we should do that.

So we are going to start with a round of questions from the Board. And I will ask Mr. Bresland first to start.

MR. BRESLAND: Thank you, Mr. Chairman.

I guess in listening to all of the presentations from the panel, which -- all of which were very interesting, I'm not quite clear if there's a consensus among the panel members as to the use or the value of a safety case. I know there was a lot of discussion this morning from the regulators about safety case. But just, if you could sort of think

about it again and just give your very brief thoughts on the current status of regulations in the offshore in the United States, especially after the new regulations that were proposed by BOEMRE back a few months ago.

MR. MOURE-ERASO: Maybe there are no reasons to answer that question.

MR. MILITO: I think what we're seeing is a continuation of a combination of prescriptive and performance-based requirements. A lot of folks will continue to say that we have very prescriptive requirements here. But I do believe that embedded in the regulations there are a lot of goal-setting type requirements that you'll see. You have to have a log preventer that's capable of sharing the pipe. Without getting into kind of the details to how you do that, you have to have the ability to effectively respond to a spill or to effectively cap and contain a blowout if it occurs. So we see a lot of provisions in there like that that are

moving toward prescriptive but that are not.

And then you have your very prescriptive type elements which, you know, are something like a blowout, a preventer must have four separate rams in it. These are the types of rams you must have. And the new requirements that have come out, you know, we find a rule -- or -- closer to the prescriptive type where you're getting into the type of pressure tests you have to run, the inclusions of two barriers for each flow path for hydrocarbons. So I think -- and ultimately, we're seeing a combination of both.

And another area where you're looking at the performance-based side is the new requirement for a safety environmental management system for an operator, which you have to have the program in place. And we have the API document which provides the guidance how to have that in place. But that -- it's also a performance-based. But

that -- it's also a performance-based metric. So we're seeing a combination of both.

Mr. Spackman and I and Joe, we talked about the joint industry task forces that came together. So shortly after the spill all the industry trades came together and we brought together all the domestic experts. And the industry -- the U.S. domestic industry came forward and said, you know, it's a good idea to adopt the safety case here and to adopt the bridging document in combination with the operator's program.

So I think that you see support, at least domestically, for that. We understand that any type of change like this takes a lot of time. But again, it's more of a hybrid. And there are strengths to that. There are strengths to knowing that you have to have this kind of BOP in place, as well as knowing that you have to have the risk management measures in place to adequately plan for any kind of potential event. So I hope that's not

muddying it more. But once again, I think the U.S. is a hybrid approach and will continue to go down that path.

MR. MOURE-ERASO: Anybody else from the panel?

MR. SPACKMAN: Yes. I think from the perspective of the IADC HSE case and our going forward with the HSE case guidelines in the U.S. we're going on the presumption that a safety case is the -- will be the norm. The question is how is that tool going to be used by the regulator for regulatory intervention. Not whether or not the safety case is going to be there but whether the regulator or regulators are going to influence the outcome of that safety case by setting specific performance measures for hazards analysis.

MR. LEIMKUHLER: Speaking on behalf of myself as a person who manages the operations, as well as Shell, I think we actually support the use of a safety --

MR. MOURE-ERASO: Excuse me. If you

could identify yourself for the tape?

MR. LEIMKUHLER: Oh.

MR. MOURE-ERASO: Before you start. I forget to say that.

MR. LEIMKUHLER: Okay. I'm Joe Leimkuhler, the Offshore Well Delivery Manager for Shell.

MR. MOURE-ERASO: Yes.

MR. LEIMKUHLER: So from that standpoint we really feel a case is a great way to demonstrate you've managed the right risk. And we really support it as long as it's done in a fit-for-purpose appropriate manner and it's not -- it's used in the right way, it actually improves your operations and not just a documentation exercise.

MR. GRIFFON: Yes.

MR. MOURE-ERASO: Mr. Griffon?

Oh, you want to add something. Please.

MR. PREBEN BERGET: My name is Ole Berget from Statoil. We are a bit cautious in

being precise sort of on recommending something. And that's -- we had Humble coming in as a new operator to the Gulf of Mexico. And that's really -- but, of course, all our legacy, all we have learned comes from this kind of perspective and not safety case but goal-setting approach was what our regulator called it back on the Norwegian Continental Shelf. So -- but, of course, we are familiar with that and our internal procedures are a lot based on that. And that's what -- the legacy we are bringing along here.

MR. MOURE-ERASO: Mr. Griffon?

MR. GRIFFON: Thank you, Mr. Chairman. I have a -- in light of what you said about not having six answers, I have a more targeted question possibly to Shell and Statoil.

There's been a discussion about the concerns about -- I think you just said it actually about having a document that sits on the shelf and gathers dust. And you went on

to say that, you know, at Shell you have and evergreen process, where you're constantly modifying and updating the safety case, which I think also is important.

You mentioned another key component was the safety culture. And I'm curious -- because we've heard this term again and again -- at your facilities how does each one of your facilities define safety culture and further than that, how do you measure it on a rig? Do you have metrics that you look at that you can evaluate the safety culture of a certain facility?

MR. LEIMKUHLER: If I had to define one particular way to define a safety culture is if the folks with the boots on the deck managing the operation, if they see something that isn't right do they stop the job and intervene and ensure they don't start work again until it's corrected. So we actually monitor the pauses we take, we monitor and track the stop-the-job interventions that we

occur. We call them heroes. It's when someone stops the job to help every rig operate safely. So we've had a program of reward and recognition to make sure that happens.

And to assess how strong that culture is we've actually hired outside firms to come in and do the culture surveys of our rig crews and our locations and benchmark that, not only against other oil companies they have in their database but also, other industries. We benchmark ourselves against that. So it's internal assessments, internal measurements, as well as outside auditors.

MR. MOURE-ERASO: Thank you.

MR. PREBEN BERGET: That question, it was about safety culture. And I think starting with the first one, capturing dust, so that safety case. That's the clear condition on our side of issue, even my follow-up and my introduction we see as a weakness with ourselves.

We are working to get everyone sort of on top of that and forcing them internally. That's been part of our extensive audit, and so it's something we just continue to have to focus on and keep working on.

On the agency culture side it's really a challenge, and it's sort of moving into the softer parts of our industry. It's hard to regulate what people are thinking about and what they're -- so there's a lot of things sort of written about and wrote about.

But internally, that's what we do. We do the safety and our assessment of the safety culture internally on a regular basis. And then that's been respected and worked on. But it's not -- I don't think we have the necessary solution available as of yet.

MR. MOURE-ERASO: Thank you.

A question that I have is for Dr. Pitblado specifically. I am -- I wonder how DNV determine when a particular practice is as low as reasonable practical. I mean, we hear

the ALARP thing. But I wonder how your company has thought out and specifically that that's the case and that's what you are observing and not something else.

DR. PITBLADO: I wouldn't say that DNV has a unique method for that. But there's fairly clear guidelines that have been issued by both UK HSE and by NOPSA, which use the ALARP approach and we really just follow those guidelines as do the companies. The only issues that are out there that -- ALARP sometimes fails for very rare disaster kind of events like we saw at Macondo. The risk is so low in terms of how people think about those risks that you can often not justify spending very much money to reduce those risks. And so we have some concerns that ALARP tends to be much better for, you might say, routine major risks. But it tends to be less effective for the biggest risks. Because it doesn't -- as I say, when you do the actual calculations for risk reduction you can't spend much money to

reduce a very rare risk.

MR. MOURE-ERASO: I understand.

I would like to ask Mr. Wark.

MR. WARK: Yes. Thank you, Mr. Chairman. We have a number of questions here. One that jumped out at me which I will be addressing to Mr. Spackman is do drilling contractors adopt different standards of safety depending on the regulatory regime that they're operating under.

MR. SPACKMAN: It's a challenging question. Obviously, there are drilling contractors that are going to be influenced by the environment in which they operate to either attain higher or lower standards than they would normally wish to attain. The regulator plays a role in challenging safety to a higher level. And those regulators that traditionally challenge safety at the highest levels -- and I would identify PSA Norway was one -- are going to probably achieve a higher safety standard from the same drilling

contractor operating in that environment than they would where you might have an oil company operator rushing to get things done in a unregulated environment.

MR. MOURE-ERASO: Thank you.

Mr. Wright?

MR. WRIGHT: Thank you, Mr. Chairman.

Based upon the quantitative analysis that is done on the front end do I get a consensus of agreement from you that the Deepwater Horizon incident and the risk of the blowout preventer not failing was assessed as a low risk? That is to say, that they had redundancy built into the blowout preventer, they had multiple systems, multiple checks and balances and therefore, may not have rated that as a very high risk for that particular endeavor, even though they were in deepwater. So in the future if we have a safety case base versus a performance -- or prescriptive base is it going to make any difference if people

don't assign the right quantitative value to those risks; i.e., they may not in fact do the right assessment of that risk? You following me?

DR. PITBLADO: Yes. Can I --

MR. WRIGHT: Please.

DR. PITBLADO: I think we had part of the answer to that from some of the speakers this morning, where, yes, you must make assumptions when you do a quantitative study. But what the regulators we heard from this morning said, they're now requiring a clear link between the design safety case and the operation's case so that those assumptions, in terms of effectiveness of devices, procedures working, that in reality during operations they actually happen that way. And perhaps, Shell might have a view with their safety case, how they make sure that the design assumptions get translated into operational reality.

MR. LEIMKUHLER: I think if you go

back and you take a look at this event here and you relate back to the failure of the BOP stack I just want to offer a note of caution. The BOP stack is constantly being referred to as having failed here. When the bottom line is investigation's not completed. The analysis of the stack is still ongoing.

There's some theories that are out there that speculate the control system was severed in the explosion and the stack worked fine. It was the fact that the control system was severed due to the explosion but hydraulic power still remained. Thus, the auto-disconnect did not work. So it may have been a compromise of control system and not the stack itself. So we -- it's very tempting to form early --

MR. WRIGHT: I'm not jumping to any conclusion. But I'm trying to make an assessment with respect to whether or not when you're doing your front-end analysis you're actually addressing -- and my presumption is

that they --

MR. LEIMKUHLER: Okay.

MR. WRIGHT: -- didn't assign that a very high risk because of all the redundancy that had been built in. Granted, they had umbilical connections as opposed to acoustic signal connections so we'll never know since they didn't have acoustic is my understanding int his particular case. So they couldn't have sent a signal down to slam home one of the guillotines to stop the flow.

MR. LEIMKUHLER: That's correct, as well. So to get back to your first question.

MR. WRIGHT: Yes.

MR. LEIMKUHLER: I think if you take a look at a safety case approach to design and operation and if you have that also, not in the case but also in your operational procedures and also your design so that you always have to have two viable barriers. And if your operational procedure states that if one of those barriers does not fail, does not

test properly you don't proceed until you always have two.

So when you're drilling you're always relying upon two barriers. Number one, the hydrostatic control of the fluid and the BOP stack itself. So is the BOP stack recognized as something that could fail? Absolutely. So therefore, you always have to have at least two viable barriers under a safety case approach. And even -- it isn't really a safety case approach, it's an operational approach. You don't need to have that -- you don't need to have a safety case to always have that operational philosophy. It just reinforces it.

MR. WRIGHT: Thank you.

MR. MOURE-ERASO: Thank you.

So we move to the Investigative Panel for questions.

MR. HOYLE: Well, I want to ask a blended question between the morning panel and our afternoon panel. And to say that safety

case has been talked about but is of somewhat limited value without a competent regulator. This was the message from the morning. But a competent regulator requires highly skilled and experienced staff. That staff is expensive. Is the -- in your view is the oil industry supportive, desirous of a competent regulator and are you willing to help pay for a competent regulator?

MR. MILITO: This question's come up recently and we, along with several other trade associations, sent a letter to Congress requesting full appropriations for the BOEMRE so that they have the inspectors, the permitters, the folks who do the environmental analysis so they have the funding to do all of that work. But we also believe that the industry pays billions of dollars in royalties, rentals and bonus bids. And those monies to cover those expenses should come from those revenues, a float of the government. In 2009 and 2008 the industry

paid over $30 billion to the government in these types of revenues. So there's a sufficient flow coming in to the government to cover those expenses.

MR. HOYLE: Anyone else?

MR. SPACKMAN: Yes. Alan Spackman, International Association of Drilling Contractors. With respect to those portions of what would be a hazards analysis under a safety case that are undertaken by the Coast Guard, we would note that the Coast Guard already has a user-fee system in place that is supposed to recover its costs and that there might need to be an adjustment to that should the Coast Guard actually undertake hazards analysis under a safety case. But the system is already there.

DR. PITBLADO: And one other comment, if I could make it. In the class societies, ABS, ourselves, are delegated regulators on some aspects of offshore safety, particularly for floaters. And we have a

normal commercial relationship with the oil companies. They pay for the services. We have a competence requirement imposed on us. It's -- we don't choose to have a small number of a large number of engineers. We -- in fact, it's specified by EMSA, the European Maritime Safety Authority. And that cascades all around the world, in terms of we have to have a certain number of competent engineers on board depending on the size of the fleet that we look after. And then that's paid for by the industry.

MR. LEIMKUHLER: To answer your question I think not only do we want a competent operator, we have to have a competent operator. It's not a question of the fact that, Oh, we want some operator that we feel is going to be flexible or malleable. We don't want that. We want to have a competent operator. The funding for that needs to come, in our view, from all the revenue sources this industry generates,

through lease bonus payments, taxation and other revenues. The revenues are there. I think it's a question of appropriations.

MR. HOLSTROM: My question is about the barrier analysis that is done in practice by your organizations and how you view that. In our reviewing of various documents related to barrier analysis one question that we have is are you implementing more modern notions of defense and depth, layers of protection or safety instrumented systems that would look at these layers or barriers and analyze how independent they are, how reliable they are, how are they tested and to ensure that when you're testing barriers you're not testing -- while there may be several barriers in place, you're only testing one barrier, we'll say, with a pressure test like a negative or positive pressure test.

Do you implement standards like safety instrument systems, which is both an international standard, as well as a U.S.

standard, ISA 84, which I understand is somewhat different than API 14(c), I believe? And do you implement things like layers of protection and defense in depth where those barriers are actually evaluated, in terms of their reliability, in terms of percentage, even a quantitative analysis?

MR. LEIMKUHLER: When you construct and HSE case and you develop your Bowties to manage the top hazards and you're relying upon defined barriers and controls by definition in the case you have to verify those barriers have integrity and audit process and certification of the barrier means you must describe how you're going to actually verify that. Not only that, they have to be independent. So I can't just put the same barrier in twice and call that two independent barriers. So you need to be distinct, independent in your audit process and also, to build even classified as a barrier you have to have means of verification and they have to be

tested on that actual barrier, not testing a series of barriers and calling them all good.

DR. PITBLADO: I'd just add it is perhaps -- the Bowtie is a petty new technique. It doesn't have the history that some other techniques do. And there isn't an international standard yet for how to do it that address some of the issues you've raised. So I think it's an area where that technique will improve over the next few years. But there are potential weaknesses that you've just raised.

MR. MILITO: And one thing I'd like to add is one of the recommendations that came out of the joint industry task forces is to look at well design. And API is now -- has a committee that's working on a recommended practice for well design. And there's a separate chapter on barriers, barrier philosophy, how you plan for the, how you verify and accept them. So it's being developed and we expect this standard to be

done in the first quarter of 2011. And hopefully, it will something that will be utilized by all of industry.

And it doesn't tell you how to drill a well. I think Joe will let you know that everybody has different ways of drilling wells effectively so that they have strong integrity. But what it does do is provide kind of an outline of things to consider to make sure you're hitting all the points and you do have ultimately strong integrity within the well.

MR. TILLEMA: I have a question similar to Don's, but more looking for some insight in the risk assessments and the risk tolerance being used with these safety cases. For those of you who have done a safety case have you found that by doing a safety case and the risk assessment that a drilling rig needs a safety instrumented system?

MR. LEIMKUHLER: A safety instrumentation?

MR. TILLEMA: Safety instrumented system.

MR. LEIMKUHLER: Can you give me more definition?

MR. TILLEMA: Well, I -- that's probably answered my question.

DR. PITBLADO: Well -- and I don't think that's being too fair. But what -- when we do a risk assessment -- and, for example, let's say you're talking about a typical area where you might have a SIL, which is a gas detection and ESD shutdown system. You would do the risk assessment.

And if you find a release event which is very serious risk and you have to allow for a certain probability your ESD system doesn't work -- and that may be a major part of your risk, that it doesn't work -- and then the SIL system would be part of your response, we can improve the reliability of the ESD system by a factor of five, factor of ten by using the SIL system. And that would

reduce the risk.

So I think proper safety cases with quantitative analysis and certainly, the kind which we do for the Zed 13 standard would often find a need for an instrumented safety system, particularly on ESD systems, gas detection systems, yes.

MR. TILLEMA: And so you have seen safety instrumented systems implemented on drilling rigs?

DR. PITBLADO: I can't answer that for drilling rigs. I know for production facilities, yes.

MR. TILLEMA: All right. Thank you.

MR. LEIMKUHLER: So the instrumentation system that we deploy offshore consists of what's known as a real-time operation center where we monitor all of the key critical parameters of the drilling process itself. But we leave the automation of the shut down and the actually physical control of the process offshore on site. We

don't transfer that authority to the monitoring systems onshore.

I found those systems to be extremely valuable because what they now -- what they enable you to do is in the event you have something you didn't expect in your drilling process you can actually have real-time monitoring of all your key parameters so it enables you to do a very, very real-time analysis. So you get the fastest recovery and you get away from a trouble event so it doesn't escalate.

MR. TILLEMA: Thanks.

DR. MacKENZIE: My question actually stems from the presentation by Mr. Pitblado, but I welcome any of the panelists to answer it.

I was interested in how you mentioned the issues of -- the technical human organizational issues and how human organizational needs to be addressed more often.

And I was just curious. In a comparison between the safety case regime and a more prescriptive regime that we have here in the states, do you feel that the safety case approach deals with the human organizational issues in a manner that's different and/or better than what's happening here?

DR. PITBLADO: I would say that addressing the human and organizational element is not yet a completely solved problem. Okay? And there's some very able people here in the U.S., both on the east and the west coast in academia who have some very useful ideas. We heard from the previous speaker about some ideas from Berkeley which are good. They fit, we think, fairly well into risk assessments. And then the risk assessments flow into the controls. And then after that you monitor the condition.

So it does, we think, fit into the context. I'm not sure if safety case is

inherently better than prescription on that. But it's not obvious to me actually where prescription would incorporate organizational issues the way the prescriptive rules are written currently. And at least you can get it into the risk assessment.

DR. MacKENZIE: Thank you.

MR. MOURE-ERASO: So we move to a second round here of the Board members.

We'll start with Mr. Wright.

MR. WRIGHT: I have no further questions.

MR. MOURE-ERASO: Okay.

MR. WRIGHT: Thank you.

MR. MOURE-ERASO: I don't have questions myself, either.

Does anybody on this side of the table?

MR. BRESLAND: Yes. Yes.

I'm just following up on a comment that Dr. Pitblado made. And I -- it's been kind of gnawing at me ever since you said it.

And I just want to see if I understand what you meant. You said that, you know, in developing the safety strategy for a major accident there are some accidents that are so rare that it's very hard to figure out exactly what you'd do to prevent them. But it would seem to me that the accident that we are investigating in the Gulf is really pretty straightforward in terms of -- you know, that's really what you want to prevent is an explosion and a huge release of oil. Is that what you meant? Or were -- is there something else --

DR. PITBLADO: No.

MR. BRESLAND: -- that I didn't --

DR. PITBLADO: I didn't mean that if that's how I interpreted. What I was saying is that some of these major catastrophic events are predicted to be so rare that although you can envisage a solution you can't justify spending that extra money because you already believe the systems you've got in

place today are ALARP. And that's the problem, that sometimes with the ALARP standard people can't justify spending extra money to put in good solutions which they already know but aren't justified by that particular standard. And that's why some companies use a continuous improvement standard rather than an ALARP standard.

MR. BRESLAND: Would this accident fall into that category of so rare that you couldn't figure out what to do about it?

DR. PITBLADO: Yes. I got to be careful when I talk about this particular accident. But I think the general comment is true. And it's not only blowouts that are rare. There are other major accident events which are very rare. And if you apply a straight ALARP test you'd probably be able to convince yourself, if not the regulator, that what you're doing already is enough when you know there are things you could do which would make that risk lower. But when you do the

calculations it's a cost comparison of risk reduction for the amount of cost, in terms of time, money and trouble, to implement a fix. And at the end of the day that ends up as an equation. And for rare events it's hard to justify spending a lot of money. And so that's what I meant. It's not that the solution is too hard to find.

MR. BRESLAND: I think the Baker Panel, in their discussions of this said you have to balance between ALARP and staying in business, you know, or going out of business. That makes sense.

DR. PITBLADO: That's a good comment.

MR. BRESLAND: Yes.

DR. PITBLADO: I think that's a good comment.

MR. BRESLAND: Thank you.

MR. MOURE-ERASO: Mr. Griffon?

MR. GRIFFON: Yes. Just a -- this is also a -- sort of tie in to the earlier

panel. This morning the regulators talked about the tracking of near misses or performance indicators and the sharing of that information. And I think one of the panelists said something to the effect that industry seemed reluctant to share.

And I guess the question I would have is, number one, do you track near misses and performance indicators. The second part of that would be do you share it within your own company company-wide and then industry-wide and with the public or regulator? I guess that's mainly to the two industry panelists.

MR. LEIMKUHLER: Yes. To answer your question, absolutely. We certainly track every incident that occurs within Shell. We have a risk matrix, so we ram it. We do a risk assessment of not only what happened but what could have happened, and then we evaluate and track those. And we look for trends in that data and adjust our safety programs

accordingly.

So we've recently seen a huge increase in the amount of dropped objects that we had in our business, whether falling out of the derrick or from lifting and hoisting in crane operations, so we instituted a dropped object prevention standard, which we found very useful.

We also conduct a monthly meeting with all of our contractors. We invite other operators to also attend our meetings, and it tends to be the ones who operate locally where you're located. And we share incidents.

If we know of a major industry that occurred in the industry we don't hesitate to ask that company to come in once you've completed your investigation and please share with us what you find. And we're willing to do the same for our major incidents.

Is there a formal industry-wide program or protocol that enables that ensures it happens? Not that I'm aware of. But that

doesn't mean it doesn't happen. I know on the industry panels I work -- I'm the Deepwater Technology Symposium Chairman -- we have a separate section devoted solely for HSEs with an emphasis on case studies and sharing learnings from incidents.

So there's plenty of vehicles and ways that industry enables that to happen. And it does happen. I just don't know if it's aware of -- that knowledge and awareness is at a public level to where they have an appreciation for all the efforts we do put in to learn from incidents and share.

MR. GRIFFON: And is -- just to follow up, how about with the regulator or with the public? Is it -- information shared at any level of that information shared?

MR. LEIMKUHLER: There's reporting standards and requirements. Any time we have an offshore incident that involves a crane, whether a high potential near-miss or actual incident with a crane, we're required to

report that. And then certainly, any injuries to personnel are recorded and reported to both MMS, BOEM and OSHA, as well.

MR. GRIFFON: Both those are all sort of personal safety things that you've mentioned so far as examples. How about systems of safety performance indicators, you know, releases or gas releases?

MR. LEIMKUHLER: All gas releases have to be reported. There's incident -- under the NPDES standards there's reporting requirements for all hydrocarbon discharges and releases that have to be reported.

MR. MILITO: I just wanted to add that the BOEMRE -- well, MMS was doing this. But the BOEMRE does a survey, the offshore operators, and they track blowout incidents, fires and explosions, spills by quantity and number of spills. They track lost incident workdays, fatalities. And all that is available on their web site. So that's another way that the regulator does it through

the collection of information from the offshore operators. MR. PREBEN BERGET: I don't have too much to add to it. That's very much the same as you heard. And Norwegian regulations are pretty clear on it, and the PSA shares that. So we are very used to what is being reported is being shared.

And then as I said also in my main introductory comments, we have serious incidents and potential incidents as part of our key performance indicators. That's widely shared internally in the company.

And we certainly find that those who are working here that even in the partnerships where we have others operating near-misses are being shared. But, of course, I'm sure there's potential of improving that sharing, as well.

MR. MOURE-ERASO: Thank you.

Mr. Wright, you don't have any additional questions?

MR. WRIGHT: No, thank you, Mr.

Chairman.

MR. MOURE-ERASO: Okay.

So I'll go to line of questions to the investigators. And also, will ask them -- I believe you are accumulating the questions from the public, so you could read them, please.

MR. HOLSTROM: I have an additional question. I think we have a couple -- at least a couple more questions.

In the U.S. context I think it's somewhat unique -- certainly, not -- maybe not in the EPA context in the nuclear world -- but in the oil sector it's somewhat unique to have a public discussion of risk management and risk acceptance concepts. Those of us who have investigated accidents have certainly examined risk acceptance criteria used by different companies. And normally that's not a public discussion.

My specific question is would you -- any of you be willing to accept ALARP

principles, for example, driving risk as low as reasonably practicable as part of what you would envision as a regulatory improvement or some of you had spoken in favor of the safety case. Would that be included within that framework that you would support?

MR. LEIMKUHLER: Shell safety case is developed to an ALARP standard already.

MR. HOLSTROM: Okay.

MR. SPACKMAN: Alan Spackman, IADC. The IADC guidelines reference ALARP.

MR. HOLSTROM: Okay.

MR. HOYLE: I have one more question. You talked -- Board Member Griffon was asking about measures. What are you measuring? And equal question is what are you rewarding? I think this would be a question for Shell Oil and Statoil. What safety metrics are the basis for awards and bonuses for your personnel?

MR. LEIMKUHLER: So offshore in the Gulf of Mexico we do have an award division

for our rig crews. And if they don't meet any of the operational goals for that well they still have the opportunity to earn a safety bonus every day. If they have any incidents, whether it's anyone gets hurt, do we have any spills, do we have any high potentials or do we just feel the safety culture is not where it needs to be we reserve the right not to award a well bonus regardless of their drilling performance.

So if you have two incidents -- first, any type of incident at all in your business related to safety you automatically lose half of your well bonus and you lose all of it if you have two. And we still reserve the discretion to make what we call a cultural intervention by saying, Look, the attitude, the mindset is not where it needs to be, folks; the bonus is suspended. And we have done both.

MR. PREBEN BERGET: It's a complicated question to respond to. Our

rewards are based on delivery and behavior. That's all. And so from our corporate management they're 50/50 between the two of them. And our behavior is rated on our values. And part of our core values is caring. An essential part of caring is HSE performance instead of accident. So that goes for us all over the world.

On top of that, on delivery we have sort of actual HSE performance as a part of that. So that goes for everything we do. And, of course, these key performance indicators, they are reflecting what kind of operations you are a part of.

MR. HOLSTROM: Just as a follow-up to that, the key performance -- I heard accidents and I heard, you know, incidents or -- how -- to what degree is that based on? Reportable injury? Or does that include concepts, maybe leading and lagging indicators like safety-critical equipment or closing action items or releases of hydrocarbons

leading and lagging indicators that may indicate information related to a potential for a catastrophic event?

MR. PREBEN BERGET: Let me start.

MR. HOLSTROM: Yes.

MR. PREBEN BERGET: This is a wide variety, and I have to come back to you if you really wanted to see the width of these key performance indicators.

But one of them, from our operations, I refer to technical integrity as part of what we are measuring. Actually, we have sort of metrics on keeping up our safety systems, keeping them always up to -- and that's being measured and that's being followed up.

And on our operations that is one of the metrics that they will need. So that is an example. That would be a leading one, I guess. Of course, it's all just on the lagging one that they are on the incidents frequency, but also serious incidents with a

potential is sort of a -- are indicator more than what actually has happened.

MR. LEIMKUHLER: So at Shell the answer is yes, because we use various measures to evaluate the overall level of safety culture on the rig, whether it's the -- what we call the proactive effort index. These are proactive efforts that folks do. And we actually standardize that to man-hours. We do track and monitor that as a measure as to what's the overall safety culture on the rig.

I personally have taken one rig to where we had two high potential incidents that just were unacceptable; suspended the safety program award system and bonus system for the rest of the year.

And we didn't take the money away. We challenged the crews to respond, saying, Look, we still have -- I think it was -- eight or nine months to go, if you can actually run the operation I want you to run for the next nine months we'll find a way to have an

event -- recognition event and return that money. It's not finances. It's not that aspect that's driving us to take that away. It's the actual safety performance and what's actually happening on the rig.

MR. LEIMKUHLER: Okay.

MR. TILLEMA: And just one more question. For those of you that have safety case and have done them does it consider simultaneous operations like displacing mud and offloading to a boat and if so, how is that controlled?

MR. LEIMKUHLER: We have what we call a simultaneous operations matrix which dictates not only the level of simultaneous operations but specifically which simultaneous operations you can do concurrently together.

On my facilities all of my rigs operate on production facilities. So we drill from tension link platforms and spars where there's also production ongoing at the well. So the offload of fluids to a vessel is keyed

to other activities ongoing on that platform. So it's fairly well regulated and understood.

MR. TILLEMA: And can be monitored throughout that duration?

MR. LEIMKUHLER: Those types of activities we use, they're permit-to-work system such that when a permit comes forward, Hey, I want to do this particular operation at this time, the offshore installation manager and other leaders on that location who actually have to sign these permits will be aware of the other things that are going on and they will make the judgment, No, from a signoff standpoint we're going to have to wait and hold off on that until we complete this other task.

MR. TILLEMA: Okay.

MR. MOURE-ERASO: Do you have some questions for the audience that you --

REPORTER: Sure.

DR. MacKENZIE: Oh, I was just going to have a point of clarification. Mr.

Pitblado, I'm not trying to pick on you. But at one point I think -- correct me if I'm wrong -- that you stated that the safety case is actually what the company wants to be, not exactly what it currently is at the moment. Is that a accurate paraphrase of --

DR. PITBLADO: I said that was a danger.

DR. MacKENZIE: That was a danger. Okay.

DR. PITBLADO: Yes. But quite often you do prepare your safety case -- well, you have to before you start operations.

DR. MacKENZIE: Sure.

DR. PITBLADO: And it can be aspirational if you're not careful.

DR. MacKENZIE: Okay.

DR. PITBLADO: And you have to ensure that the operations truly reflect what the safety case set as the desired level. So in most cases people do operate their facilities as per their safety case. But we

were commenting on is it just a piece of paper. And the example would be --

DR. MacKENZIE: Sure.

DR. PITBLADO: -- that the aspiration isn't attained in practice.

DR. MacKENZIE: Thank you.

DR. PITBLADO: Okay.

MR. MOURE-ERASO: The questions?

MR. HOLSTROM: We have some questions from the audience and I'll just read the questions as written. The first question is how do groups like API measure the effectiveness of their recommended safety guidelines if these guidelines are only recommendations and only voluntarily implemented by their members.

MR. MILITO: Well, ultimately, it's the regulator who decides whether or not to make these requirements. And we -- like I discussed earlier in my opening statement, we've seen 80 of our documents adopted and made into requirements by the regulator. In

addition to that, BOEMRE will come to us and work with us and we'll come up with a document that meets the needs of offshore operations. So it's a green process. We continue to evolve our documents.

And recently, in the past week we came out with a revised version of our Recommended Practice 65-2 which has to do with proper cementing practices. That document just came out this summer. And based upon this incident we looked at the preliminary findings and realized that we had some changes we needed to make to make sure we have strong cementing practices in place. So it's based upon really what the demands are from the regulators and the industry in looking at operations.

MR. HOLSTROM: Okay. Next question. This is for Shell, Mr. Leimkuhler. How has the HSE case reduced incidents and how did Shell implement the HSE safety case perspective in its organizational culture?

MR. LEIMKUHLER: I think safety case has probably done a good job of reducing a lot of the higher -- high potential incidents associated with the asset and the larger risks associated with the project. We don't really use a safety case to manage slips, trips and falls. We have other programs that we use to really help drive that incident rate down to very low levels. The real value I find in the case is really driving that two-barrier Bowtie mindset throughout the -- not only the design of the well but also the operational execution of the well.

MR. HOLSTROM: Okay. Thank you. Question from the audience. With the majority of the major oil and gas operators having operations worldwide and in a location where safety cases are required why don't they utilize this practice in areas where it is not required? I guess what could be added to that is if you do, you know, you can explain that, as well. I assume that you don't.

MR. LEIMKUHLER: That's correct. Since 2002 we've used a safety case globally in our operations for oil well drilling.

MR. HOLSTROM: Yes, Mr. Spackman?

MR. SPACKMAN: Alan Spackman, IADC. One of our members, early adopter of the safety case approach was a drilling contractor that had no operations in any area where that HSE case was required. They made that commitment to develop and HSE case based on their own corporate identification of it as an appropriate tool for regulating hazard.

MR. LEIMKUHLER: I guess as an additional comment, we've worked with a lot of drilling contractors in the Gulf of Mexico to where the first time they used a case is -- this was Shell because we require it. And I've always been impressed by the number of drilling contractors that after they leave Shell, they still utilize the case because they recognize the value of it. Even when it's not required they still say, Look, this

is a good piece of business for us, we realize the value in it. And they take ownership of it.

MR. HOLSTROM: Okay. We received an additional question that was inquiring about potential well control or blowout incidents that may have occurred recently in both Norway and in the North Sea, I believe, in the UK jurisdiction that may have involved perhaps Shell and Statoil?

It's hard to tell from the question. Is there anything, you know, any -- if you are aware of such incidents are there any lessons learned that could be described from those incidents that would be useful? Or how do you share such lessons learned?

MR. PREBEN BERGET: I'll comment shortly. We have an incident on the Norwegian Continental Shelf, called Gullfaks, that is currently under investigation by Norwegian authorities. And I'm sure that will be shared and is already shared on the PSA home page

what was the cause of it. And so it's pretty open.

This actually was a near miss, in the sense that it was not a blowout, but it gets a lot of attention and we are -- being a small country and then the oil business being very important for us, it's very evident all over the country what is ongoing.

MR. HOLSTROM: Okay.

MR. LEIMKUHLER: At Shell there was an incident in the North Sea. I'm not exactly sure exactly when it happened. But the particulars of it was there were downhaul barrier that failed. The flow occurred. The BOP stack worked. High pressure fluids were circulated in the well and the well was successfully killed. So the barrier concept worked. And things -- I'm still waiting for the final report on exactly what happened to the barriers down in that well.

MR. HOLSTROM: Okay. Thank you.

The next question is please comment

on possible differences in complying with a goal-based regime in offshore U.S. from other regimes worldwide.

MR. MILITO: I think one thing you're seeing -- and it's been in the regs here in the U.S. -- is certification that companies have to do to show that they're meeting the requirements. We're seeing in the new interim firewall that's come out. We saw that in the NTL that came out. So essentially, companies will have to retain third-party independent certifiers like DNV or ABS to come on board and demonstrate that this BOP will fit the intended purpose in this particular operation. And that is one thing that I've noticed more recently being kind of a trend with our regulations here is that you have to use third-party certifiers to come in and check that box.

MR. HOLSTROM: Okay.

This is sort of a related question. It's directed at Statoil but I think it could

be directed at all the panel participants. And it's a question about the effectiveness of inspections in different regulatory regimes around the world. What are your observations about the effectiveness of inspections by the regulator?

MR. PREBEN BERGET: How can they -- well, yes. As you heard from the PSA, inspections is not -- they are going in to a major part of our audits and verification. That's the way they're doing this. So this was debated quite a lot this morning, I guess. And we have a good understanding of -- so -- and we are in general pleased with that. I think it's working well. But, of course, whatever we are, we are first and foremost -- an obligation is to live by the standards of the country or the operation where we are. So coming to the U.S. we, of course, respect this way of working. Still, we live by our -- sort of number one is to live by the country's -- their agents, rules and regulations. And on

top of that we also apply our own procedures. So --

MR. HOLSTROM: Okay.

And additional question. We've heard of commendable practices to identify communicated control risks through safety case and ALARP demonstration processes by industry panelists. Could the precursor conditions that occurred on the Deepwater Horizon have occurred if your company -- in your company and if so, what barriers might have effectively prevented the catastrophic loss? Can these be generalized to other major accident hazards?

MR. MILITO: I think there's a reluctance because folks are waiting for the ultimate conclusions from this incident before they start analyzing their own practices and ultimately making those types of opinions. We -- we're expecting end of March the Board of Inquiry of the Coast Guard and the MMS to come out with their investigative report.

This CSB report will be coming along down the line, as well as the National Commission. So -- and we're also seeing what's coming out from the individual companies. So it's a matter of not making those types of opinions until we know all the facts.

MR. HOLSTROM: Here's a -- an additional question. How are corporate boards being held accountable for safety culture? I guess a follow up to that would be is there -- are there safety discussions or safety presentations, accountabilities, responsibilities in board of directors. And that perhaps could go to Statoil and Shell.

MR. PREBEN BERGET: Yes. I think I mentioned it in my introduction that a lot of these parameters are rolling all the way up to our CEO.

MR. LEIMKUHLER: I can tell you within Shell from the upper management the expectation of the role safety plays in the operation as it being a core value and not

something that's a priority that may be subject to changes is clear throughout. The safety expectations of how you manage your operations within the Shell safety framework that I've laid out is a clear expectation. And we're held accountable for departures from that.

So we have full detailed investigations on not only real incidents, but high potential incidents that go up to the highest levels of the company. And there's certain things to where if we ask for a department from the standards it needs to go to the highest level of the company, including the president. That's the degree of awareness they want to have if we are going to consciously depart from the safety framework that we have laid down.

MR. HOLSTROM: Okay. Thank you. That's all the questions.

MR. MOURE-ERASO: Yes.

Okay. So I've been asked that we

need a five-minute break, and we'll come back here in five minutes to start the last panel. Yes. Before we leave I would like to --

(Whereupon, a short recess was taken.)

MR. MOURE-ERASO: Thank you very much. I think we are ready to get started. The last panel of the day is what we call the Union and Worker Panel. We are especially thankful to the participants that they would like to join us and discuss from the point of view of the workers the regulatory situation in offshore drilling.

We have in this panel Mr. Mike Wright, who is the Health and Safety and Environmental Director of the United Steelworkers. We have Mr. Roy Erling Furre, representative from the Norwegian Union of Energy Workers, also known as S-A-F-E, SAFE. We have Mr. Glenn Trimmer, who is the Secretary-Treasurer of the United Steelworkers Local 4959 in Alaska; and Mr. Fritz Guenther,

President of the United Steelworkers Local 4959 in Alaska.

So the first panelist is Mr. Wright.

So, Mr. Wright, please proceed.

MR. WRIGHT: Thank you. This on? Yes. Chairman Moure-Eraso, distinguished members of the Board and staff of the CSB, thank you for the opportunity to participate in this important public hearing.

My name is Mike Wright. I'm the Director of Health, Safety and Environment for the United Steel, Paper and Forestry, Rubber Manufacturing, Energy, Allied Industrial and Service Workers International Union. And I promise never to read that whole name again this hearing. We are the USW for short. We represent 850,000 workers in the sectors I mentioned and many others. But for this afternoon the important name of that -- the important word in that long name and the reason I read it is the word, Energy.

30,000 of our members work in the

oil sector, the vast majority in refineries. Although you will hear today from two of our members who work in production on Alaska's North Slope. Altogether, our members account for about two-thirds of refinery capacity in the United States.

At the outset let me say that unlike my three colleagues on this panel and many other presenters today, I have never worked in the oil industry. While the USW and its predecessor unions have done a great deal of work on refinery safety and even more on process safety generally, we do not represent workers on the offshore oil platforms in the Gulf of Mexico. No union does. And the industry has worked hard to keep it that way. So I'm not going to talk this afternoon about kicks and blowout preventers and cementing and drilling mud.

Instead, I want to make three simple points. First, the problem isn't confined to BP. Second, the problem is confined to

offshore exploration and production. And third, we can learn a lot about safety management and mismanagement and the culture of the oil industry by looking at what's happening in refineries. Because in the end it's all one industry.

So let me talk about refineries. Most of our members in oil came through a merger with a union called PACE. That merger was finalized nine days after the BP Texas City disaster. And Texas City consumed much of our effort over the next several years. In the analyses and reports that followed Texas City the CSB produced its report on the accident itself, of course, and the Baker Panel reported on safety management in all of BP's American refineries.

We decided to take a look at the industry as a whole through a survey of our local unions in the 71 refineries operated by 22 different companies whose workers we represent. The findings are detailed in our

2007 report, Beyond Texas City. We asked about four hazardous conditions that helped caused the Texas City accident and asked whether they existed at other refineries and whether management had taken effective steps to address them.

Those conditions were atmospheric venting, inadequate management of instrumentation and alarm systems, sighting temporary structures near process units and allowing non-essential personnel in vulnerable areas during start ups and shut downs. We also looked at emergency response programs. 90 percent of surveyed refineries had one or more of those hazardous conditions. 43 percent had three or more. 70 percent reported inadequacies in the emergency response programs. Those data were collected nine months to a year after the Texas City accident. Yet 87 percent of our locals reported that the overall management of process safety in their refineries was still

not effective enough. Incidentally, that last critical condition I mentioned, non-essential personnel in vulnerable areas was one reason why seven people died in the Tesoro Anacortes accident on April 2 of this year, more than five years after Texas City.

In my career in the USW I've been able to work on safety issues in a wide variety of industries, steel, non-ferrous metals, mining, rubber and plastics, paper, chemicals, forestry, nuclear fuels, general manufacturing. I know of no industry where the gap between the intrinsic hazard of the process on the one hand and the quality of the industry programs addressing that hazard on the other hand is so wide.

That's not because oil industry safety programs are so bad in comparison to other industries. Indeed, they are somewhat better than the average safety programs across all industries. But they tend to be the kind of ordinary programs aimed at trips and

sprains and injuries in general, mostly by exhorting workers to just work safely often through programs that focus primarily on worker behavior instead of finding and addressing the kind of system failures capable of causing catastrophic accidents. It was macabre in the aftermath of the Anacortes accident to hear the industry praising its excellent safety record based on OSHA recordables as if spraining an ankle was equivalent to being burned to death.

But the real problem is evident when you compare the ineffectiveness of those safety programs to the magnitude of the hazard. Mining, for example, has a higher death rate among workers. But a mine accident is confined to the mine while a worst-case refinery accident can affect thousands in the surrounding community. And no mine accident is capable of causing the kind of environmental damage that was caused by the Deepwater Horizon blowout.

Kim Nibarger, a member of our Health, Safety and Environment Department, and a former oil worker describes a refinery as follows. Kim said, "Take a gallon of gasoline in a sealed metal can. Get your barbecue grille good and hot. Now put the can on the grille. Multiply that by a million. That's a refinery."

Of course, refineries have hazards beyond hydrocarbon fires and explosions. On October 4 of this year a worker died in a hydrogen sulfide release at the Exxon Mobil refinery in Chalmette, Louisiana. And the greatest community hazard of all is the possibility of a total loss of containment accident releasing hydrogen fluoride from an HF-catalyzed alkylation unit. In EPA's modeling the lethal plume goes beyond the 25-mile limit of the model. A full release in a populated area could spill or injure more than a million people unless they evacuated in time.

A far safer system using solid acid catalysts as a replacement for HF has been demonstrated at the pilot stage. But to date we know of no refinery planning to build such a unit. Most have not even converted to the somewhat safer, although not safe enough modified HF system in which the boiling point of the HF system is raised by certain additions.

Of course, the oil industry goes beyond many others in its system for setting voluntary standards, the American Petroleum Institute. Many of those standards are strong, well-reasoned and useful. But overall, that system isn't good enough. The fundamental problem with voluntary standards is that not everybody volunteers.

For example, API recommends the use of diesel engine air intake shutoff valves to prevent explosions cause by runaway engines in hydrocarbon gas or vapor releases. Such measures are the law in the European Union,

Canada, Mexico, even China. But there are no federal regulations in the U.S. governing that hazard. Only an API recommendation. So most engines in most refineries lack these protections. The main supplier of such systems tell us that they have sold ten times as many to refineries in Canada where they are required by law than in the U.S. where they are not.

Even where an API recommendation is widely followed it may have loopholes that completely negate its intent. An infamous example is the API Recommended Practice 753, which was developed in response to a CSB recommendation that the API bar trailers and other portable buildings from potentially dangerous locations. The API responded and wrote an excellent standard in all respects except one. It specifically exempts light weight fabric enclosures. So in many refineries the trailers in dangerous areas have simply been replaced by tents.

The impact of these failings is evident in the industry's performance. Several years ago the USW set up a system for tracking serious process safety incidents in oil refineries. We use whatever published sources we can access. But we also rely on reporting from our members.

In 2009 we recorded 45 serious process safety incidents, fires, explosions, releases. Five workers died in USW refineries. Things are not getting better. This year we recorded 49 serious incidents through December 7 with 11 deaths. That's exactly one a week. Each of those incidents resulted from a loss of at least one and usually several levels of containment or protection.

And every week we get calls from our members about dangerous conditions. Dangerously thin piping carrying high pressure hydrogen, temporary pipe clamps that seem to have become permanent, pipe clamps on top of

pipe clamps, cracked process vessels like coker drums, decisions by management to run critical systems even where the instrumentation is broken or some of the safety systems are inoperable.

And if you need more examples on Monday the USW joined a number of community and environmental organizations in Louisiana to release Common Ground II, a new report on safety in that state's 17 refineries. Using data from the Louisiana Department of Environmental Quality the reported charted an average of ten accidents a week reportable to the Department since 2005 involving releases of hazardous materials exceeding the reportable threshold. BP doesn't operate a Louisiana refinery. The biggest offenders were Exxon Mobil, Calumet Lubricants and Citgo.

We in the USW have tried to address these problems. In 2008 and '09 in our contract bargaining we proposed comprehensive

language on process safety and on fatigue caused by the massive overtime the industry relies on. The companies would not agree to any mandatory programs and made it clear that they would take a strike rather than agree with the union on safety.

When the CSB recommended that the American Petroleum Institute and the USB work together on the issues of fatigue and metrics the API insisted on doing it through their normal voluntary standards process. They assured us that everything would be done by consensus. And so we gave it a good-faith try. But instead of working through disagreements the industry simply called for votes. Where it was there unions -- it was the USW and two unions, mostly representing contractors -- against 12 or more industry representatives. And, of course, we lost every time.

After trying to make the process work for more than a year we finally gave up

in frustration and left the talks rather than put our name on inadequate standards. The two recommended practices, API 754 and 755, are marginally better than nothing. But they are not good enough. If the industry had engaged in real consensus discussions they could have been so much better.

After Texas City the USW applied for an received a grant from OSHA to do process safety training for oil workers. We wrote training manuals and curriculum, all of which was reviewed and approved by OSHA. We offered the training to a number of refineries. It would have been free. We only asked the company to continue to play their employees their regular wages for the several days of training. That was all. They refused even that. One of the excuses was that they couldn't spare anyone from their regular jobs. We ended up presenting the training in smaller doses at conferences for workers who would come on their day off -- days off and in other

industries.

I don't mean to say the situation's uniformly bleak. Fifteen U.S. refineries participate in the USW's Triangle of Prevention Program, which includes systems of safety training for the entire workforce, along with intensive incident investigation to find and fix hazardous conditions. But that's 15 refineries out of 71.

We are currently in quiet discussions with parts of the industry on other improvements. So far those discussions are mostly talk. And there's an old saying that talk is cheap. But another word for cheap is cost effective. We believe talk is cost effective. And we are willing to talk to any company, any trade association so long as there's a chance that talking will lead to greater protections for our members and for the communities that surround our work places. As Monday's Louisiana report shows, we've also made common cause with environmental and

community groups concerned about refinery hazards.

So what's the path forward? First, we have to fundamentally change how we regulate this industry, not just offshore and not just in exploration and development, but all the way through refining. I said earlier that there's a dangerously wide gap between the inherent hazards of the oil industry and the effectiveness of the industry's safety programs designed to address them. There is an even wider gap between the hazards of the industry and our regulatory programs.

A nuclear meltdown might be worse than a catastrophic release of HF. But the nuclear industry is regulated by the NRC, an independent agency with real power and resources that sometimes shuts down hazardous operations.

Mining is a dangerous industry, but mining has MSHA with a stronger law and far more resources per worker than OSHA. The oil

industry has OSHA and EPA for refineries and the Department of the Interior for offshore drilling.

OSHA does its best, and the recent National Emphasis Program has led to real improvements. But OSHA simply doesn't have the resources to give the industry the level of attention over time, nor does the EPA Risk Management Program, despite an excellent staff and strong commitment.

Offshore the situation is even worse. The new Bureau of Ocean Energy Management Regulation and Enforcement doesn't have the staffing, the resources, or the regulatory tools to do the job.

Last week the Wall Street Journal reported that the Bureau could only pay new inspectors half of what they could make working for the industry. And the proposed federal pay freeze is not going to help that.

And the Bureau is the wrong place. In mine safety we learned 35 years ago that

you can't put the same department that handles industry promotion and collects fees in charge of safety. That's why we took mine safety out of the Department of the Interior and created MSHA in the Labor Department. That lesson should also apply to offshore oil. We should also put aside American exceptionalism and look closely at the programs in the UK and Norway. Those programs came at great cost, the 1988 Piper Alpha disaster, which took 167 lives. They deserve serious consideration.

Let me add one other thing that would make oil exploration and development safer. And that's unionization. I'm not saying that unionization automatically increases safety or that all union plants are safe. Texas City was a unionized plant.

But we can bring fresh eyes, a fresh approach, and experience in other industries to the table. More important, we give workers a real voice in workplace conditions. We can encourage people to report safety problems,

and we can protect them when a manager doesn't like it.

In fact, managers themselves sometimes bring us problems, quietly, secretly, anonymously, when they can't get upper management to address them and when they believe we can. And sometimes we can and do. The other panelists this afternoon will go more deeply into what they've been able to accomplish through their unions.

Let me close by saying that I believe in the oil industry. In the five years I've been privileged to work on oil issues, I've come to know hundreds of dedicated oil workers, union and management alike. And I think we can solve these problems.

I was trained as an engineer, and I think engineers can do anything. But it's not just an engineering problem. The industry doesn't lack for technical confidence or worker commitment to safety. And I think the

previous panel clearly demonstrated that technical competence and that commitment to safety.

What we need, though, are effective management programs with strong union participation backed by effective regulations enforced by well resourced and independent agencies. We have a long way to go. But we can get there. Thank you.

MR. MOURE-ERASO: Thank you very much, Mr. Wright.

The next person is Mr. Roy Erling Furre, from the Norwegian Union of Energy Workers.

MR. ERLING FURRE: Thank you very much, and thank you very much for the invitation. My speech will have a main focus on worker involvement, ALARP, and the safety case.

The oil history does have some turning points that have led to great changes and improvements in the safety regulations.

Among them is the Alexander Kielland and Piper Alpha that we heard about earlier today. They led to many important changes in both regulation and the safety approach. In UK the safety case was introduced after the Piper Alpha.

In Norway we have also experienced large changes without accidents. Around the year 2000 a spokesman from the industry said that the safety had never been better. They used lost time accident rates, LTA, in order to prove it. The unions and authorities were offering another opinion. We all were worried about the safety. Our safety delegates and union reps gave us a warning about the negative safety development.

At this time the oil price was very low and the companies did much downsizing and cost cuts that weakened the safety conditions. The political response to this was so strong that it gave many new initiatives in the safety systems. We did establish most of our

central tripartite arenas at that time, and fortunately we also got a lot of BBS programs at that time, behavior-based safety.

The Norwegian working environment is empowering the unions and the safety delegates. The petroleum regulations -- they also have a clear demand of employees in union involvement in all phases of the petroleum activities.

Establishing development of management system should also be done with contribution of the employees and their elected representatives. The regulations also demand that all necessary information about risks and decisions shall be given to the workers' representatives.

The main agreement between the employees and the unions is also regulating mutual acceptance and agreement about cooperation and involvement.

The workers' involvement can be described in three levels. One, the central

tripartite, two is the elected workers in the companies. That's safety delegates and union representative but it also is the Working Environment Committee. That is quite important in Norway. And the third is the user/worker involvement at each workplace at the lowest level.

The union must, of course, establish communication between all these three levels in order to get the right knowledge and understanding of the challenges. The tripartite arenas are a very good place to identify problems and issues that need to be addressed. In that way we can solve a problem before it actually is evolving to be a problem and before accidents happens. Working together in tripartite arenas is not well described in any literature. So these arenas have to be developed in cooperation between the three parts. It may take some time before they work properly. I, myself are represented in almost of these tripartite arenas in

Norway.

I'll say some more about ALARP and risk reduction. It's my advice to avoid that -- all the cost benefit of analysis leads to not implementing the risk reductions that are identified.

It's important that the hierarchy of controls that is used and the systematic way we identify and reduce risk and accidents are clearly defined and understood by everybody involved.

In the ALARP processed it's a reversed proof order. It shall be proved why we don't need to implement and identify risk reduction measure. In the system is a goal-setting regulations and worker involvement. This can lead to very much pressure against all the decision-making processes. Therefore, it must be frames that lead to protection around the workers that are involved in an ALARP process.

I will continue with the safety

case. After the Piper Alpha disaster the UK introduced the safety case. This is a systematic way to do a risk analysis.

In a similar way we do have safety case also in Norway but not in the same manner as in the UK. So it's more similar ways, what we call the process around the Acknowledge of Compliance, the so-called AOC. That's an acknowledge from the PSA. And a handbook for the AOC process is published, also standards. SAFE thinks that both approaches will lead to better safety and a good process with better risk understanding and risk reduction.

The demands on worker involvement are that the worker representative shall comment to AOC on any deviations from any -- from the regulations. That's a good way to keep up the focus on the risk that is identified.

The main safety delegate is often used for this purpose. In addition to the risk analysis process in the safety case, in

there you'll see the PSA is also inspecting a rig prior to give the final AOC. So in these days the world's largest flotel is laying passive in Norway awaiting to get the AOC, because they are lax in the procedures and maintenance system.

The worker involvement is not as good in the UK as in Norway. The unions in the UK are weakened. It would be difficult for a local worker representative to write a comment in a safety case report that will lead to increased costs.

The lack of unions in the United States oil industry can also lead to the same problems. Who will dare to write the critical comment in a safety case report if the unions and the authorities fail to make a system with worker representatives that are under the protection or care of the union when it could be possible to make this work? The quality of the involvement will decide how good the workers' contribution will be.

The technological evolution and the more demanding exploration in deeper water makes it necessary to also develop new and better ways to perform risk analysis like a safety case.

The Norwegian regulations are mostly goal setting. And we do need a lot of hard work from the safety delegates and the unions in order to lift up the goals to where the safety level should be.

Adapting the Norwegian regulations regime without the tripartite and union system could be dangerous and should not be directly copied. This could lead to self-regulation of the industry. So it will also make it very difficult to make a legal prosecution after an accident.

SAFE wants the law process in the safety case lead us to focus on risk reduction and the use of hierarchy of controls. This is an important way to getting out of a loop with the use of behavior-based safety.

The use of behavior-based safety incentives, punishment and reward thinking will only lead to narrow focus on slips, trips, falls and the use of PDA, and it would be difficult to address working environment and avoiding disasters and major accidents under such a scheme.

And U.S. have very much competence and experts in both the unions, the government and the industry that should make it possible to design or run a safety system that will prevent disaster like the Deepwater Horizon. All authorities and industry in the world will learn from this accident.

It's important that when the investigation report from the United States Chemical Safety Board is finished that all affected parts in the whole world should understand the lessons learned from the investigation and implement learning points in their regulations and safety systems.

It's also a good idea to export the

Norwegian safety delegate systems with protection of the union as in the Working Environment Act. A safety delegate in Norway can stop any work that he thinks is an immediate danger to life and health.

But we worry that we still don't see any companies that voluntarily adopts that safety delegate systems when they go abroad.

The Norwegian working conditions with good salaries and 14 days on 20 days off also makes offshore working places attractive and makes it easy to recruit highly-skilled workers and it secures stability, competence and training. It's also one of the most important building bricks in any safety systems. So we must have good systems to secure that.

We all need to look at the regulations and the inspection systems. The U.S. BOEMRE must keep up a high inspection rate until the collective safety delegate system based on a competent union is

established.

The way we use indicators should also be looked at in order to find indicators that focus on actual risk level instead of just being a source to safety awards. It is necessary to inspect the plans and procedure for maintenance. We feel that the incentives from the HR departments in the companies is encouraging cutting expensing unnecessary investment and maintenance. That's why it's a safety hazard.

And the way the procedure is designed and used is also important how easy it is to do a good job. We have seen procedures that are designed to put blame on and responsibility to the workers if an incident happened and new procedures is written instead of having a few but good procedures. Thank you very much.

MR. MOURE-ERASO: Thank you very much, Mr. Furre.

I would like now call Mr. Trimmer

from the United Steelworkers from Alaska.

MR. TRIMMER: Mr. Chairman. We represent around 320 operators and maintenances workers who work for BP in Prudhoe Bay, Alaska, which is the biggest oil field in North America. I've worked in the petrochemical industry for about 34 years in refineries, chemical plants and the last 22 years as an operator for BP in the oil field at Prudhoe Bay. While we're not an offshore unit, we have a lot of similar operations.

I guess one o the challenges today was to come up with just ten minutes of -- to talk about -- we certainly have a lot more than that. But we'll try to confine it to the three things that we were asked to talk about. I'll start off with the employee involvement in company health and safety performance and accident prevention and overtime and fatigue issues. And then Brother Guenther will talk about preventative maintenance.

I'd like to start with the health

and safety. I would say that our company has a health and safety program where they address a lot of different issues. But what we came out of yesterday was one of the members said the things that are reported and measured are the things that are -- matter and are manipulated. And those -- I talk about those things that we keep track of and that are reported and their possibility in being manipulated. I would say have a two-prong approach which is the carrot and the stick.

Around two years ago we got a new president for BP Alaska. And he told us his mandate was to reduce the amount of incidents, accidents and environmental accidents in Alaska. They set about reviewing current safety policies with employees and started a program of disciplining employees for violations. They put up posters and gave out little cards to carry around in your pocket. And in our opinion it was a program on just driving down the numbers. As a result,

employees were driven away from reporting accidents and near misses for the fear of being disciplined.

An example of that is we had had a vehicle accident where a contractor was seriously injured and broke his leg and didn't report it for over three hours. When asked why he hadn't reported it, he stated he was afraid he'd be fired. So when it was -- this came apparent that, you know, he was hurt bad enough that he had to seek medical attention it was reported. So as a union, we confronted BP's president with their safety program concentrating on discipline and driving down this reporting. And his response was, We may have gone too far in concentrating too much on the discipline aspect. I would say in fairness to them in the last year they've moved away from that and moved more towards the carrot approach.

But they create a computerized readout that's gone over daily in our morning

meetings that we have prior to, you know, our work day starting every day. And our first line supervisors go over a set of numbers. They have a matrix that they come out and it's a readout and they go over and it has a recording of the last 24 hours and -- of recordable illnesses, first aids, fires, near misses, vehicle accidents, spills, PSM violations, leaks, such as that.

And on this matrix it has a set of goals that are -- each work area has a set of goals that they're supposed to meet. It tells you whether or not you're exceeding or reaching those goals or you're falling short. And those goals are based on bonus, on how much money you're going to get paid at the end of the year and why -- what -- we've heard testimony today about incentive programs. And I think they can be a good thing. It's a balancing act on whether or not it's going to be something that's positive or something that drives away reporting because it's going to

cost you money.

Which brings me to the carrot portion of it, I guess. On October 18 of this year we got a letter from Bob Dudley, who's our new CEO. And in it he says all employees are entitled to -- it's a forth quarter focus on safety and compliant operations. And in the letter Mr. Dudley states that the sole criteria for performance awards for our operating business in the fourth quarter will be performance safety.

As an employee who at the end of this year is going to be involved in this bonus program, we asked as a union and as an employee what portions of that safety readout that we hear every day in our morning meetings is going to affect that performance bonus. Is it going to be, you know, as simple as a first aid or a sickness or is it, you know, a fire or an explosion or what parts of those? I would say that as the fourth quarter has just about ended, we haven't got that information

yet. So Mr. Dudley's letter come out and I would say that the result was we were all under the impression that anything that could be reported was going to affect that safety bonus at the end of the year. And I'm not saying that that was his intent with the letter. But I believe anyways that that's the result of it.

I'd say also the reason I know that this doesn't work, the stick approach, the discipline approach is that over the years, in the 30 plus years that I've been in this industry they've -- they companies have hired safety professionals to come in and give us classes and everything and those safety professionals have told us that disciplining people for reporting accidents is not a way to get people to report. But they -- a message that I've heard loud and clear, but I don't think the companies have.

Safety procedures. I just want to touch on this briefly in the short amount of

that time that we have -- is in the last 20 years our company has hired outside contractors for the most part to come in and write our safety procedures and technical documents. The result has been that the material that they provide us they feel meets their regulatory requirements. But it's not material that we use. The -- they're computer-based programs that are created by somebody who's never worked for the company, who doesn't work in our operation, doesn't understand our operation and we don't use them in the day-to-day running of the operation, such as procedures on starting up plants and things like this. And these came up in a recent OSHA audit that we had this last summer.

And I would say just recently now the company has made some changes where we're actually using operators that are company operators that work in the plant for the first time now starting to write those procedures

and technical manuals. But they're -- what we've been telling them as a union is -- for these last 15 years is that they should have been able to provide both, met their regulatory obligation and provided us with a tool that we would actually use. But I'm not sure why, based on what we heard they paid for these outside consultants over the year, why they've chose to take that tack.

I would also say we've heard a lot of things today about the Baker Report, the CSB's report from the Texas City incident. And I would comment on BP's approach towards exploration versus refining. Well, where I work at -- the well pads facilities -- BP in the past has asked OSHA for help in determining that where the well pads were they wouldn't be covered by PSM because they didn't process oil actually, they only drilled it. Where the facilities -- which is where I work -- are covered by PSM standards.

The recent Texas City accident

resulted in a ten-point agreement between the union and the company to address the issues that were brought out in the Baker Report and the CSB report. Initially, BP said that -- they told us that those would extend to all of their facilities. And as time passed and we got farther away from the Texas City accident, we have in the production filed tried to discuss with BP the implementation of the ten-point plan on the things that we thought applied to us up on the North Slope. And their response was is that that ten-point plan didn't cover exploration, like we were some entirely different entity.

And, you know, one of the issues on there -- a big issue to our local union has been the creation of a full-time health and safety, you know, union position, which is covered in all of the refineries in the lower 48 that are represented by the Steelworkers, which we have not got the company to agree to on the North Slope.

The other important thing I just wanted to touch on is -- I think -- is the way we transfer custody to the drilling outfits that come on the well pads and drill wells. We have union employees that work on these well pads as operators. And they -- they're the ones that permit all the work, use the company's permitting process for any of the work that's being done on that in their given work area, which is the well pad. But BP has a policy in Alaska where they literally transfer that custody -- that operator transfers that custody of the drilling company and that custody transfer stays in effect while they're on that pad drilling that well. It's not like a normal permit, where we -- every 12-hour shift we renew the permit for the work that's going on in that area. I think that's an important point.

I wanted to also touch just a little bit on their training program. We don't feel we have a formal training program. We don't

have a training department. Twenty years ago we had an apprenticeship program where BP trained operators up and maintenance people through this apprenticeship program. Through budget cuts and, you know, the price of oil going up and down well, safety and training and those type of things are always the first things they cut. And we haven't had a training department in 15 years.

Now, when they hire a new employee, they come to the facility, they're assigned to a mentor at that facility and, you know, the company monitors every couple of years whether or not they're qualified on a job. But it's up to the mentor in each facility where they work to develop their own training program to advance that person.

Overtime and fatigue issues. In 2008 after several years of high overtime the union made a request for information from BP on the amount of overtime we were working as compared to the industry standard. What we

found was we were about double what the industry standard had been in the last three years. This last year we've on the North Slope finally started hiring people at a faster rate than that they were leaving. Also, the study showed that the majority of the overtime that was being worked were 18-hour shifts, not working so on your day off.

BP's changed its policy somewhat about working 18-hour shifts in that you needed upper management's permission to work an 18-hour shift. The result was there a shift to working 16-hour shifts to get around the new policy, which goes back to what we said before. When you start measuring things people find ways to manipulate them and get around them. People could work unlimited 16-hour shifts.

An example, our production control where we have the main control room that operates. The average overtime per person through December 1 of just this year is --

unscheduled overtime is 446 hours, which is about 21 percent, almost triple the industry standard. And we have cases where people have worked two weeks shifts of 16 hours a shift every day. And I would say that not a reasonable person thinks that fatigue's not an issue for somebody working 16 hours a day 14 days in a row.

I'll turn the mike over to Fritz to speak about preventive maintenance. I'd like to close with just saying I guess we all have our reasons for being here today. But I didn't want to go today without saying that the reason the steelworkers are here is there were 11 people killed, not just an oil spill. And if there's something that we can say or do today that helps that from not happening again, that's why we're here. Thank you.

MR. MOURE-ERASO: Thank you, Mr. Trimmer.

Mr. Guenther?

MR. GUENTHER: Chairman Moure,

members of the Board and members of the Investigative Committee, my name's Fritz Guenther, and I'm actually the Chief Steward of Local 4959 in Prudhoe Bay, Alaska, not the president. I've been a BP employee Prudhoe Bay for 31 years. All of those 31 years in maintenance on the western operating area. In the western operating area we currently operate three crude oil processing facilities. Today numbers are we produce about 180,000 barrels a day of crude oil, 4.2 billion standard cubic feet of gas per day and approximately 350,000 barrels of water.

A little maintenance history about Prudhoe Bay and the western operating area. From 1979 to 1994 the maintenance philosophy was heavily weighted towards preventative maintenance. We have a small predictive maintenance program at the time, as well. In the mid-80s the facilities doubled in size through gas handling expansion, produced water handling expansion and gas lift programs.

In the mid-90s following the certification of our union management had a directive to quote don't grow the union. The hiring of hourly employees, operators and maintenance techs came to an abrupt halt. That coincided with the doubling in size of our facilities and the equipment we were asked to maintain and operate. At the same time, due to demographics, we experienced a high retiree rate. And as you can expect, the number of -- work doubled and the number of people was going down. It wasn't long before our work backlog started going through the roof.

We went from a heavily preventative maintenance program to a reactionary maintenance program where all we did was basically run around and fix emergency breakdowns all hours of the day and night. It got to the point where a simple work order scheduling code would not get work done. You needed to code the work request as an E to get

work done. That evolved into three different E codes to get work done, an E-1, 2 and E-3. And that stands for Emergency Work Orders.

In 1995 the issue of not having accurate and up to date P&IDs was also brought to management's attention. Instead of fixing this their answer was to post signs on the documentation room doors that said that, Documents contained herein are for historical reference only. Current management at that time justified the staffing levels by saying that industry standards state that seven to ten man days of back log are optimum. And to reach this level maintenance managers moved literally hundreds of PM -- Preventative Maintenance Work Requests and procedures into what they termed abeyance. In other words, they weren't going away, they just weren't getting done.

State of disrepair included all systems, including mechanical, electrical and specifically, our fire and gas protection

systems. Repeated attempts to get management to take action went nowhere. The never-ending response from them was, We're working on it. Fearing a catastrophic event, hourly workers brought concerns to -- not only to management but started going to outside agencies, which did little to put pressure on getting the work done and the problem solved. Eventually we started going to the media.

2005 the president -- the Texas City explosion happened and people started paying a little of attention to us. We still weren't getting things done. Then the oil transit spill in Alaska happened and now management, as well as the regulatory agencies and the media were paying attention to us. The ombudsman's office was created to address worker concerns. Management made pledges to address the massive overtime issues and worker fatigue. The union used Judge Sporking and his investigators with mixed results.

Today the good news. Fire and gas

system upgrades are ongoing, the hiring rate as Brother Trimmer alluded to, exceeded attrition rates in most areas. But it took five years to get this done. Safety-critical PMs are being identified and being worked back into our system. Accurate system descriptions and operations manuals for our facilities are now being drafted. But it took fatalities to get this done, not a simple request to management.

We still got some outstanding issues at Prudhoe Bay. Corrosion is the big one. Prudhoe Bay was designed for a field life of approximately 25 to 30 years. Well, we're there. We've got lots of pipelines that have patches on them. We've also got lots of pressure vessels that have not been taken out of service and inspected internally for over 15 years.

PM's. We still have lots of field devices such as pressure, temperature switches and vibration monitors on our rotating

equipment that have not been calibrated or function tested in over 15 years. Our HSE position that we started requesting at the contract negotiations in 1998 is still outstanding. We still do not have a full-time health and safety representative position.

And as a closing statement I'd tell everybody in this room that the costs associated with a catastrophic event -- most of you go home. You may spend a few uneasy hours in front of Congress or regulatory agencies but you still go home at night to your families. We might not be so lucky. Thank you.

MR. MOURE-ERASO: Thank you very much, Mr. Guenther.

And I would like to thank the whole panel, Mr. Wright, Mr. Furre, Mr. Trimmer and Mr. Guenther. And I think we move to the questions from the Board members. I would like to start this time to my right.

Mr. Wark, you have some questions?

MR. WARK: Thank you, Mr. Chairman.

One of the recurring themes in our investigations in tragedies like this has to do with excessive overtime, fatigue and a question as to how much that may have played a role in the accident, the tragedy. It certainly was one of the issues at BP Texas City. I've heard that -- well, I guess I'd like to ask this question first and then maybe a follow up.

And that is, Mr. Trimmer, you mentioned that there's like, 446 hours cap on overtime.

MR. TRIMMER: Not a cap.

MR. WARK: Huh?

MR. TRIMMER: Not a cap, no.

MR. WARK: Oh, I thought --

MR. TRIMMER: That's just to date.

MR. WARK: Okay.

MR. TRIMMER: That's what they were as of December 1 --

MR. WARK: Okay.

MR. TRIMMER: -- in one work area.

MR. WARK: Are you forced to work this overtime? Are the workers forced to work this overtime or is it something which is maybe tolerated or desired because of financial issues?

MR. TRIMMER: I'd say the answer is both. Our contract doesn't allow the company to force us to work on our days off, you know, being that we're in a remote location and, you know, when your two weeks off or your one week off come you're allowed to go home and you can't be forced to stay. When you -- once you're up there, whether or not you work an 18-hour shift could be a condition of being forced. I have been forced to work 18-hour shifts. So I guess it's yes and no.

MR. WARK: I see. Well, I've asked this question before in other public hearings we've had on investigations that we've completed and released, and I've had it explained to me that -- kind of the way you

have, that it's a kind of two-headed horse here and that there are financial issues where overtime is built in and in some cases would be -- determine whether somebody -- the workers got a house loan or things like that. Is that accurate, as far as you know, or not so?

MR. TRIMMER: I would say that would -- you know, about the individuals' financial situations, whether or not they think they need to work overtime or not, I would say is that our normal schedule is a seven-day work week, 12 hours a day, and you work in that, you work 84 hours and 40 of that is straight time and 44 of it is overtime. And that's not what I'm talking about. This 446 per person is -- it would be unscheduled overtime above and beyond your normal 84-hour work week.

MR. WARK: I see.

MR. TRIMMER: So, you know, if your hourly rate is X, it's -- you know, you can

make 40 hours of straight time and 44 hours overtime.

MR. WARK: And I think I detected from what you were saying that you do consider excessive overtime a fatigue issue and a safety issue. Is that right?

MR. TRIMMER: Absolutely. Absolutely. We've gone to the ombudsman. We've gone to the newspapers about this. And as a result, I think that and along with what had happened in Texas City, what we've seen this year finally is a increase in our numbers and that they're hiring more people than are leaving.

Up until, I'd say, this year they were leaving a higher rate than we were hiring. And the union had come to the company in several labor management forums and complained about the amount of overtime and the lack of personnel.

MR. WARK: Okay. Thank you.

MR. WRIGHT: Could I say one thing

quickly about overtime? I think -- if we're looking at the difference between voluntary and involuntary overtime, I think most of us would maintain that the involuntary overtime is more dangerous. And that's for two reasons.

One is fatigue, obviously, and the other is distraction. You want to be at your kid's baseball game, and suddenly they tell you you got to work a double. There is a level at which any overtime becomes dangerous. And we may have reached that in -- both on the North Slope and in some of our refineries.

But in general we think that involuntary overtime is worse than voluntary overtime. We do think, though, that sometimes it's -- the distinction between voluntary and involuntary overtime is a little hazy.

For example, I know of cases where somebody's asked to work overtime. It's essentially voluntary but you know if you refuse it the next person in the line is going

to be essentially told he or she has to work overtime and they may be fatigued and they may have, you know, something to do at home and you don't want to put them in that position so you quote volunteer for the overtime. So it's not a bright line between the two. But in general, where you can make the distinction, forced overtime is worse.

MR. MOURE-ERASO: Thank you.

Mr. Griffon?

MR. GRIFFON: You're changing the order here. Yes, trying to keep us alert.

Yes. For -- this is probably mainly directed at -- to Mr. Furre, only because it touches on the safety case. But others may have an opinion, as well. I wanted to hear a little more about the level of involvement of the workers, worker representatives in the design and implementation of the safety case and then whether you feel it is effective and adequate and is, in your opinion, working. And then the -- another part of that would be

I think in your comments, if I heard it correctly, you mentioned that in some cases the ALARP is used to prove that you don't need further safety systems. Maybe I misunderstood that comment. But I wanted to also understand if the workers had a role in sort of defining what is as low as reasonably achievable or practical in this case. Not like the nuclear industry, achievable. In that little phrase there is a couple things that I think are subjective, the reasonable and practical part. And I wonder if the workers have a role in defining that during the safety case development. So --

MR. ERLING FURRE: Oh, yes. According to the regulations the workers shall be involved in every level. The regulations -- or the listing up how a worker's involvement should be done -- and it's at every -- any level from planning we're going through and risk elevations and so forth.

But what you're talking about, the ALARP process, was a misunderstanding. The ALARP process states that if you find in the risk reduction a measure it should be implemented. But what I said, that it's -- I'm afraid that the cost benefit analysis could be misused to avoid implementing those measures. So that was a worry that we are about.

When it comes to involvement in the connection of safety cases, it could vary a lot from company to company, the quality of involvement, from the absolute best until a little bit poor. So we can find the whole range of quality on the involvement.

But we also do see from company to company that they have different approaches to how they understand the issues, the ALARP process, for instance. So there should be some work to make things very clear what we do expect.

MR. GRIFFON: And just to follow up

on the ALARP. Have you had experiences where you believe that the union was sort of pushing for a stronger technology or option that was viewed by the company cost-prohibitive and therefore wasn't implemented? Are there cases like that that -- disputes like --

MR. ERLING FURRE: Well --

MR. GRIFFON: -- that that arose during --

MR. ERLING FURRE: Oh, of course. The regulations in Norway are goal setting, so that means that they have to be interpreted. So if someone -- you have a cost-cut focus and incentives that makes them want to cut costs in order to reach their bonus, the fight can be quite tough to reach this goal.

So our safety delegates and union representatives need to be very active. If they don't be active, it's a high risk that the level they land on is quite low.

MR. GRIFFON: Thank you.

MR. MOURE-ERASO: Thank you, Mr.

Griffon.

I will ask Mr. Wright to ask some questions.

MR. WRIGHT: Thank you, Mr. Chairman. I address my question to Mr. Wright, although I think it's already been answered, but I'll ask anyway.

I was going to initially ask whether or not the union personnel were involved in the development of safety case analysis in the offshore industry. But from what you tell me there is no union representatives in the offshore industry. So that being said, let me ask what your thoughts are about the effectiveness of the safety case methodology or scheme in reducing risk and improving safety.

MR. WRIGHT: My own view is that it's a very good approach but it's not a panacea. We also think that, for example, the process safety management standard's a pretty good approach. I think the safety case has

certain advantages over it. But we -- but PSM used right can keep a facility pretty safe.

We've seen people pencil-whip process hazards analysis a lot. We suspect you could do that with the safety case approach, too. You would -- detecting that and responding to it depends on a strong regulatory agency.

I should say that a safety case approach isn't all that foreign to the U.S. experience. I'm not sure if this was covered this morning. But it's very similar to what EPA does during -- in its basic permitting process under the Clean Air and Clean Water Act. So it's something that we're familiar with. We think it works well there. We think it's certainly worth looking at and probably adopting here.

MR. WRIGHT: Thank you.

That's all I have, Mr. Chairman.

MR. MOURE-ERASO: Mr. Bresland?

MR. BRESLAND: Thank you, Mr.

Chairman.

This is a question for Mr. Wright. But it's really based on a comment that Mr. Guenther made about the BP ombudsman. And I know that applies across the board in BP. But that's probably as much as I know about it. But what has the union's experience been with the ombudsman, in terms of its effectiveness?

MR. WRIGHT: I don't know a lot about how we've responded to it in the BP situation. We represent workers in a lot of difference companies in a lot of different industries. So I think the experience on the North Slope is going to have to sort of stand for itself. I do think that we've generally supported ombudsmen and we've seen where they can work. We've also seen situations where it acts more as a -- I was about to say safety valve but it really doesn't promote safety. It gives people a place to complain but nothing really happens.

We think the best -- we still think

the best place for -- when we talk to one of our members about, you know, What do you do if you spot a hazard, the first thing you do is go to your supervisor and make sure that they know that hazard exists. And the second thing you do is you go to your union safety rep. Because, you know, ultimately that union safety rep is going to have some independence and some backup and be able to address that issue. If there's an ombudsman, as well there's nothing wrong with using the ombudsman. But, you know, we think a strong, independent union is really the key.

MR. TRIMMER: I'd like to add to that. We've used the ombudsman frequently in Alaska. And I'd say that the results have been mixed. He's been helpful in some areas, been not able to help us in other areas. My understanding is BP is thinking about discontinuing them right now. We've been better with it than we've been without it.

I wanted to try to answer one of the

questions you asked Mr. Bresland in the other panel, which was about the blowout preventer and the low probability. I would say that what BP has told us is that in our process hazard analysis post the Deepwater Horizon accident is that we needed to concentrate more because they felt that was a low-probability high-impact and that they needed to address that in their future process hazard analysis because of what happened there. So -- I don't know if that helps.

MR. BRESLAND: Okay. Thank you.

MR. MOURE-ERASO: Thank you. I have some question for Mr. Trimmer. As we have discussed in the United States, the tool that we have in general industry for prevention is the process safety management.

And in the conversations that we have yesterday you were telling me about your experience about trying to get the process safety management to be applied to the circumstances of your operation in

production -- oil production. I wonder if you can tell us that experience and if you were successful and moved that along to get PSM to cover this operation.

MR. TRIMMER: Eventually we were. And this has to go back almost ten years ago now. We filed a CASPA, which is a Complaint Against the State OSHA. We had filed several complaints with Alaska OSHA on BP and didn't feel like our concerns were being addressed. As part of that CASPA that we filed in the closing that we had where we sat down with the state the field manager for BP asked for assistance from state OSHA on how they could have the drill sites, the well pads exempt from PSM standard because they didn't treat any oil out there. And OSHA was helpful with them to get that done.

And there was a time that OSHA made a ruling that the well pads wouldn't be covered by PSM and they weren't. I would say since then that hasn't changed in that, only

in that BP has voluntarily included that in their PSM program now. But it's still our understanding they're under no obligation -- regulatory obligation to do that for the well pads.

MR. MOURE-ERASO: Thank you.

I have another question. This is for Mr Wright. You described to us your experience on participating in discussions with API to discuss the possibilities of developing some standards on fatigue and metrics of the PSM. And you described very well in your statement how it develops and how it became impossible for the union to stay in there. And my question is since this is one of the tools that we have, which is the voluntary standards, how you conceive, how do you think that will be possible in a fruitful way to participate in those discussions in which you are called to be one among 12 in an APA situation, for example.

MR. WRIGHT: Well, we're not against

participating in involuntary standards -- I'm sorry, I didn't say that right -- in voluntary standard programs -- there's a space between the in and the voluntary. We've done it a lot. We've done it through ANSI, for example. We're currently doing it in a revision of the ANSI C-10 standard, which covers essentially management -- safety management systems. And we've been involved in other ANSI standards, as well.

I'm a little -- we were a little shocked by our experience with the API because the API is accredited as an ANSI standard-setting body. What happened to us with API would not have been tolerated in the other ANSI processes that we've been involved in. They really are consensus processes. They try very hard to reach agreement. That's not to say that they never take votes. But it's really at the end of a very long discussion where everybody really tries to reach consensus. In this case it was at the

beginning of the process.

We've, you know, essentially considered talking to ANSI about this and suggesting that maybe API should not be accredited since they violate the ANSI -- what we see as the ANSI protocols. We haven't really come to that decision yet. We would recommend that the Board not accept these two standards as being responsive to its mandate which we saw as asking the union and the API to work together. We thought that meant working together as equals. But the API insisted on this process under which they retained all of the power to decide what was in the standards.

Having said that, the standards are better than nothing. But my fear about them is that if they -- that for the foreseeable future that they will preclude doing something better. And we think we need something better, both on metrics and on fatigue.

MR. MOURE-ERASO: Thank you.

I would like to move to the Investigator's Panel.

Please, Mr. Holstrom, start?

MR. HOLSTROM: My first question is to the whole panel, and it touches upon meaningful participation in safety programs that are designed to prevent major accidents. We -- I think many of us are aware that the process safety management standard in the U.S. has an employee participation provision. We understand from the presentations that occurred today, both by Mr. Furre but also by the -- by Mr. Ognedal that there are employee health and safety reps positions in Norway in the Norwegian system. What I would like to -- the question I would like to ask is for those that are the U.S. representatives, do you think that a mandatory --

And, Mr. Furre, you can correct me if I'm wrong.

-- but a mandatory health and safety rep position would create a situation where

there's more meaningful participation in these major accident prevention initiatives and programs. And the other side of that is, is it you experience in the U.S. that you do have or don't have meaningful participation in major accident prevention programs. And when I say that I'm referring things -- to things like meaningfully participating in accident investigations, meaningfully participate in hazard -- process hazard analysis, management of change reviews and those types of activities.

And then, Mr. Furre, I'm interested in you describing your experiences of how your participation, you know, of your union and the health and safety rep system has made -- what specific differences have you seen and if you could provide some examples of that, either positive or negative.

MR. ERLING FURRE: Yes. According to the Norwegian law it's -- there's no way around it. You do have to have this safety

delegate system. That means that there's no way you can manipulate away from it, so you have to have it no matter what.

So this means that so much a part of the Norwegian culture, it's well established, that oil companies will accept it and use it. But sometimes we do see that there is some resistance in letting them far enough in on the things that ought to be discussed.

So the collective pressure from the unions and the safety delegate are very important in order to make this function. So we -- almost every time this is meaningful and good processes.

But we do -- have seen some examples of not meaningful processes. But we are trying to fight them away. And we are sure that we are on the right track on how to solve these problems. Yes, so can highly recommend that to establish such a system.

MR. TRIMMER: I would say we do participate in accident investigations. Yes,

we think a mandatory health and safety rep would be meaningful. But I would just say about our relationship with the companies on health and safety in general we have health and safety language in our contracts.

Most of the oil industry does that we represent through national oil bargaining. They call for joint health and safety committees and spells out how they would operate and what their limitations are.

That language entered into the national bargaining contracts in 1968 due to a strike we had with the oil industry and virtually remains unchanged since then.

We have tried through collective bargaining to update that language to make it more meaningful in today's environment, but we've not chose to strike yet to get there, and the industry has -- is not been agreeable in changing that language.

In just our last contract we came up with a full comprehensive change to the health

and safety language and it was as strike issue to the company.

MR. GUENTHER: I agree with Glenn. I think nationwide language that would put workers on any committees like that, as long as they're equals at the table with management would be a good thing. Currently, in the management that we have at Prudhoe Bay has been very open about asking us to participate in accident investigations. That was not always the case. There was a time period there when we had to assert our right to be there and literally force our way into the room. But with the current managers we have right now they're -- we don't have that problem.

MR. WRIGHT: Let me just add that when we negotiate a new contract when we've just organized a facility the first two things we try to get in safety are a safety committee with union safety reps and second, the right of workers to refuse unsafe work. So we think

safety reps are absolutely critical. It's a little hard to see how you would do it in a non-union facility. Two issues there. One is who picks them. If there isn't a union to pick the person how do you ensure that they're independent from management? And second, how do you protect them when management doesn't like what it hears? But in a unionized facility that's, to us, absolutely key to safety.

MR. MOURE-ERASO: Mr. Hoyle?

MR. HOYLE: Thank you. This is a question for Mr. Wright. The steelworkers union has experienced many major incidents in the oil industry. Do you see any particular similarities between the causes of these incidents and the findings that have been reported thus far in Deepwater Horizon? And if you have seen similarities could you describe some of those for us?

MR. WRIGHT: The only thing I know about Deepwater Horizon is what I've read in

the reports that have come out so far and in some of the reporting, especially the really excellent reporting -- and I'm -- this may sound strange to friends of mine because I'm not a big fan of the editorial policy of this newspaper. But the Wall Street Journal has done really excellent reporting on the Deepwater Horizon.

I think we -- it's a little hard to answer because we don't know quite enough about Deepwater Horizon, we don't know why the -- because it's been said we don't know how -- why the blowout preventer failed. But it appears that what we've seen in a lot of accidents, not just process safety accidents, but just sort of more routine accidents, was operating that day on that rig. They were behind schedule, they were trying to get it working, get it operational, they made decisions to cut corners, they decided to skip some critical tests.

We've seen that a lot. We've

seen -- I mean, even in accidents that don't make the newspapers beyond -- you know, beyond the county in which they occur, we've seen people killed in the same way, something breaks at 3:00 in the morning, you need to get it fixed, you need to get that unit into production and you throw some maintenance workers at it, you cut corners and people die. And that's clearly related to what happened on the Deepwater Horizon.

Ultimately, it's a failure of -- in all these accidents it's a failure of management to properly assess the risks, to properly respond to the risks and to make safety a priority. Even when you think the risk is relatively low, low doesn't mean zero. So, yes, I think there are similarities but we'll have to wait till the reports are completed to see all of the similarities. I don't think we'll -- I don't think we're going to find this is -- in its root causes that this is a absolutely unique accident. I think

we'll find the root causes are depressingly similar to many of the other accidents we've seen, not just process safety accidents but normal accidents.

MR. MOURE-ERASO: Mr. Tillema?

MR. TILLEMA: Yes. My question is related to the different regulatory regimes and workers' awareness and involvement with risk assessments and hazards. And so in general if you could just comment on whether or not workers view the blowout preventer as a failsafe device I think that would be really helpful for me. Both regimes, yes.

MR. ERLING FURRE: Oh, yes. The blowout preventer is one of the very most important devices that you have in drilling. My own brother is working as a subsea engineer and doing work and maintenance on the blowout preventer. So I discussed a lot with him the importance of that. But there are also many other systems that are important. But it's -- that is a barrier that need to be trusted.

You cannot have failures in the blowout preventer no matter what.

MR. TILLEMA: Yes. I guess my question is more -- I mean, I personally would consider a failsafe device a device that when it failed would be in a safe condition. And from talking to various workers we understand that many of them actually felt that the blowout preventer would fail in a safe direction. And I'm interested in if that's true of workers in general in your country.

MR. ERLING FURRE: Well, I really haven't experienced actually that situation in Norway.

MR. TILLEMA: Okay.

MR. ERLING FURRE: But they do tell us that -- well, the regulations say that there shall be at least two barriers. And sometimes they do have more. And -- but when they are in the middle of a drilling operation that is expensive. If one of them fall away and we have two left they still do continue.

So -- but I cannot go beyond two barriers.

So --

But I do have one worry. That is that the -- as when we go into more and more deeper water, more difficult conditions, colder, more -- it will be more and more expensive to do these operations. And when you are worried about that does the systems -- can they be trusted, can they fail? In order to find that out they sometimes do have to pull all equipment and the blowout preventer up. And that would be very, very expensive. And then the system is incentive system, where the decision makers do get money if they keep on the face. This could be a very dangerous situation.

MR. TILLEMA: Uh-huh.

MR. TRIMMER: I mean, I've -- I would only add to that is that it's outside my normal expertise. But in facilities and refineries and in the oil field valves that we have, they normally, whether they're air

controlled, electronically controlled or hydraulically controlled, fail in the safe position.

Why this didn't do that, I'd leave the oil industry -- up to them to tell you why. I know in our oil field we have surface safety valves on producing wells. They operate under hydraulic pressure. In a loss of that hydraulic pressure they would close. My understanding is that's not the case with this. And I'd leave it up to them to explain to you why.

MR. TILLEMA: Okay. Thank you.

MR. MOURE-ERASO: Ms. Johnson?

MS. JOHNSON: Thank you. I just wanted to ask Mr. Trimmer, who discussed process safety a little bit earlier.

I was hoping you could just clarify for me what types of safety standards apply to drilling, production, exploration, operations in Prudhoe Bay and how effective you think they are in protecting health and safety and

what might need to be improved.

MR. TRIMMER: Well, effective. They're effective if they're used. We have PSM standards in the facility that I work in. But they're not documents, they're not tools that we use. If the company creates those tools to meet their regulatory obligation only they're pretty useless. Hopefully, we're moving currently from a position of that to where it will meet their regulatory obligation and actually be a tool that we use.

We -- like I said, the facility I just -- I work at we just had a PSM audit this last summer. One of the things I told the OSHA investigator was is that these documents weren't relevant. And that's a requirement of PSM. But I would say that the citations that came down, I didn't read any of them that said, This document is irrelevant. I mean, they did say about our operating tables and that, that we needed to redo those because they weren't -- they didn't meet their

specification. But I was talking about all of our computer-based training that we have and recertification.

So I would say is that in fairness to the company that I work for, in the last few months we're moving towards where we should be. But I would say, you know, PSM has been out for a long time. And for the last 20 years we've had this computer-based training that's -- has very little to do and is not a document or -- that's relevant to what we do, nor do we use it. And in that case it's useless.

MR. MOURE-ERASO: I think we are going to go directly to audience questions.

Have you received some?

MR. HOLSTROM: Yes, Chairman Moure-Eraso. I have. The first one is to Roy Furre.

How does the safety system in Norway allow for learning from previous catastrophic accidents?

MR. ERLING FURRE: Well, we do have some regulations that stands that all information in connection with investigation reports and so on should be available. And we also do have in the regulation that the risk for major accidents shall be analyzed. It's regulated in the regulations how this should be worked.

MR. HOLSTROM: Okay.

Another question for Mr. Wright.

Earlier in your testimony you mentioned safety regulations other countries may have made mandatory but are voluntary in the U.S., such as the runaway diesel emergency shut-off valves.

If the U.S. versus Canadian sales numbers you mentioned are correct, clearly the API recommendations are not enough. What are the biggest obstacles to passing legislation or implementing mandatory regulations such as with the runaway diesel emergency shut-off valve?

MR. WRIGHT: The biggest obstacles to passing legislation I don't think I have to tell this audience. We are in Washington, D.C. And that's probably enough.

Regulation? That kind of regulation would probably have to come -- at least with respect to onshore refineries, would have to come from OSHA. The OSHA standard-setting process is just sclerotic. It can take years and an incredible amount of staff time for OSHA to set a new standard.

Along with the Chemical Safety Board, we urged, for example, OSHA to write an emergency temporary standard venting gas flows. And I talked to some of the OSHA staff afterwards, and they sort of explained what -- they had looked at it and what kind of resources they would have to bring to that effort, taking away from things like combustible dust, which was the -- which was a previous CSB recommendation.

So I think the legislative barriers

are pretty obvious. The barriers from a regulatory sense are just that the process is so long, requires such resources. And every health standard and almost every safety standard OSHA has ever written has been challenged in court. So it takes legal resources, as well. And there are just so many things to address.

MR. HOLSTROM: How do each of the panelists perceive the impact of the Chemical Safety Board's Texas City report and recommendations, including those on safety culture at BP? Have there been any measured improvements in BP's approach to safety?

MR. WRIGHT: I guess I should start. First, we think that the CSB's report on Texas City was the best analysis of a particular accident in depth that I think I've ever seen. There's some that I think are probably equally good. Some of the work that Andrew Hopkins has done on specific accidents are equally good. But as the product of a regulatory --

or of a government agency, it was a superb report. And I think the Baker Panel came up with a report that looked at sort of safety management and safety culture in a company, at least nationwide, better than anybody else has done it before or since.

It has had an impact. I think it's -- BP, I think, is a much safer company because of it, at least in the refineries. I'm not sure the lesson's got offshore. But the ten-point program that we negotiated with BP, the work we're doing with them now, I think, all came as -- well, really all came as a result of 15 people dying in Texas City. But the kind of midwife for that process was the reports that the CSB and the Baker Panel did. So it's had an enormous impact.

It's had less of an impact on other companies, I think. And that's unfortunate. I think a lot of oil companies have tended to see Texas City and see Deepwater Horizon as sort of a one off. It's real easy for them to

say, Oh, that's BP, that's not us. But what we've seen through our work in the oil industry is that, at least in the refining sector, the hazards exist, the accidents exist, the problems exist throughout the entire sector, it's not just one company. And therefore, other companies, I think, need to do more to learn from those reports.

MR. GUENTHER: I'll have to throw myself at the mercy of the CSB and say that I haven't read your report yet, but I will. But we've recently implemented a control of work standard which is going to improve safety in our plants greatly.

MR. MOURE-ERASO: You could watch the movie, too. Have a movie on the report.

MR. TRIMMER: Well, I've seen the movie and read the report. So I would say that it has had an impact. I would have though it had a bigger impact than it has. Maybe it would if Congress would give you guys the authority to put some of them in jail.

Maybe it would have a bigger impact. But I'd say that it's not sustained. You know, they've got a short memory. I don't think it's a coincidence that we've had an Alaska oil spill, a Texas City explosion and this latest disaster all from the same company. I don't think anybody thinks that's a coincidence.

What I've seen recently with BP is the changes that have been made and the money that was being spent now on issues that came out of Texas City are going to move the other way again. You know, they just had an oil spill. It's going to cost them a lot of money. And what we're seeing now is, you know, there's new charts coming out. And this is the budget for next year and these are the things that are going to fall below the budget now because of the constraints of what this is going to cost them. So they have a short memory.

MR. ERLING FURRE: Yes. We also

have BP in Norway. The -- most oil industry did learn much from the BP Texas report. All companies were discussing it and it made very many discussions. And it was, of course, very important in Norway, especially for the process places, also.

But we do hear from BP that they are using very much of the same safety systems that was described in the report, the stop cards, the LTA focus and the behavior-based safety approach. And we also heard at this very difficult to raise questions that will cost money when it comes to safety. So I still think they have much to learn.

MR. HOLSTROM: I think this is our last question. It's for Mr. Turner.

Please clarify if you are also discouraged from reporting process incidents, as well as injuries in the new BP safety program implemented after the Deepwater Horizon incident in April.

MR. TRIMMER: We're not discouraged,

though.

MR. HOLSTROM: Okay.

That's the last question.

MR. MOURE-ERASO: We have put in a request from the public to make a statement. So is --

Mr. Arthur Schwartz, if you could please step over to the microphone here so people -- or that microphone. That's fine, yes.

MR. SCHWARTZ: Mr. Chairman, members of the Board --

MR. MOURE-ERASO: I don't think it's on. Help is on the way.

(Pause.)

MR. SCHWARTZ: Do I use one of these?

MR. MOURE-ERASO: Oh, you can get -- yes.

MR. SCHWARTZ: Okay. Thank you. Mr. Chairman and members of the Board, my name is Arthur Schwartz. And I speak today on

behalf of the National Society of Professional Engineers, NSPE. NSPE appreciates the opportunity to comment before the Chemical Safety and Hazard Investigation Board today.

NSPE commends the U.S. Department of the Interior for enacting additional safety measures in the aftermath of the BP Deepwater Horizon offshore oil rig explosion earlier this year. Offshore oil drilling, however is an inherently risky activity. And as the BP oil spill demonstrated, an accident exposes the public and the environment to potential catastrophe.

The combined high-risk nature of offshore drilling and accompanying possibility for disaster necessitates an additional degree of protection for the public health and safety.

NSPE believes that licensed professional engineers should have a direct supervision over all engineering design, operations and maintenance of offshore oil

rigs. Professional engineers are licensed by the government, which requires them to meet and maintain technical and professional competence standards.

Professional engineers are also bound by a code of conduct to protect the public health, safety and welfare above all other considerations. Safety can be compromised when employees feel compelled to put obligations to their employers before ethics.

Professional engineers are unique in two ways. First, professional engineers are accountable to the state that licenses them, ensuring that a professional engineer's paramount obligation is to the public and not to the employer.

Like physicians and attorneys, professional engineers who violate their professional code of conduct will lose their license to practice, causing immeasurable damage to their reputation and career. For

professional engineers the threat of the loss of a license carries greater weight than continued employment with one company.

Second, when professional engineers make decisions they are taking full personal responsibility for those decisions. Professional engineers sign and seal plans as individuals and are personally accountable and responsible for the soundness of those plans. This personal accountability and responsibility renders professional engineers resistant to outside pressure and motivates them to hold fast to critical design, operation and maintenance standards.

Because of their proven competence, based on their education, examination, qualifications and experience and because their legal obligation to the public health, safety and welfare NSPE recommends that offshore oil rigs employ professional engineers to supervise all engineering design, operation and maintenance decisions. This

will help to improve adherence to offshore oil drilling standards and reduce the potential for future disasters. Thank you.

MR. MOURE-ERASO: Thank you very much, Mr. Schwartz.

Is there anybody else that want to have a statement?

(No response.)

MR. MOURE-ERASO: Okay. So I would like --

There is one.

MR. POJE: Hi. I'm Gerry Poje. I'm a --

MR. MOURE-ERASO: I'd like to recognize Mr. Poje as a former member of this Board. So --

Okay, Mr. Poje.

MR. POJE: I think on behalf of everybody who's here today, I want to thank the Board for organizing this meeting. This has been very generous contribution from all the panelists into elucidating a very complex

area, but one that is extraordinary urgent.

I'm personally gratified that the Board has matured to this point in time, having been there at the very beginning, to see it grappling with what is perhaps its largest investigation.

The BP Texas City event is a extraordinary event that was studied and generated important recommendations that we've already heard testimony about, but this is now a platform above that.

And I think the ability to shape new regulatory regimens in the offshore platform arena, if you do it wisely and well as an institution, it will help shape and strengthening of safety in the onshore arena, because we will now have a mirror to hold up to the onshore system that is also in desperate need of improvement, as we've heard from a number of the most recent panelists. So I'd like to thank you for doing that.

But I'd also like to urge us all to

recognize how humbling the experience was today of seeing this vast array of experience and knowledge paraded before us. And I challenge my successors on the Board to be as equally studied as the staff will have to be in delving into these details, that we need to run as fast as we can absorbing everything that was said today and more in order to bring this to fruition as a CSB investigation as rapidly as possible.

The reason as rapidly as possible is so important is that the signal is waning already to create needed change in our society from this terrible tragedy.

And the clock ticks and we lose the power of good work by this institution and all the generous people who have shared their information with us today. So I urge you to do what you can to hurry up and absorb everything that was said today and more and move the investigation as rapidly as possible. Thank you.

MR. MOURE-ERASO: Thank you, Mr. Poje.

I would like to thank the panel of union members and workers. I appreciate your statements and your sharing with us your experiences. This has been a very insightful and informative day.

In closing I would like for us to echo what Mr. Trimmer says, that we owe to the workers of the Deepwater Horizon platform, the 11 workers that died, we owe them to remember them. They are a reflection of the fact that this is a terrible tragedy.

We at CSB have said that the health and safety rights of workers are human rights and the worst denial of human rights is for a person to lose their lives when they are working.

We at CSB are committed to conducting a thorough examination of all the factors that led to this explosion. Those factors will include the quality and

effectiveness of past and current regulations on offshore drilling in this country with recommendations for improvements if the Board deems that necessary.

In my view there have been far too many accidents in recent years in the energy industry, as we have discussed today. Our accident investigations over those years half the time show lax enforcement of rules and many times has shown great gaps in safety procedures and hazards analysis.

We are in the process of identifying the root causes of the Deepwater Horizon explosion. Our commitment to the public is that we will develop those in due course and as an independent agency we will make those public.

I want to thank each of the Board members here for their comments and their spirited conversation. I would like to thank also the diligent members of the Investigative Team that are sitting with us here, as well as

the support systems in our Washington office that make this meeting possible. All of us share a strong interest in preventing future accidents and are dedicated to completing this investigation.

I will again like to thank all today's participants and the audience for their presence, their patience, their attention and participation.

With that, this meeting is adjourned. Thank you.

(Whereupon, at 5:11 p.m., this meeting was adjourned.)

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C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: Regulatory Approaches to Offshore Oil and Gas Safety

Before: Chemical Safety & Hazard Investigation Board

Date: 12-15-10

Place: Washington, DC

was duly recorded and accurately transcribed under my direction; further, that said transcript is a true and accurate record of the proceedings.

Neal R. Gross

Court Reporter