

# Eliminating Fatal Risks

Dale Bradford

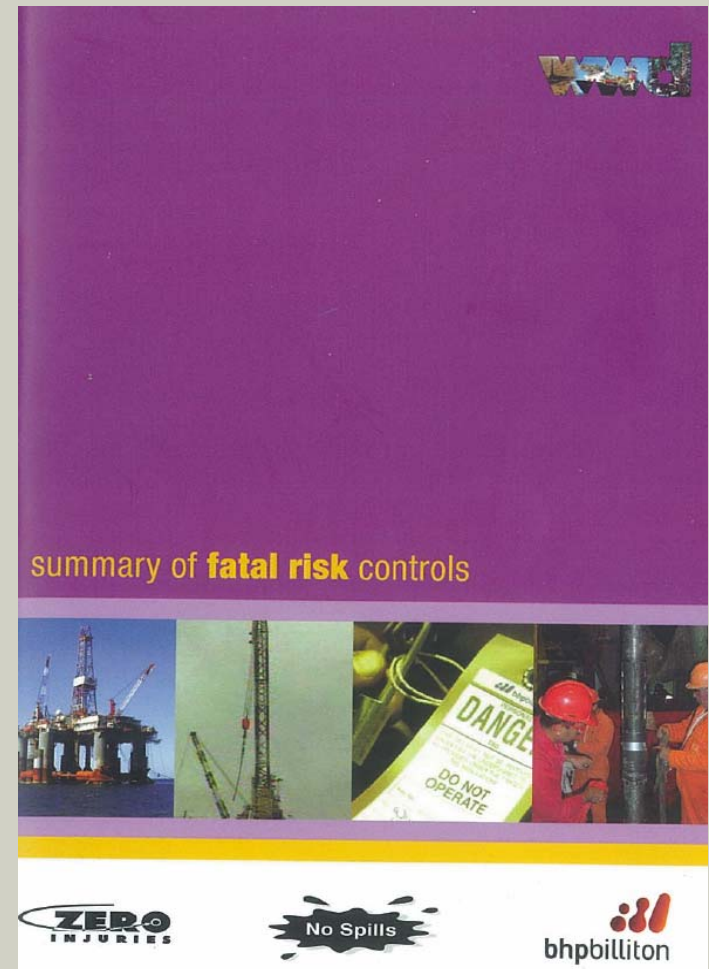
Drilling Superintendent



**bhpbilliton**

# Setting the Stage: The BHPB Fatal Risks

- BHPB Fatal Risks identified following a review of past fatalities and significant incidents within BHPB
- Key MODU fatal risks include :
  - Working at Heights (including manriding)
  - Confined Space Entry
  - Equipment Safeguarding
  - Isolation
- Major initiative taken within BHPB Worldwide Drilling to apply the hierarchy of controls to eliminate or reduce activity.



Where are we Now?

## Fatal Risk Control – Hierarchy

- **Eliminate**
  - Remove the hazard from the work place or cease participation in that activity
- **Substitute**
  - Substitute for a less hazardous process, procedure or method.
- **Engineer**
  - Protect or guard a process, machinery or activity
- **Administrative**
  - Procedural controls & HSE Management Systems
- **Protect**
  - PPE



## Fatal Risk Elimination - Process

- It was recognized that efforts were made to manage fatal risks through engineering, administrative and protective routes
- Less time had been taken to determine what level of risk existed (activity, frequency of exposure and reason for that exposure)
- In early 2005 a study was undertaken to identify which fatal risks were encountered and what the actual level of exposure was



## Example 1 – The C.R. Luigs

- BHPB Petroleum contracted **drill ship**
- Owned and manned by contractor: GlobalSantaFe
- Typical Personnel On Board:
  - 110 – 130 total
  - 80% Contractor Crew
  - 15% Third Party Contractor
  - **5% BHPB**



## Fatal Risk Elimination – Research – Low Hanging Fruit

- Data was gathered to determine:
  - Type of activity
  - Location
  - Number of persons exposed
  - Time exposed
  - Reason for the activity
  - Planned or unplanned / Routine or non-routine
- Direct feedback from the rig crews was used to identify ways to eliminate the high risk jobs. **BHPB incentivised the crews to submit ideas – “BHPB is willing to spend \$\$ to make your workplace safer”**



## Fatal Risk Elimination - Plan

- This allowed the team to identify any 'low hanging fruit' – modifications and changes that could eliminate that activity in the most efficient and effective way:
- **Routine Lifting Operations**
  - Constant rig floor and near constant main deck and vessel activity
- **Routine CSE Activities**
  - Tank cleaning had the greatest duration, risk and exposure
- **Routine Working at Height Activities**
  - Planned maintenance on TDS and blocks were the greatest duration, risk and exposure
- **Dropped Object Risk**
  - Large number of non-drill floor personnel exposed to drill floor risks



## Summary

- Lifting Operations –
- Commonly used drilling additives are shipped offshore in “tote tanks”. The tanks require significant crane work to offload and place into position using forklifts.
- For an example well, tank handling required 96 crane lifts.
- Simply **switching to a permanently installed bulk system reduced the overall number of tote tank lifts by 80%** and eliminated related forklift activity.
- The reduction in tanks on deck freed up a significant space on deck; allowing free movement of other cargo and improved visibility for personnel moving around on the deck.



## Summary

- Dropped Objects –
- The drill floor –work area under the 180ft (55m) derrick – is exposed to elevated risk of dropped objects and mobile equipment movement
- Despite this hazard, **over 100 personnel per day passed through the area** on their way to job locations – personnel nonessential to rig floor activities.
- The construction of the CR Luigs Rig Floor Bypass, a walkway around the rig floor, **stopped non-essential personnel from having to pass through the rig floor area, thereby eliminating their exposure** to significant dropped-object and mobile equipment-related hazards.





05/05/2006



**ZERO**  
INJURIES

**DO IT** SAFE  
RIGHT  
ONCE





05/05/2006



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## Summary

- Working at Height –
- Some frequently accessed areas on the GSF CR Luigs had ladder-only access.
- With creative planning and design it was possible to **replace these ladders with stairs or access gangways**, eliminating the numerous hazards associated with climbing ladders.



## Example 2: Atwood Eagle

- Stybarrow Development Campaign WA-255-P
- Atwood Eagle Semi-submersible MODU
- First used in 2004, again in 2005, Stybarrow Sept 2006 through to ~ Sept 2007
- Typical Personnel On Board:
  - 110 - 120
  - 65% Contractor Crew
  - 30% Third Party Contractor
  - **5% BHPB**



# Status of Elimination of High Risk Activities on Atwood Eagle

- 2005-2006 – Risks reduced on CR Luigs as shown on previous slides
- 2006 – Key learnings from GOM implemented on Atwood Eagle
  - Manriding Reduction
  - Pit cleaning system
- 2007 – Revisiting the initiative with broader scope
  - Working at Height / over water
  - Equipment Safeguarding
  - Electrical Isolations



## Manriding Elimination: Riser Running / Pulling.

- Lifting cap has a control line running along the TDS control loop, connected to the riser lifting cap while rigging up.
- Man riding removed by connecting the hose to the lifting cap at rig floor level before the long bails are attached.
- This hose is now permanently mounted on the service loop.



## Manriding Elimination: Stab Master

- The Eagle has the Stab Master fitted. The head on the stab master requires changing when running from 13<sup>3</sup>/<sub>8</sub> to 9<sup>5</sup>/<sub>8</sub> and visa versa.
- Initially the change out of the head and removal of the safety sling required man riding.
- A review and change of procedures has removed the requirement for man riding.



## Manriding Elimination: Hanging Sheaves in the Derrick.

- Manriding traditionally used to hang, secure and service wire line and banana sheaves in the derrick.
- Control line and gauge cable sheaves mounted above, around or near walkways in the derrick, allowing personnel working in the derrick to climb out (with a safety harness) and rig up or down the sheave.



## Manriding Elimination: R/U Flowhead

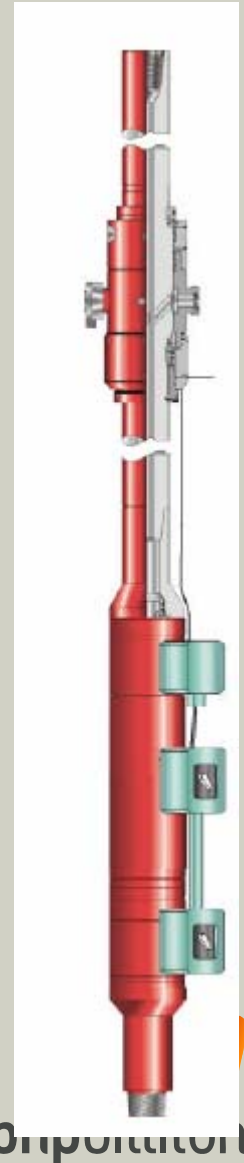
- Procedure change: Kill and Production hoses to flowhead installed and pressure tested at rig floor level instead of manriding



## Manriding Elimination: Automated Cement Head

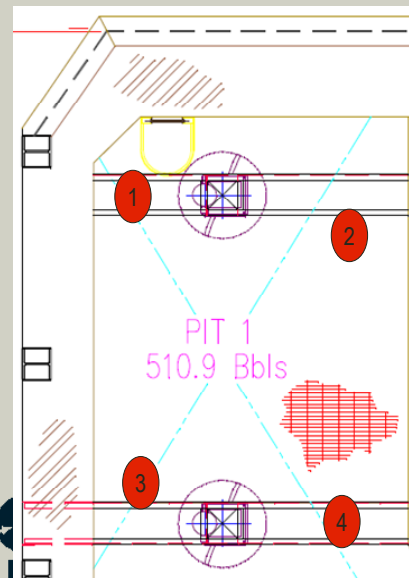
Man riding with conventional cement head previously required to:

- Attach and remove cement hose, (now attach the valves and hoses on skate when picking up cement head before landing casing. The assembly, i.e. drill pipe, and cement head, is made up on deck).
- Function Lo-Toque valve for pressure testing, cementing and flushing, (pneumatically operated valve in use).
- Launch ball and dart, (cement head now remotely operated. This allows release of dart and ball from the floor and refunction the head to clean out valves during displacement).



# Pit Cleaning System

- Reduces confined space entry and human contact with muds / chemicals used.
- Reduces time cleaning the mud pits.
- One pit cleaned while another is being set up (4 heads in each pit) and 1 spare head. Operates at 144psi and has a chemical injector for detergent.



## Automated pit cleaning system



To remove the need for vessel entry a pit cleaning system has been installed.

From this – to this



# Next Step

COLLECT IDEAS & CURRENT HIGH RISK ACTIVITY DATA FROM WORKFORCE

JAN-FEB 07



COLLATE & INTERPRET

MAR 07



REVIEW DATA WITH WORKFORCE

MAR 07



IMPLEMENT FEASIBLE OPTIONS



## Atwood Eagle High Risk Activity Tracking Sheet Jan-Feb 07

Date: \_\_\_\_\_ Permit Number: \_\_\_\_\_

Description of Job \_\_\_\_\_  
\_\_\_\_\_

Place a strike for each time you conduct the high risk activity, and estimate the total time taken.

Example: Under 1 permit, was hoisted into derrick 6 times, for about 10 mins per lift

Activity	Number of Times	Total time
Manriding	7/11	60 mins

Activity	Number of Times	Total time
Manriding		
Confined Space Entry		
Working Over Water		
Working at Height		
Electrical Isolations		
Removal of Equipment Safeguarding		

Ideas to Eliminate or Reduce Task \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PLEASE PASS TO BHPB HSE COACH WHEN COMPLETE

## Fatal Risk Elimination

This is the first step on a journey...

“....limited only by the imagination and ingenuity of people who are most directly impacted by the problems that they seek to remove and are therefore the people with the greatest motivation.”

...so just “ask them how” ...

