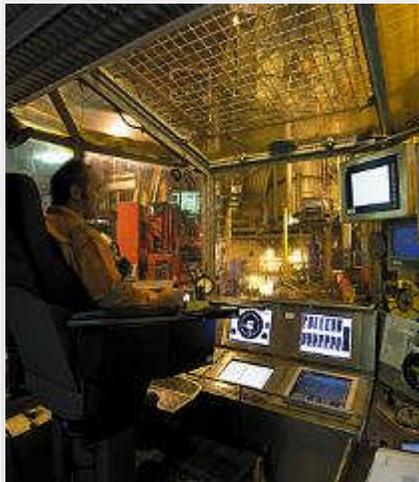




## *Asset Integrity and Leadership*

### *A Drilling Contractor's Perspective*



**Jean Cahuzac**  
Executive Vice President

December 6, 2007

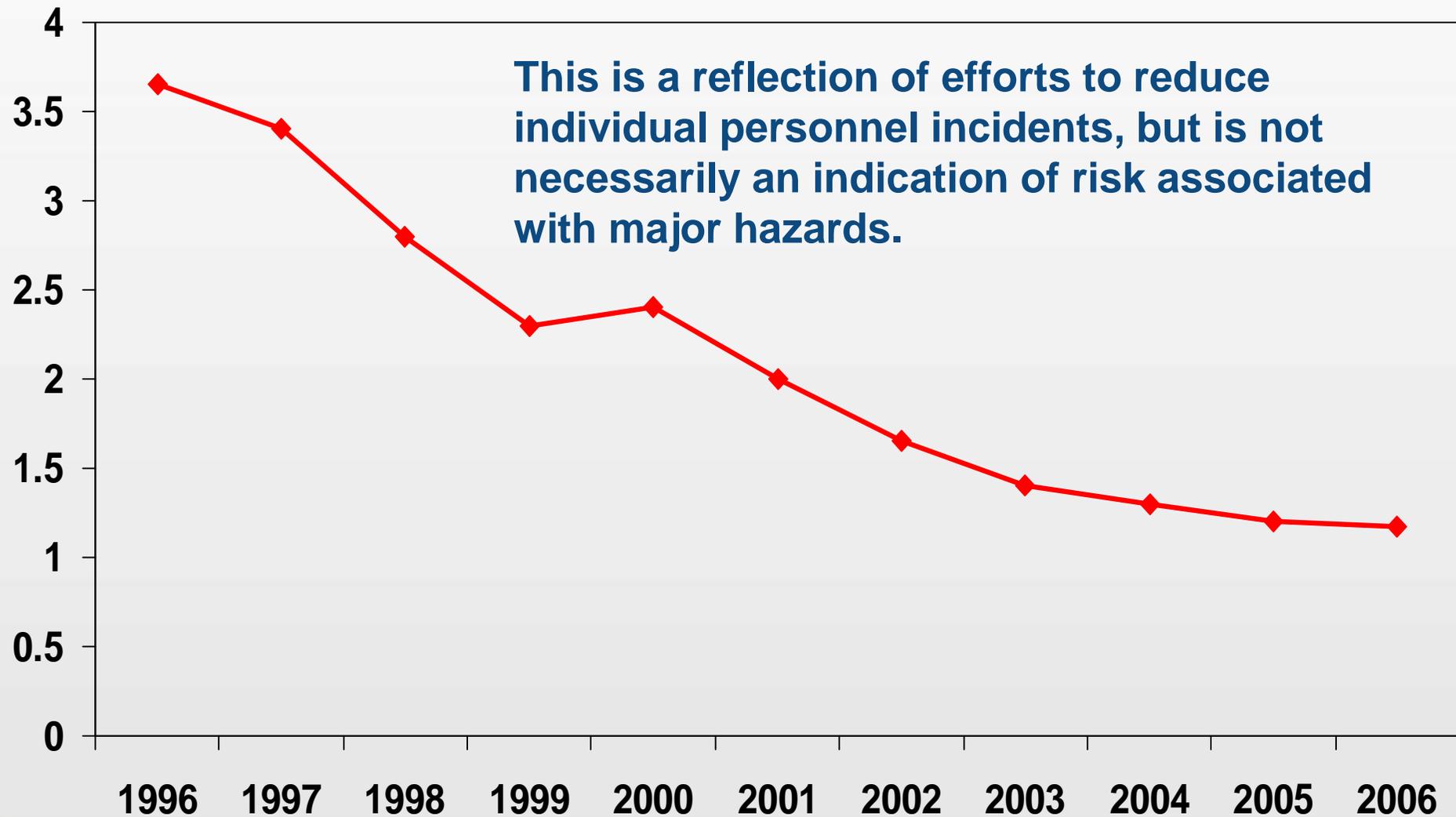
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- ◆ **Industry overall safety results show improvement, but safety statistics can be somewhat misleading .....**

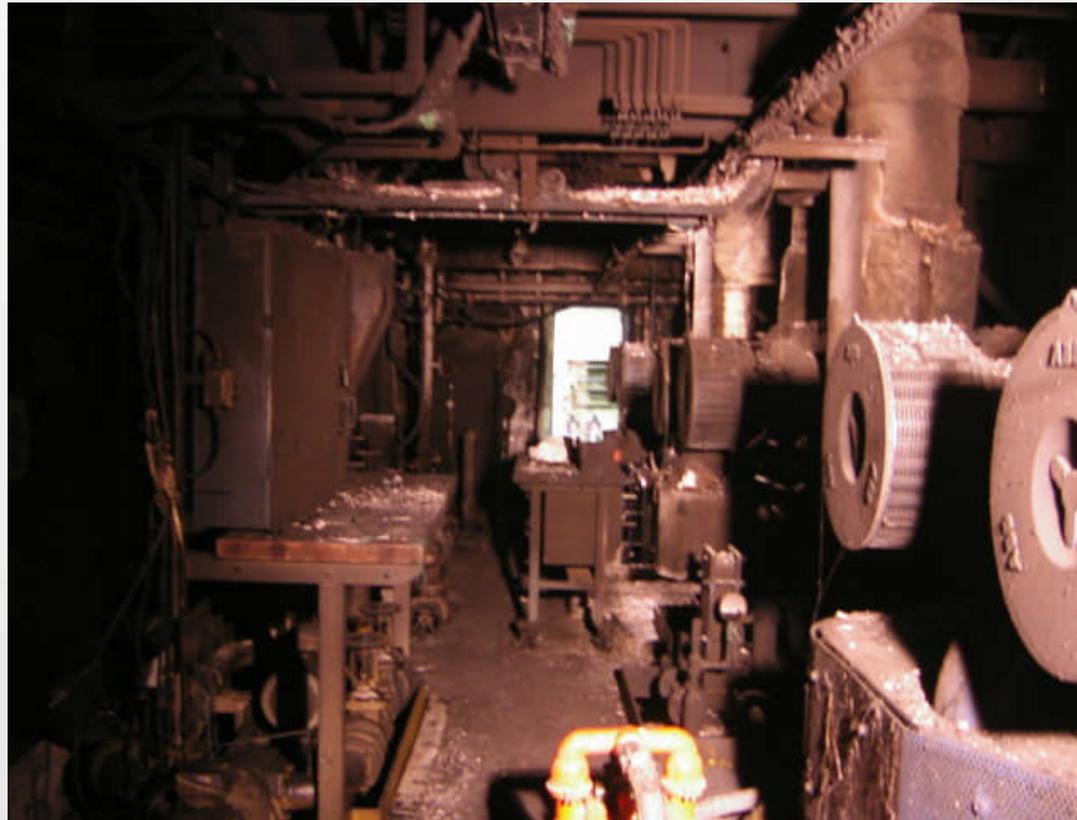
## Total Recordable Incident Rates – 1996-2006

IADC Total Industry offshore incident rates



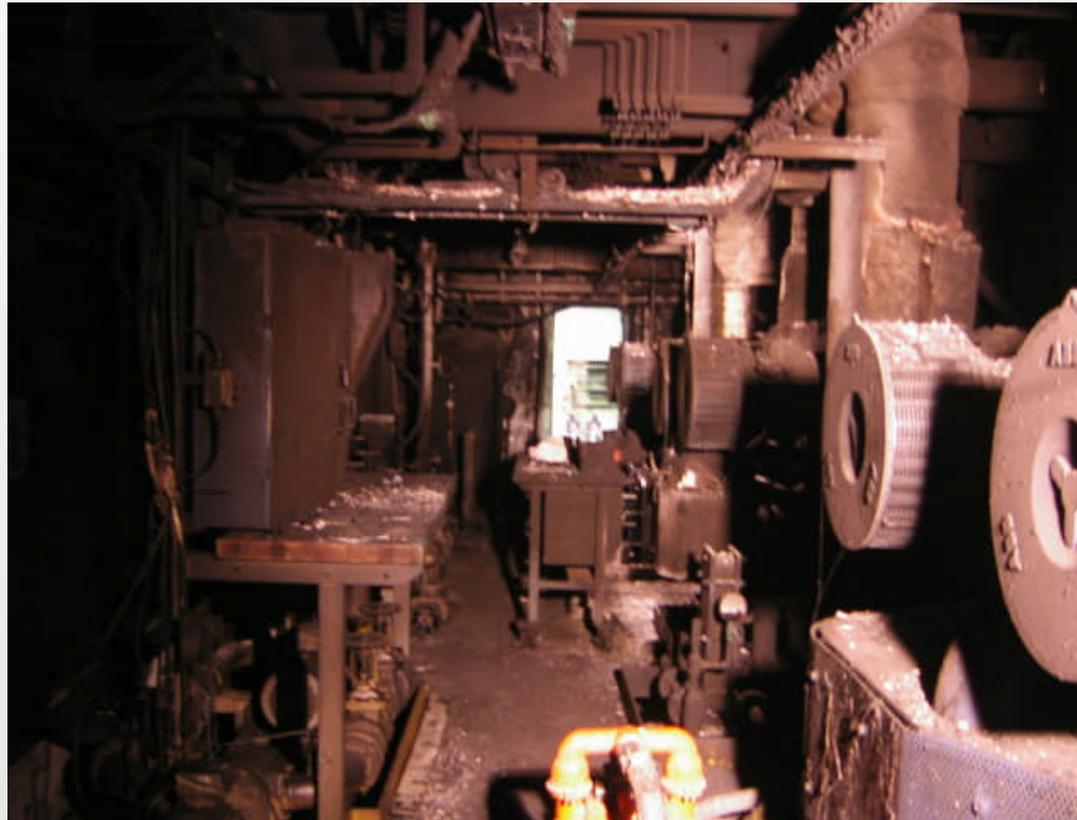
**2003 - major fire damage to Jack-up engine room**

*A “wake – up “ call*



Major fire damage to Jack-up engine room

**Less than 5 years old unit , TRIR < 0.3**



## **An evolution in our approach**

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**From**

**A focus on asset integrity (design, maintenance, procedures ..)**

**To**

**A focus on operations integrity (Asset integrity + management system and safety leadership)**

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# **Asset integrity**      *The Drilling contractors challenges*

## ◆ **An aging Modu fleet**

- Average MODU fleet age is 25 / 30 years and increasing

## An aging Modu fleet – Maximizing Performance and Service Life

- Typical design fatigue life was 20-years for older units when built
- Class societies, regulators and Industry renewed focus



## An aging Modu fleet – Maximizing Performance and Service Life

- ◆ **More effective approach to evaluate fatigue life based on rig history and region of operations**
  
- ◆ **Assess the remaining fatigue life through structural analysis and inspection to prevent need for unnecessarily frequent inspections:**
  - ✓ Identify critical structures and examine past defect history
  - ✓ Fatigue analysis and fracture mechanics studies
  - ✓ Toe grinding and life enhancement work where necessary to reset “clock”
  - ✓ Maintain standard structural inspection intervals

**©New technology allows to safely assure continued asset life**



## An aging Modu fleet – Maximizing Performance and Service Life

- ◆ Enhanced maintenance programs and replacement of obsolete systems is possible although very costly.



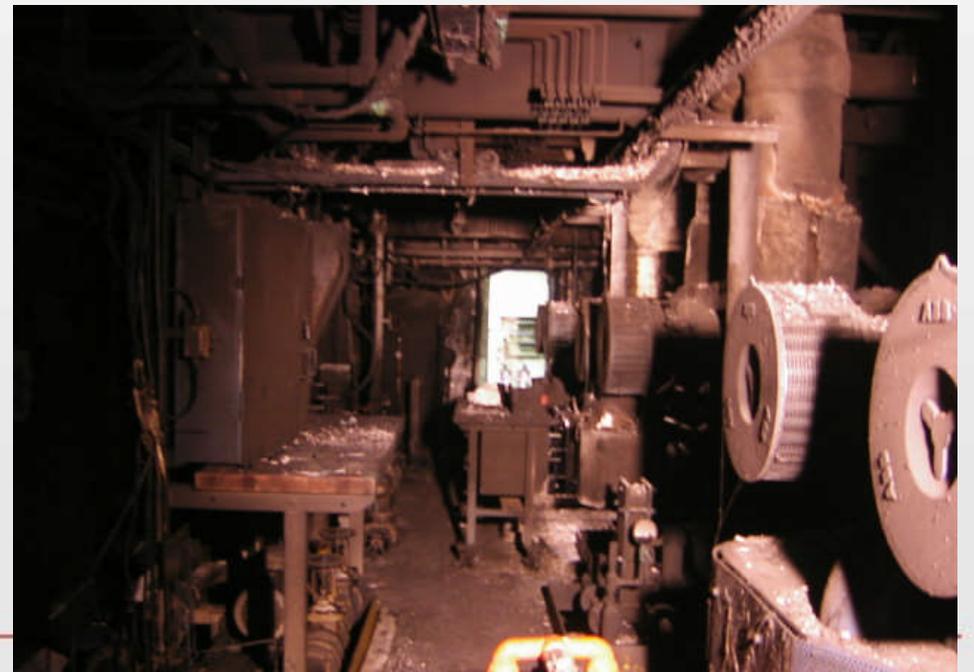
**Technical solutions do exist, limitation is mainly driven by economical constraints (Out of service time, shipyard investments etc ..)**



## **Asset integrity**      *The Drilling contractors challenges*

- ◆ An aging Modu fleet
- ◆ Major incidents are not unique to older installations and equipment.

## Newer fleet also at Risk



## Newer fleet also at Risk

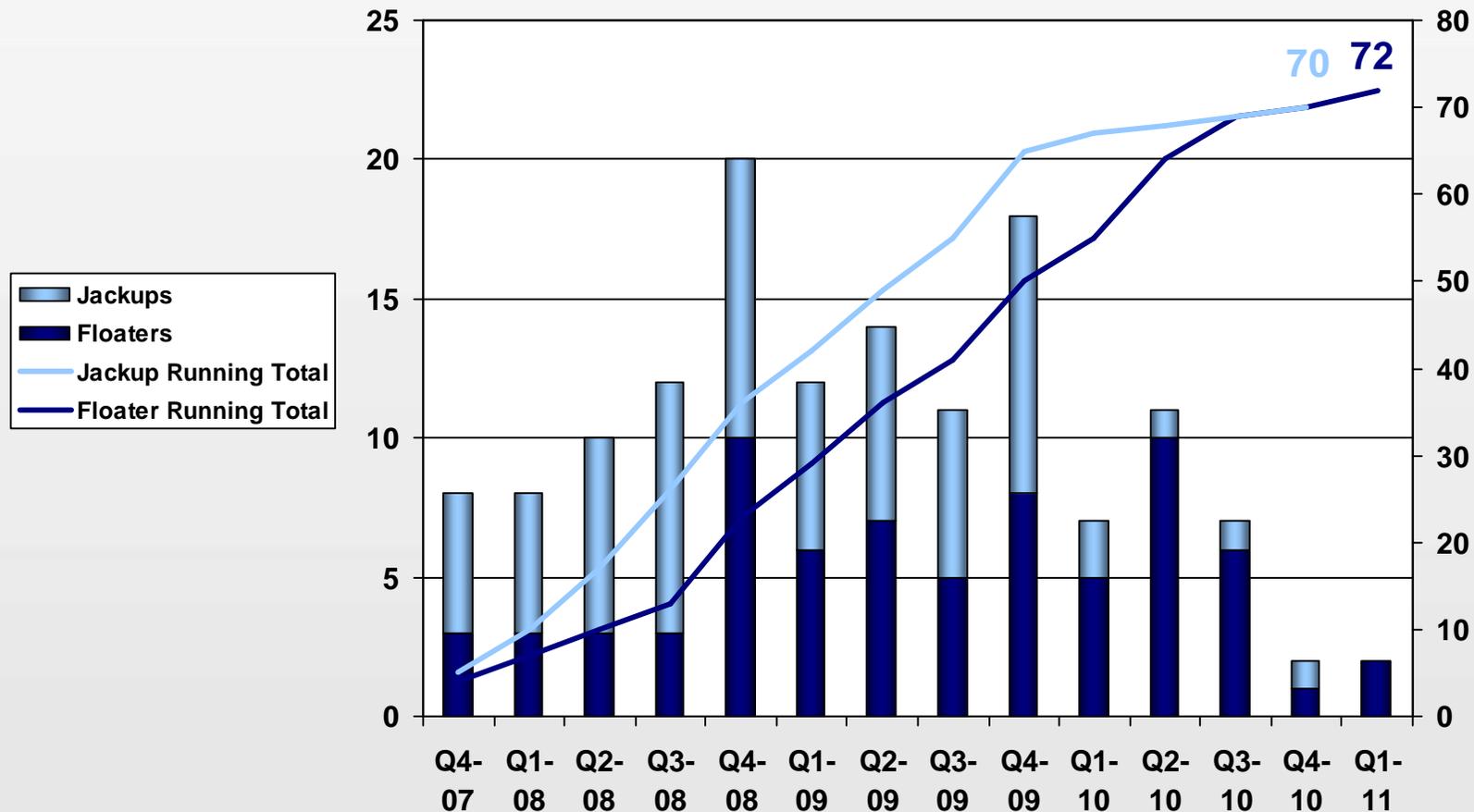
- ◆ Complexity and new systems require more active management.
- ◆ New people.
  - Trained, experienced, and competent personnel are necessary to ensure the management system controls are applied



# Newest Assets may even represent today greatest risk

Newbuilds continue to expand the fleet and stretch the available experienced resources ever thinner

## Newbuilds by Delivery Quarter



Source: Transocean analysis - effective October 1, 2007

## Greatest Challenge – Dilution of Experience

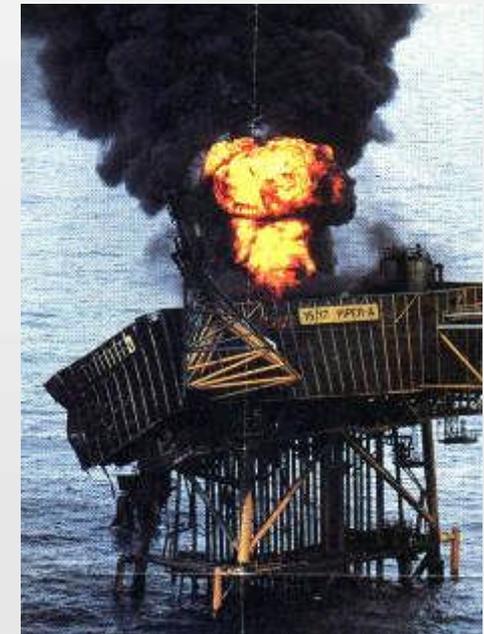
### ◆ Industry activity is booming

- Growing workforce
- Attrition due to retirement or leaving industry
- Cyclic nature of industry has created an experience gap



### ◆ Need to ensure new personnel do not repeat mistakes of the past

- Recent training seminar – only 3 of 30 participants had heard of Piper Alpha
- Need to effectively pass on the experience we have today



# **Asset integrity**      *The Drilling contractors challenges*

- ◆ An aging Modu fleet
- ◆ A “booming “ industry
- ◆ **Risks associated with third parties**

## Risks associated with third parties



- ◆ **Our installations interact with external sources of hazards**
  - Supply vessels
  - Helicopters
  - Diving vessels
  - Platforms
  - Stand-by vessels
  
- ◆ **Mutual assurance is needed among duty holders**
  - Oil companies
  - Drilling contractors
  - Sub-contractors
  - Vessel owners

## ***Focus on operation integrity***

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- ◆ **Safety vision**
  - ◆ **Operation integrity case**
  - ◆ **Management system & safety leadership**
-

# Focus on operation integrity

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## ◆ Our vision

**“Our operations will be conducted in an incident-free workplace – all the time, everywhere.”**

- Individual & **catastrophic** incidents

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## Focus on operation integrity

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- ◆ **We believe that major accidents can be prevented.**
  - **Major Accident Assessments conducted on every installation in the fleet.**
  - **Implemented a comprehensive management system fleet-wide, designed to prevent and mitigate incidents**
  
- ◆ **Contribution to the development of the IADC HSE Case Guidelines.**
  
- ◆ **Currently implementing Operation Integrity Cases**
  - **Based on the IADC Guidelines**
  - **Provides assurance that the management system controls are effective**

## Focus on operation integrity

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- ◆ **Safety leadership**
    - *Zero tolerance*
    - *Accountability*
    - *The obligation to stop an operation in case of doubt*
  
  - ◆ **Training & competency evaluation**
    - **Simulator training combined**
    - **Management of major emergencies**
    - **Safety leadership training & master classes**
  
  - ◆ **A new audit approach**
    - **PMAA**
-

## Simulating Offshore Operations



**Advanced Marine Simulator in Aberdeen**



**Instructor's Room**

- ◆ The facility combines marine and emergency response simulations with realistic marine-related causes and effects
- ◆ All OIM's and key supervisors / managers must pass Major Emergency Management (*MEM*) certification by successfully demonstrating MEM competence

# *Summary*

- ◆ **Maintaining asset integrity requires high equipment maintenance standards and effective audit schemes.**
  
- ◆ **There are many parties that affect the integrity of the operation at the work site:**
  - Each party has a role to play in reducing the risk of major accidents.
  
- ◆ **Without an effective implementation of the Duty Holder's Management System the risk of major accidents will not be reduced to an acceptable level.**
  - Robust management system
  - Constant management attention & leadership

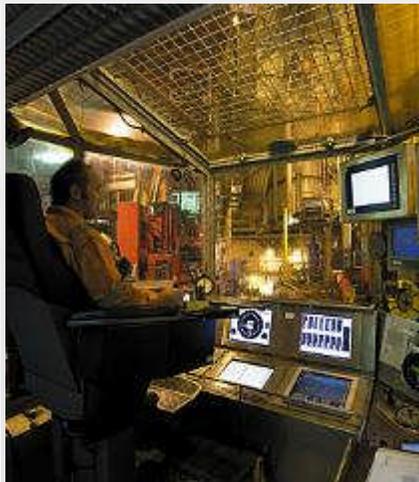
**“Safety is not an intellectual exercise to keep us in work. It is a matter of life and death. It is the sum of our contributions to safety management that determines whether the people we work with live or die.”**

- Brian Appleton, Technical Assessor to the public inquiry into Piper Alpha





Thank you



**December 6, 2007**

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