



# Safety and operational risk: progress and perspectives

Speaker: **Richard Morrison**  
Title: **vice president – global deepwater response**  
Speech date: **19 October 2012**  
Venue: **Rio Oil & Gas Conference**

Thank you very much Jose and Rafael.

It is an honor to be here with you on the 30th anniversary of this conference.

It is refreshing to be on a panel featuring not only my industry colleagues, but also our regulatory leaders.

It's important that we don't just "talk to ourselves," but hear also from those who develop and enforce offshore regulations and verify that our operations are in compliance with them.

I look forward to a productive session.

When it comes to safety and risk management, we at BP know that we are under exceptional scrutiny.

Regulators and the public want to know what we have learned from the tragedy of the Deepwater Horizon – and how we are acting on that learning.

So I'd like to discuss with you today how we are moving to enhance and continue systematizing risk management within our company...

From the executive floor...to the rig floor.

Let me underscore that we are in no position to preach.

Our purpose is to share what we have discovered in hopes that others will find our experience instructive and useful.

Before going on, I'd like to emphasize how real offshore operational safety is for me personally.

Like many of you, I have focused my career on oil and gas exploration and production.

I have worked as an engineer, as well as an operations and business leader, both onshore and off.

My youngest son, Spencer, is now headed for a career in the industry.

He recently completed an internship with another operator – working a seven-day-on, seven-day-off rotation on a floating production platform 80 miles offshore in the Gulf of Mexico deepwater.

From the perspective of an operations leader and a father, clear rules, procedures and regulations are a very good thing.

And when combined with a sound operating system, we should expect all of our employees and contractors – many of whom are family and friends – to return home safe after every hitch.



So does the health of the barriers in place to prevent major incidents matter to me?

Of course it does.

And because people depend on those barriers day in and day out, we cannot simply trust...we must verify our controls work.

Risk management in this high-hazard industry has always been at the forefront of BP's agenda – as I am sure it is for all of you.

But as one of the newest members of our corporate board and former head of the US nuclear navy, Admiral Frank Bowman, puts it: "When you think things are going the best, you should be losing the most sleep."

And on that tragic night aboard the Deepwater Horizon, multiple barriers – both human and physical – failed to prevent the accident from occurring.

Over the past two years, I and others have had a chance to share much of the "what" we learned and are doing to further enhance the safety and reliability of our operations.

Those actions are based on the findings and recommendations of our internal investigation of the Deepwater Horizon accident, which we've shared publicly.

Today, I hope to give you some perspective on the "how" – how we are embedding these enhancements.

With that, I will discuss:

- First, how we have restructured the company and further optimized the management of operational risk.
- Second, give you some concrete illustrations of these efforts.
- And finally, comment briefly on how industry is collaborating to advance risk management capabilities.

At BP, our approach runs from top to bottom.

CEO Bob Dudley has made clear, and continues to make clear, that we must place safety and operational risk management at the heart of everything we do.

From the Board Room to the job site, we are further standardizing the way we identify, quantify and review risks and execute risk action plans.

Our revised Group Risk Standard now requires the same 8x8 risk ranking matrix be utilized by every operating entity in the company – no exceptions.

We spent a lot of time reviewing and making even clearer the definitions, risk ranking criteria, and decision rights in our process.

We did this in order to further enhance global consistency and quality in the relative ranking and review process.

Proof of the progress of this work comes in the quality and impact of the resulting Risk Action Plans and the ability to demonstrate year-on-year reduction in risk by executing on those plans.

We're now completing the third annual risk cycle since DWH. This systematic approach has yielded important connections and new insights.



For example, when we examine the safety and operational risks at the level of our global operations, we find approximately 30 common barriers that we rely upon to prevent risk events.

This list of barriers won't likely surprise you...

It includes elements like safety instrumented systems, PSVs, procedures, competency assessments, etc...

More interesting is the frequency with which they show up on our prevention action plans which is helping us move the right people to the right places to assess and assure the quality of these barriers.

Our Upstream operations have been further restructured along functional, rather than asset-based lines.

We believe that a functional organization helps foster the long-term development of specialist expertise and reinforces accountability for risk management.

Our new Safety and Operational Risk Organization (we call S&OR) provides us an independent view of operational risk and has been functioning for 18 months.

This team is accountable for the overall risk management process.

It has the deep technical expertise needed to verify plans and results.

It can, when necessary, intervene in operations. In other words...

It has veto power over all phases of our operations.

Our performance and reward system reflects the fact that all personnel at BP – regardless of their actual job function – have a responsibility for safe operations.

Our leadership site inspections and formal audits have been sharpened.

Our executive leadership team and many of our board members visit our sites armed with an appreciation of the key barriers that they discussed in the course of the annual risk review process.

They can then observe our team's awareness and understanding of barrier integrity at the site in a more systematic way.

These fundamental changes were put in place to assure a deep, standardized, and verifiable approach to reducing risk across our global operations.

So we are focusing with exceptional intensity on the barriers that stand between us and the risk we are managing.

Not only the physical and the human barriers, but systems that sustain those barriers.

How are we doing that?

It starts with a pretty simple principle – which is to become more systematic in all that we do.

This is the only slide I will throw at you today.

We all have our own language when it comes to systematic approaches. This is what we use.



As you can see, it has four parts.

We define operations as systematic and in control when operational and technical requirements are:

- documented, well-understood and practiced;
- When there are clear accountabilities in place.
- When competencies are defined and demonstrated;
- And finally, when conformance is assured – the “How do we know?”

A systematic approach is one that is predictable, defined and independent of the individual.

It is also dynamic and doesn't stand still.

The standards and practices, assessments, actions and activities are guided by and live within our Operating Management System (OMS).

Time, plus continuous improvement, is what sustains it.

Now I'd like to illuminate for you how this approach plays out in the field – starting with the example of zonal isolation.

Effective zonal Isolation is a key goal and risk we all share. How are we approaching it more systematically?

First, documentation of requirements.

After months of development, our new S&OR organization recently published a refreshed internal practice.

It defines the methods and specialists required to verify that zonal isolation has been achieved.

Equally important, it clarifies the conditions that would trigger the use of circumferential logging after the job is pumped.

Criteria for what constitutes complex zonal isolations are identified. If determined complex, it prescribes increased technical expertise and oversight for the entire well.

This represents a significant amplification, both in terms of technical breadth and clarity of language and definitions.

Second, accountability.

We're establishing cementing as a career specialty within BP.

BP currently has 21 cementing specialists – nine of them in the global engineering team and 12 deployed to the regions.

Systematic input into the well design workflow requires both the Regional and Global specialist to agree on the basis of design for complex zonal isolation activities.

In short, these specialists now have veto rights over design.

Third, competency.

Now that cementing is a formal discipline within the company, we are assembling a competency framework, and a structured development and career path.



An advanced cementing course is nearing completion.

It will re-enforce zonal isolation requirements and deepen proficiency across a broad range of cementing challenges.

Finally, verification.

The requirements for zonal isolation are held, not by the Wells organization, but by the Safety and Operational Risk organization, our independent authority.

If a well does not conform to the requirements, a different process is initiated.

A formal risk assessment is done to see if the deviation requires escalation to the S&OR organization.

As a final point for assurance...

We are systematically auditing our cementing suppliers globally with a focus on competency.

We also perform confirmation testing on supplier slurries to assure they meet design specifications.

I chose zonal isolation as just one example to highlight the four elements of our systematic approach.

Here are a few more examples:

We have also made a strategic choice to bring all of our core and specialty wells training under one roof – the Houston-based BP Global Wells Institute.

The institute will have a bias for experiential learning through case study, simulation and learning in the field.

As part of this effort, we've recently commissioned a state-of-the-art well simulator at our Houston campus.

In the area of competency, our well site leaders are being rigorously assessed against a seven-part framework, three parts theoretical, four parts practical.

This measures not only their ability to respond to a well control incident – but also to demonstrate skills that aid in preventing one from happening in the first place.

It is an integral part of our Applied Well Control Training.

What do I mean by "Applied?"

We are driving a better balance and understanding of both prevention and response techniques.

And in an environment that is as real as we can make it for rig crews, both BP and contractors.

This teamwork element is key.

The Ensco DS3 rig, for example, has completed its program in Angola and is in transit to the Gulf of Mexico.

But the ENSCO and BP rig leadership teams won't be talking about the Atlantic weather for the journey.



Instead, they will be training in Houston Wells Institute together, where they will be introduced to the specific field risks they might encounter.

They will be observed and assessed on how they approach well control incident scenarios in the simulator.

That experience will change the conversation at the rig floor.

The last few examples I'd like to share relate to assuring conformance – the how do we know?

The best way is to go and see.

As Admiral Bowman is fond of saying, "You don't get what you expect, you get what you inspect."

Inspections are not new at BP.

We have always employed site visits, leadership audits and other programs.

But we found the opportunity was there to become more granular, go deeper, become more systematic.

We've equipped our leaders with Eight Lines of Inquiry, developed around eight specific defects in process safety that have led to most industrial accidents.

The first group of four covers routine operations, the second group covers non-routine.

We don't have time to go through all eight, but let me talk about one, which is safety critical equipment and instrumentation.

On a rig inspection I conducted last week, we were discussing wellbore monitoring and alarm settings with the mud logger, the driller, the OIM, and the well site leader.

While impressed with the competency of the team, we sensed a lack of clarity around safe operating limits for flow detection.

Specifically, what were they and who had the authority to adjust them?

This was a great chance to reinforce process safety fundamentals on the rig and improve our well monitoring program.

Inspection plans must reflect the risks associated with that particular operation, best developed and discussed before arriving onsite.

Armed with that plan, and knowing the barriers that are in place, a much deeper and clearer inspection can take place.

The findings and actions of our inspections are discussed by the Global Wells leadership every six weeks.

Sooner – if warranted.

A very different kind of verification is occurring in our Houston office. This one looks to capture weak signals or deviations from plan at our Gulf of Mexico drilling operations.

This is happening in our new 24/7 Houston Monitoring Center, which is separate and distinct from the rig support teams that staff our real-time operations center.



This facility is about prevention.

It focuses exclusively on well-bore monitoring...

The pumps, the pits, the pressures mud weight, flow rates...

Not on optimization.

Not on efficiency.

The team is insulated from day-to-day operations.

They integrate, analyze and verify that the data they're monitoring is consistent with agreed execution plans.

If not, there is an agreed escalation protocol to be followed depending on severity.

We're evaluating this capability in the Gulf of Mexico, our largest basin, and are exploring its possible deployment worldwide.

Our assurance efforts also involve Process Safety.

To date, with the focus on gas handling at the surface, we've HAZOPed 80 percent of our existing fleet and four of our five new builds.

Here in Brazil, we have recently conducted a HAZOP for our upcoming Drill Stem Test for the Tiapu well.

For example, we are tracking seven additional drilling process safety indicators worldwide.

By trending these indicators and leveraging process safety expertise in our investigations, we are further embedding process safety in drilling operations.

Another example of process safety in the wells organization is the systematic use of HAZOPs on the rig fleet.

We brought together the BP and EnSCO rig team, process safety experts, and key contractors to identify and action the associated risks and issues.

This work is paying off.

The rig team now has a deeper appreciation for the design basis of the rig systems as well as barrier philosophy.

And they have a greater appreciation for the value of HAZOPs for any future rig modifications.

All this is helping make the language and concepts of process safety live as we work to reduce risk.

I've said a lot about prevention here today, and I don't want to ignore response.

I'll be happy to detail it further in the discussion.

Suffice to say, there are a number of Active workfronts inside our company and in our industry – from capping and containment to relief wells to surface response.



We are making solid progress advancing industry capabilities through OGP, IADC, IPIECA, API, and the Center for Offshore Safety in the US.

Yet there is more to do.

In this effort, we have strong support and healthy challenge from our regulators that we all benefit from.

The point I would like to make here is that we in BP remain committed to deploying our people with DWH experience to joint industry and regulatory efforts to transfer lessons in a practical way.

If you think there is more we can do please let me know.

I trust the perspectives I have shared provide further insight for you into the progress we are making to apply our learnings, enhance safety, and manage operational risk.

We are continuing to be more systematic in our approach to risk management – persistence, continuous improvement and time will be required to sustain it.

If you accept Admiral Bowman's challenge that we get what we inspect, not what we expect – and we do – then our job as leaders is to ask a simple question every day:

How do I know?

Thank you for your attention and the opportunity to participate in today's forum.