



# **Be Bright or Be Dead**

## **Knowledge Management for Hazardous Working Environments**

**Keynote**  
**Digital World, Nice, 24 February 2013**

## Where do I come from?



- Most of you come from environment similar to this
- Academic research helps me to better understand what I can do in my day-to-day work and to improve the way I act
- But usage might be somehow different....

# Where do I work today?



## What am I working on?



On 20 April 2010, while drilling at the Macondo Prospect, an explosion on the rig caused by a blowout killed 11 crewmen and ignited a fireball visible from 56 km away. The resulting fire could not be extinguished and, on 22 April 2010, Deepwater Horizon sank, leaving the well gushing at the seabed and causing the largest offshore oil spill in U.S. history. The resultant oil spill continued until 15 July when it was temporarily closed by a cap. Relief wells were used to permanently seal the well, which was declared "effectively dead" on 19 September 2010.

## Ensure the obvious

1. Permit to work
2. Energy isolation
3. Ground disturbance
4. Confined space entry
5. Working at heights
6. Lifting operations
7. Driving safety
8. Management of change



Each person is responsible for wearing and / or carrying adequate winter gear while on the North Slope during winter (October 1 through May 1) months. At a minimum, each person must have a warm heavy coat or jacket with a hood or with a hat that covers the ears, warm gloves and warm substantial footwear. Additionally, winter gear requirements are dependent upon job duties and risk assessment.



# Organizational Changes

- **It was recognized that – even though standards were in place everywhere – no global standard existed**
- **Expert knowledge was spread all over the globe, but not centrally consolidated and used**
- **Therefore a Global Wells Organisation was implemented, with a strong link to the organisations safety and operational risk department**
- **To speed up innovation, new technologies are made available to other organisations**
- **There is a strong will on all management levels to share and improve, open minded**

## Safer drilling



Drilling on the Serette field offshore platform, Trinidad

**Since the beginning of 2011, all BP-operated drilling and wells activity has been conducted through a single organization - our global wells organization**

### A more centralized approach

By bringing functional wells expertise into a single organization with common global standards, our global wells organization (GWO), we are working to standardize BP drilling and wells operations with the intent of delivering safe and compliant wells.

We have also centralized oversight of our major projects, under our new global projects organization. It has changed the way all our major projects are delivered, allowing a standard approach to contract procurement, risk management, inspection and review – as well as creating standard metrics to measure success. The benefits of this more centralized approach are already apparent in specific projects.

### Working together for safer drilling

GWO works with our safety and operational risk function with a view to reducing risk in drilling and so reducing the likelihood of a spill or incident occurring through prevention efforts. We also aim to reduce the consequences should one occur by focusing on containment, spill response, relief wells and crisis management.

While GWO brings global experience of an extensive range of wells operations, S&OR brings deep safety and operational risk management expertise from across all of BP's business - upstream and downstream - to support GWO in their task.

The group S&OR team interfaces at the most senior levels with the GWO, and ultimately has approval accountability for the development of new engineering practices. Day-to-day activities follow a similar pattern: S&OR experts are deployed to work closely with leaders in the GWO and bring real-time support and independent challenge at site-level.



### Gulf update

The latest news and information from Alabama, Florida, Louisiana and Mississippi

▶ [www.bpgulfupdate.com](http://www.bpgulfupdate.com)



### Capping & containment technology license

BP has a technology license available to provide organizations with royalty-free access to BP's patented capping and containment innovations

▶ [Email us for more details](#)

▶ [Download the factsheet \(pdf, 197KB\)](#)

### Related links

▶ [An overview of the lessons learned that we are sharing globally \(pdf, 2040KB\)](#)

Advancing Global Deepwater Capabilities

▶ [Sharing lessons from the Gulf](#)

### External site

▶ [RestoreTheGulf.gov](#)

An official website of the United States government

Useful tools



# Lessons Learned

Advancing Global Deepwater Capabilities



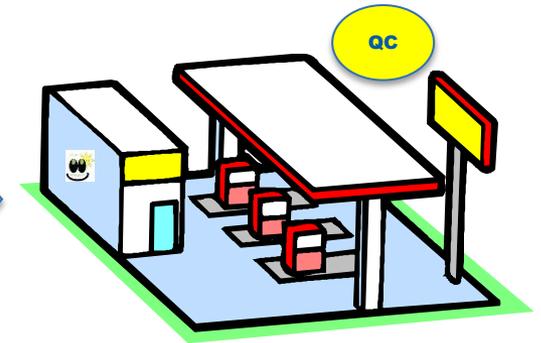
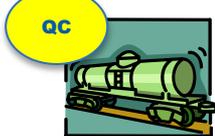
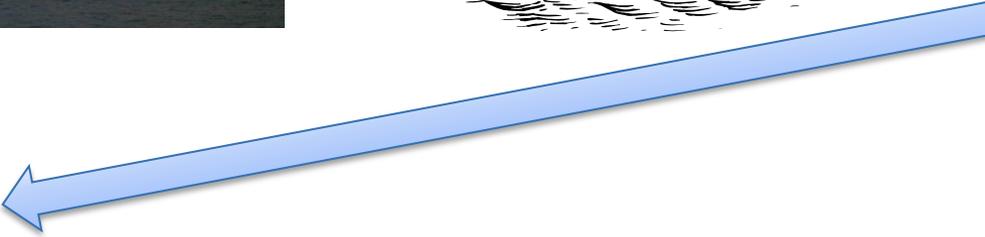
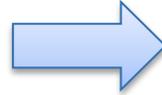
- The recommendations from the lessons learned have been implemented in all Exploration and Production Regions
- The sustainability of the implementation is regularly audited

- A thorough and detailed lessons learned analysis has been performed, to understand what led to the incident and how incidents like this and similar incidents can be avoided
- The lessons learned have been published

Committed to Sharing our Learnings Around the World



# Global Alignment – where can it happen?



# Global Rollout



- If a quality control is useful somewhere, it is assumed, that it is useful everywhere, where a similar product is produced, transported or sold in a similar way
- If a quality control is not in place, it has either to be explained, why this control does not provide safety benefits, or it has to be implemented
- Competing quality controls (targeting for the same result) contribute to quality efficiency

## Other examples – Dhahran Missile Failure

*On February 25, 1991, a Patriot missile defense system operating at Dhahran, Saudi Arabia, during Operation Desert Storm failed to track and intercept an incoming Scud. This Scud subsequently hit an Army barracks, killing 28 Americans. - General Accounting Office Report Number B-247094*

The Patriot battery at Dhahran failed to track and intercept the Scud missile because of a **software problem** in the system's weapons control computer. This problem led to an inaccurate tracking calculation that became worse the longer the system operated. At the time of the incident, the battery had been operating continuously for over 100 hours. By then, the inaccuracy was serious enough to cause the system to look in the wrong place for the incoming Scud.

The Patriot had **never before been used to defend against Scud missiles** nor was it expected to **operate continuously for long periods of time**. **Two weeks before** the incident, Army officials received Israeli data indicating some loss in accuracy after the system had been running for 8 consecutive hours. Consequently, Army officials **modified the software** to improve the system's accuracy. However, the modified software **did not reach Dhahran** until February 26, 1991--the day after the Scud incident.

<http://www.fas.org/spp/starwars/gao/im92026.htm>



## The Challenge

- **All Knowledge Management and Learning activities have been reactive**
  - Driven by an incident
  - Collected from existing resources
- **Most major incidents are „unexpected“**

# Pattern

## ▪ Possible Elements

- Maturity of staff
- Experience of staff
- Cultural background
- Region
- Weather conditions
- Work done before / planned after
- Personal „heat map“

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- To identify training need, intervention requirements, process and procedure changes

# Silverback

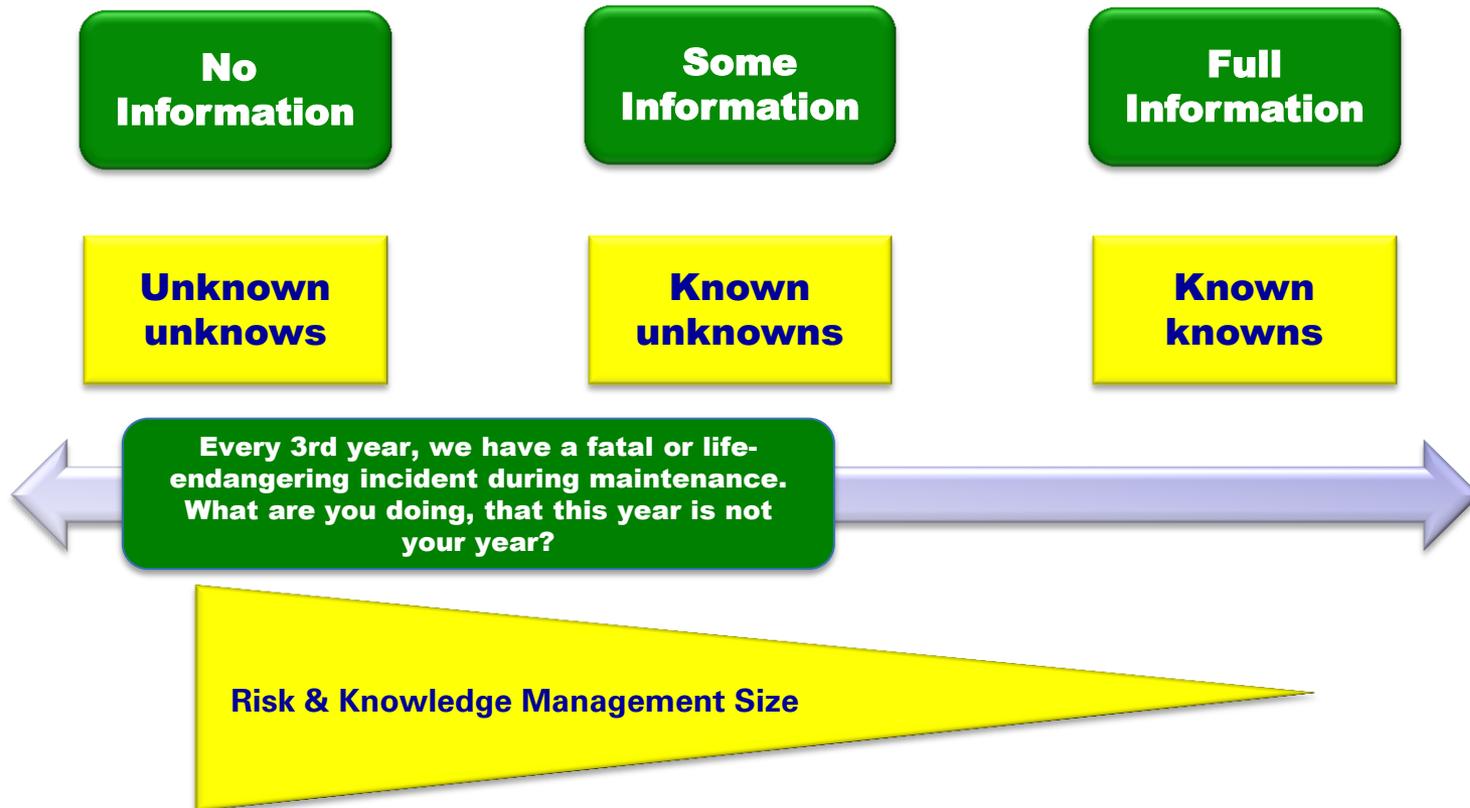


- **Silverbacks are typically more than 12 years of age**
- **named for the distinctive patch of silver hair on their back which comes with maturity**
- **have large canine teeth which also come with maturity**
- **Without a silverback to protect them, the infants will likely fall victim to infanticide**
- **The silverback is the center of the troop's attention, making all the decisions, mediating conflicts, determining the movements of the group, leading the others to feeding sites and taking responsibility for the safety and well-being of the troop**

**Example FMEA worksheet**

FMEA Ref.	Item / function	Potential failure mode	Potential cause(s) / mechanism	Mission Phase	Local effects of failure	Next higher assembly level effect	System Level End Effect	(P) Probability (estimate)	(S) Severity	Detection (Indications to Operator, Maintainer)	(D) Detection Dormancy Period	Risk Level P*S (+D)	Actions for further Investigation / evidence	Mitigation / Requirements
1.1.1	Brake Manifold Ref. Designator 2b, channel A	Internal Leakage from Channel A to B	a) O-ring Compression Set (Creep) failure b) surface damage during assembly	Landing	Decreased pressure to main brake hose	No Left Wheel Braking	Severely Reduced Aircraft deceleration on ground and side drift. Partial loss of runway position control. Risk of collision	(C) Moderate	(VI) Catastrophic (this is the worst case)	(1) Flight Computer and Maintenance Computer will indicate "Left Main Brake, Pressure Low"	Built-In Test interval is 1 minute	Unacceptable	Check Dormancy Period and probability of failure	Require redundant independent brake hydraulic channels and/or Require redundant sealing and Classify O-ring as Critical Part Class 1

# Expect the unexpected



# How do you feel today?

<p><b>CAREFUL</b></p>  <p><b>Terrific!</b></p>	<p><b>GOOD</b></p>  <p><b>I'm fine</b></p>	<p><b>ACCEPTABLE</b></p>  <p><b>So-so</b></p>	<p><b>INTERVENE</b></p>  <p><b>Don't ask</b></p>
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## **Make people talk to each other**

- **Bring the right people together**
- **Give them time to talk**
- **Give them topics to discuss**
- **Record everything**
- **Play back the recording**
- **Let them evaluate their discussion**
- **Evaluate the discussion externally**
- **Publish results**

## Must Do's

- **Discipline**

- „Hold the handrail“

- **Have to be informed**

- Can't proceed in process without having received and digested information
- Measures to eliminate circumvention

- **Have to share**

- Lessons and experience

## Don't overengineer

- **The major finding so far is that strategies and tools are in place – but not properly used**
- **As long as nothing happened, nobody is interested in delivering knowledge & learnings or using them to improve the own situation**
- **Incentives**



THANK YOU FOR YOUR ATTENTION!

# Enjoy Digital World 2013

