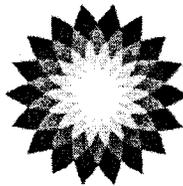


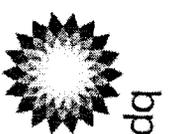
# Engineering in E&P post Macondo

Paul Tooms – VP Engineering



bp

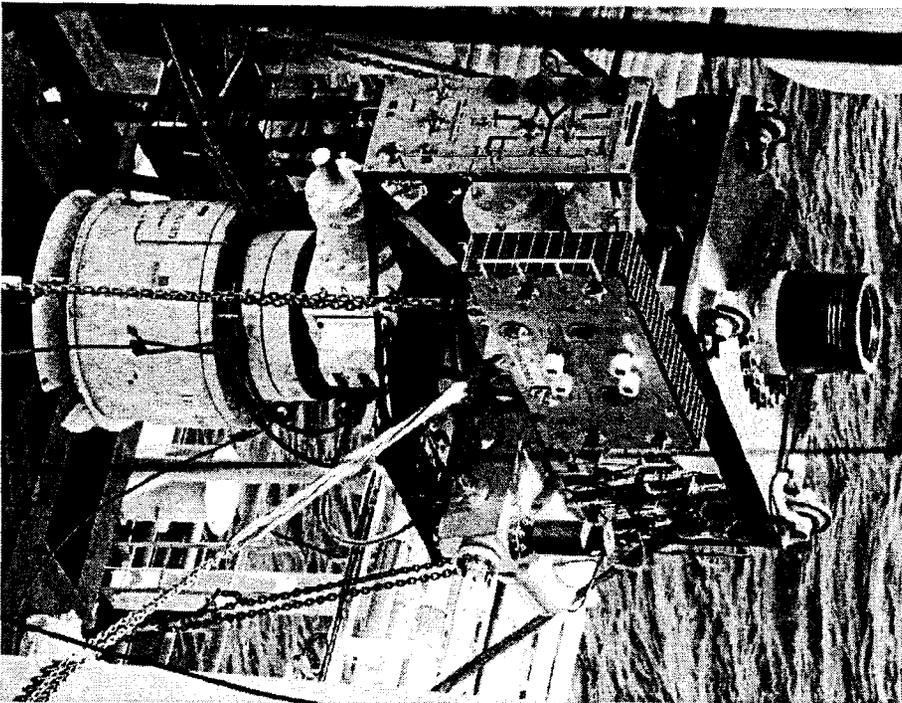
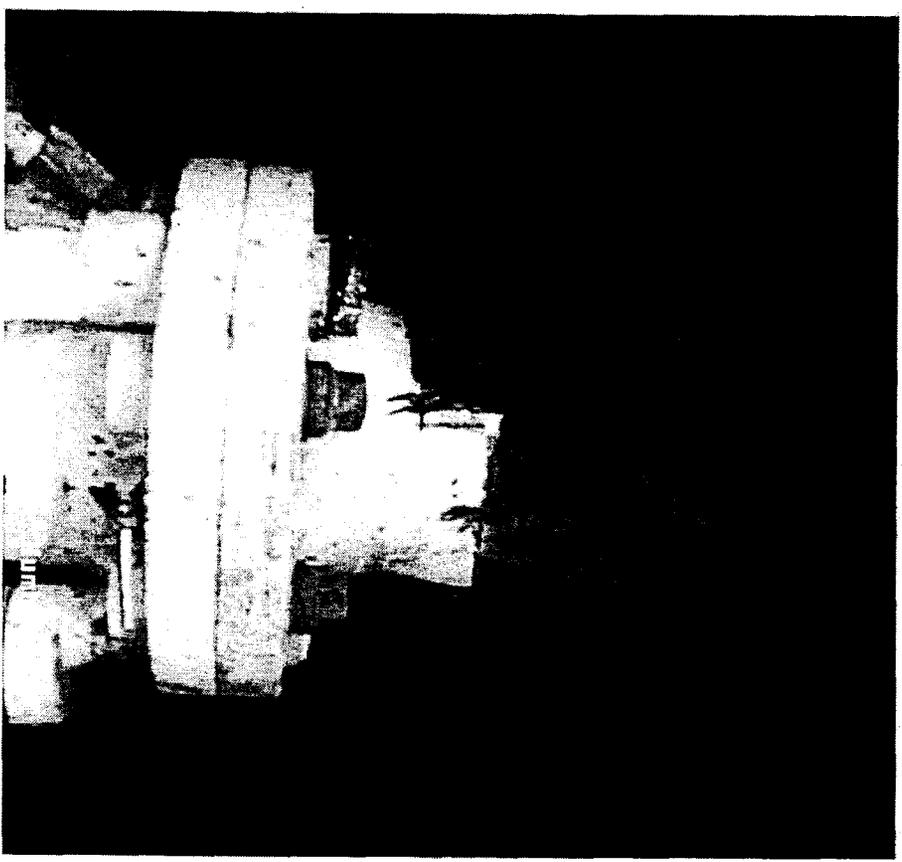
Exhibit No. <u>6189</u>
Worldwide Court Reporters, Inc.



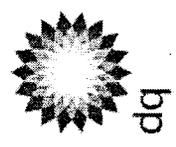
- Continue to follow the strategy and plan as laid out in Malta, re-inforced in Boston. Sharing  
-> Learning.
  
  - Our biases
    - Make engineering in BP simple, reliable and effective
    - Engineer with rigour
    - Engineers to have impact
    - Engineering Authorities make the tough calls
- +



Decomplexifying  
- the capping stack



Engineering in BP by Paul Towns VI Revised 24.03.2010

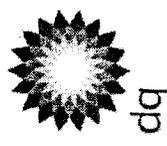


**The need for Engineers to have impact**

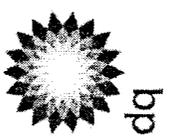
**— quotes from FT on July 16**

**The US government on Monday allowed BP to extend for 24 hours the containment cap shutting off the leak from the Macondo well**

**But US officials were quick to point out that it was up to them, not BP, whether the cap could stay in place.**



## Engineers had Impact

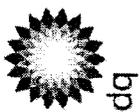


I was honored to have had the opportunity to work with and get to know all of you ...Inspired by your engineering team, with whom we worked with so closely ..... Best Regards,

Margie Tatro - Sandia National Laboratory

*On a personal note, I wanted to share my observations on the overall quality and extreme 'competence' of your entire staff during my connection to this activity. Their technical integrity and professionalism should be a source of pride to you and your staff*

Rob Sharpe - Lawrence Livermore National Laboratory



2010 Production Division – S&O Risk Summary

Severity Level	1	2	3	4	5	6	7	8
A	A similar event has not yet occurred in our industry and would only be a remote possibility	A similar event has not yet occurred in our industry	Similar event has occurred somewhere in our industry	Similar event has occurred somewhere within the BP Group	Similar event has occurred, or is likely to occur, within the lifetime of 30 similar facilities	Likely to occur once or twice in the facility lifetime	Event likely to occur several times in the facility lifetime	Common occurrence (at least annually) at the facility
B								
C								
D								
E								
F								
G								
H								
Frequency	$10^1$ /yr or lower	$>10^1$ to $10^2$ /yr	$>10^2$ to $10^3$ /yr	$>10^3$ to $10^4$ /yr	$>10^4$ to $10^5$ /yr	$>10^5$ to $10^6$ /yr	$>10^6$ to 1/yr	$>1$ /yr

Aviation     Natural & Floating Systems     Marine / Ship Collision  
 Facility Process Safety (MAR)     Pipelines & Wells     Oil Spill Response     Other

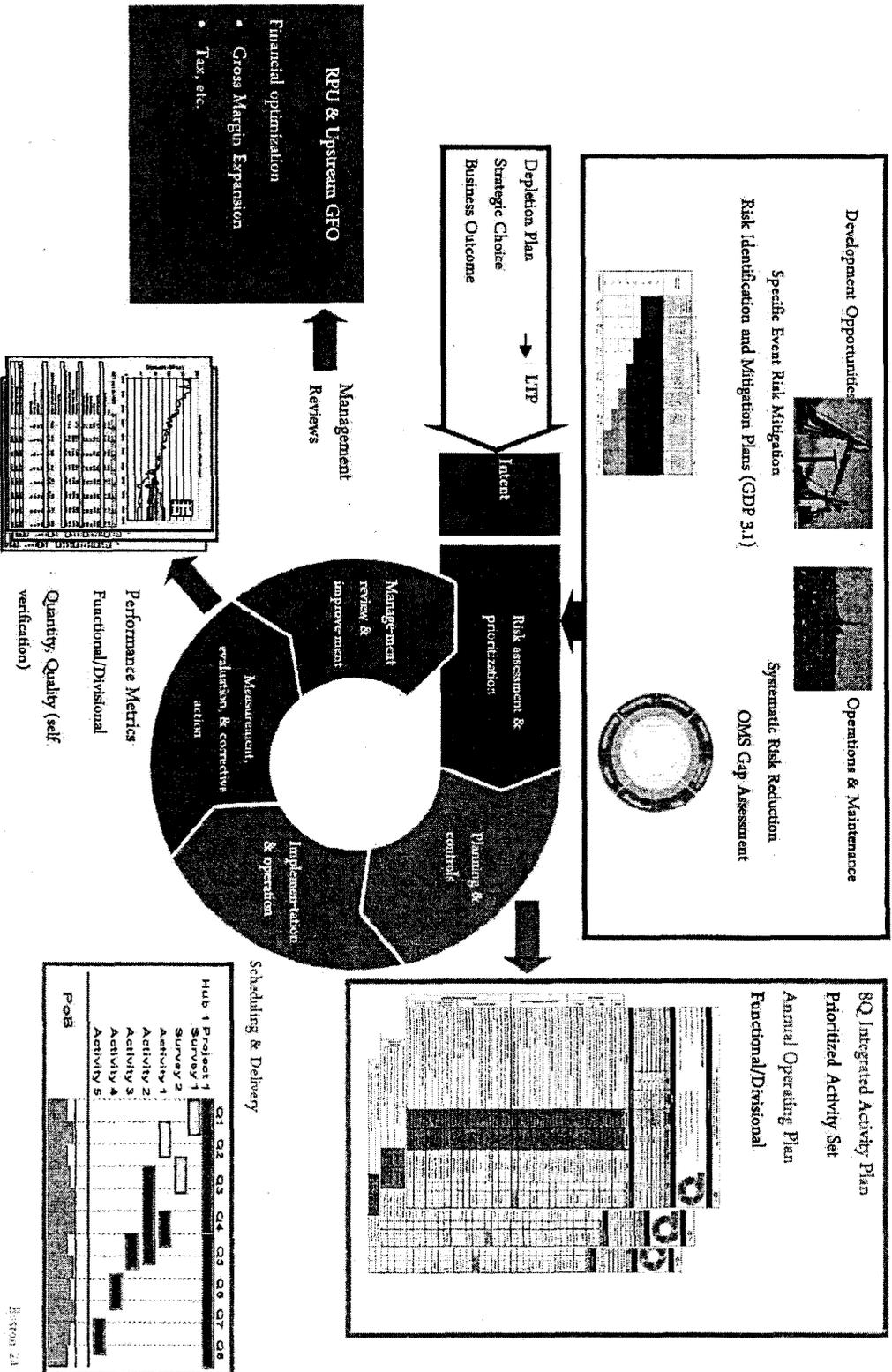


# BACK UP

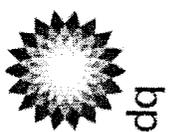
# Performance Management in Context: The Performance Improvement Cycle (PIC)



Performance Improvement Cycle: Exists at both Segment and RPU Level



## Simple, reliable, effective Engineering in BP



- Reduce / Avoid complexity
  - Simple elegant solutions are generally inherently safer
  - “Decomplexify”
- Remove buried conservatism
  - One engineers extra margin leads to another’s design challenge
  - Compounded conservatism leads to risks
- Develop & Apply appropriate standards
  - Thoughtful interpretation of ETPs
  - Challenge can be appropriate
  - Retrospective application will be defined as needed

## Engineers to have impact

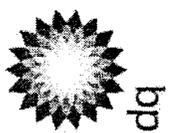
- Equip our engineers with the tools to be effective & have impact
  - Interpersonal skills
  - Influencing skills
  - Leadership
  - Problem solving (incl. Sense making)
- Persuasion + logic are the favoured tools of an engineer
  - But they are rarely effective in changing views
- Operators should understand their process and safe operating limits
  - Engineers need to act as coaches



## Engineering with Rigour

- Engineers must know the discipline, be able to do the maths
- Write it down in sentences
  - Reports, not PowerPoint
  - “bullets can kill”
- BP Engineers make the decision, not EPPMS contractors
- We value individual expertise and judgement

*Our Engineers will engender deep respect.*



EA's

- EA's are the point at which the tough operational engineering decisions need to be taken
- EA's must be fully competent, confident able to exercise great judgement
- They must be valued by leadership (Divisional, Regional and Central)



## Engineering Metrics

- Segment Recommended Practice for Engineering Management – section 8.1, E&P Segment Engineering Tier 1 metrics

