

SAFETY
& RISK
PRACTICE



Global Industry Local Risk

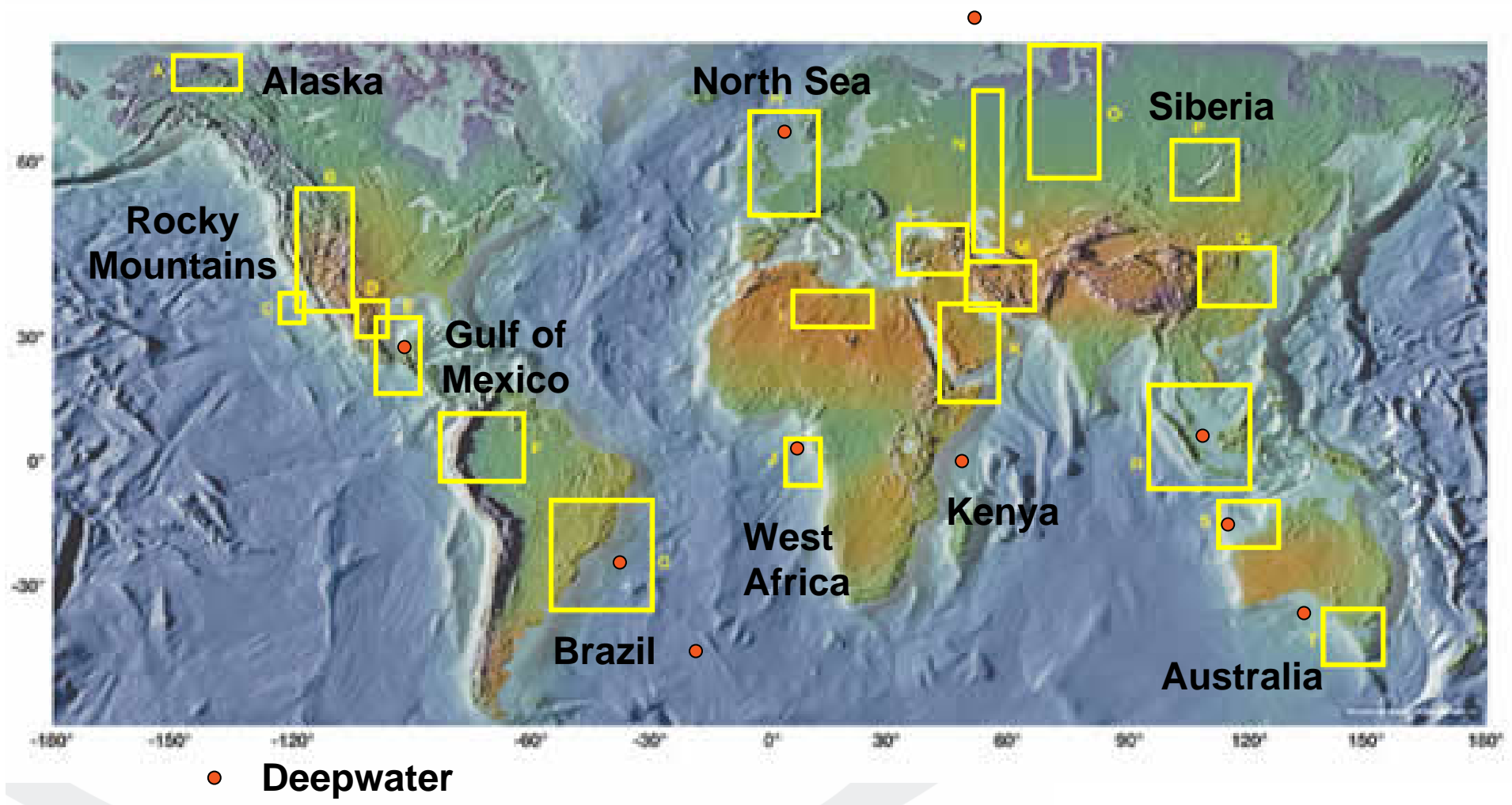
*IUMI Conference
Tokyo 2006*

Introduction

Present two partners in the Exploration Industry

- Oil Companies
- Drilling Contractors
- Technology –
 - new technology vs new uses of current technology
- Update on current events

Background Major Oil & Gas Fields



Oil Companies: What do they do?

Make the plan

- Conduct exploration – find the drilling sites
- Do the well design
- Site supervision
- Conduct emergency response
- Contract specialist service companies

Primary inputs are people & services, not equipment

Oil Companies: Outcomes 1/2

- Find new reserves
- Use new types of well designs
 - Underbalanced drilling / completions
 - Wells in deep water (2500 feet +)
 - High pressure / temperature / Ultra deep
- New types of reserves
 - Coal Seam Methane
 - Seabed Hydrates

Oil Companies: Outcomes *2/2*

- New types of energy
 - Geothermal
 - Windfarms (offshore / onshore)
 - Solar

Types of Wells

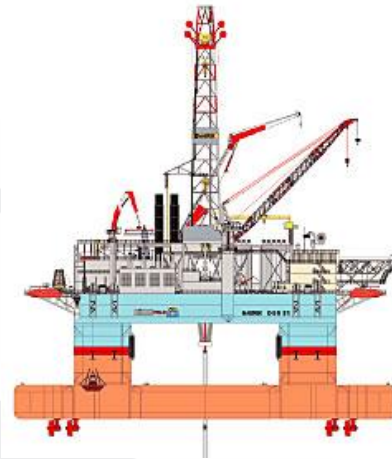
- Offshore
 - Vertical
 - Deviated
 - Horizontal
 - Under-Balanced – development wells
 - Onshore - As above plus
 - Geothermal
 - Coal seam/bed Methane
- Longer you are drilling
The higher your exposure

Drilling Contractors: What do they do?

- Supply the rig & equipment
- Personnel
- Conduct operations – follow the Operator's plan
- Provide specialist people & equipment
- Very basic to highly sophisticated

Types of Rigs: Offshore

- Jack UP
- Semi-submersible
- Drillship



New Rigs

MODU's Under Construction by Delivery Date				
	Jack Ups	Semi-submersibles	Ships	Total
2006	9	1		10
2007	18	1	1	20
2008	12	5		17
Total	39	7	1	47

MODU's Under Construction with no Drilling Contract				
	Jack Ups	Semi-submersibles	Ships	Total
Total	33	6	1	40

Pause before the roller coaster

- [SurpriseParty.wmv](#)



Oil Company Current Events

- Offshore: More areas, deeper water, bigger technology
- Onshore:
 - Test bed for new technology
 - Current – Drilling with Casing
 - Drilling as fast as possible
- Reserve Types which are expanding:
 - Ultra deep reserves – deep water offshore
- Trying to hire people as fast as possible
- Spending lots of money fast

Operator Driven Technology

With offshore rig rates between \$150,000 and \$500,000
\$104 to \$347 / minute

Focus on:

- Saving time
- Adding to reserves
- Faster rates of production

If an Engineer saves 3 minutes a day he pays his day rate.

If he saves 1 hour of rig time he pays for 1 month's salary

Examples

- Drilling with casing
- Surface BOPs on a semi submersible
- Multi purpose offshore rigs – dual activity derricks

Drill Contractor Current Events

What's Happening:

- High day rates
- Expanding rig supply
- Growth in all regions

Which means:

- Newer equipment
- Rigs with higher specifications
- Hiring people as fast as possible
- Old rigs are still in service / brought into service

Rig Technology

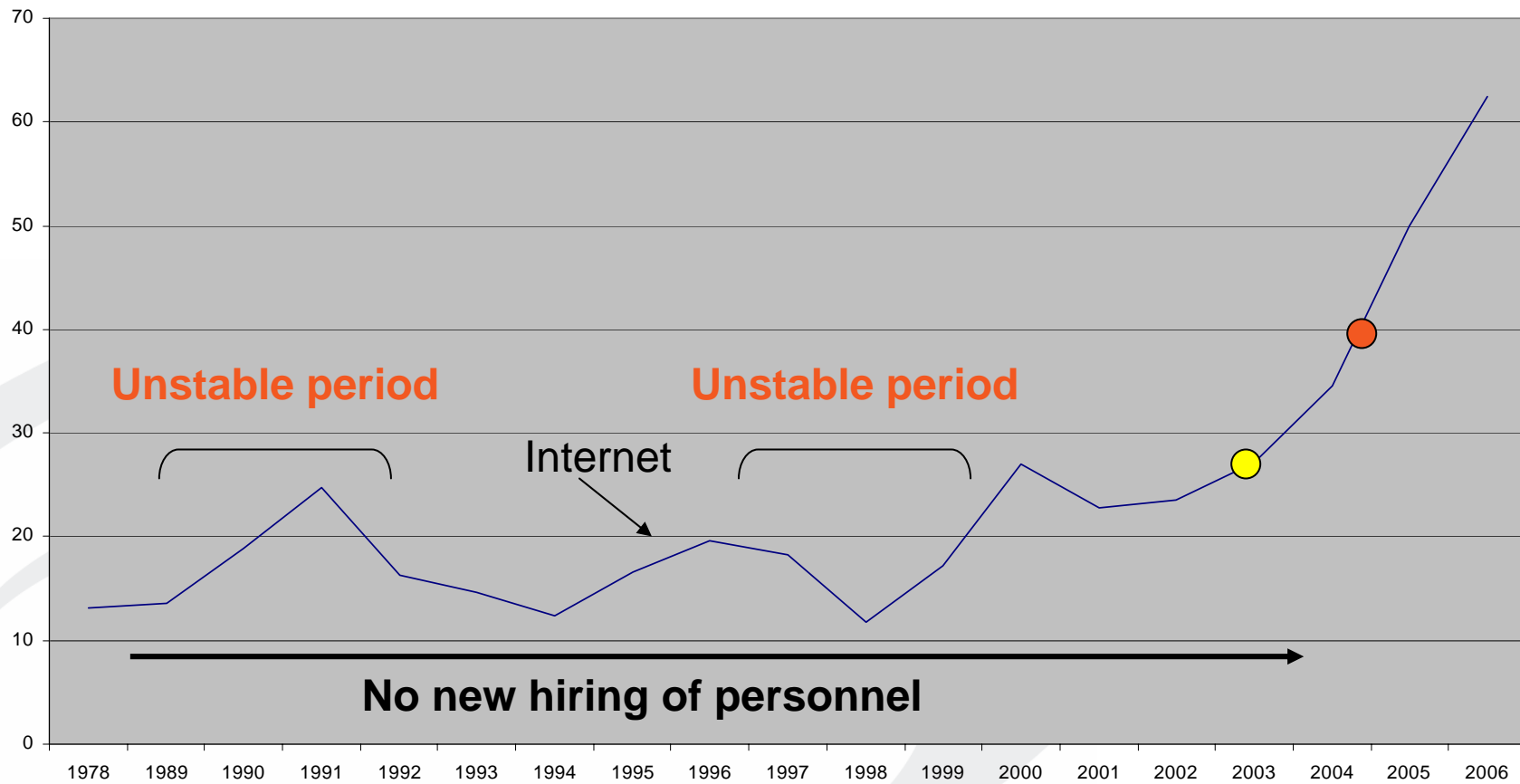
- Bigger, better for deeper wells
 - Blowout prevention
 - Dual activity derricks
 - Automated drillfloor equipment

Last revolutionary technology was the Varco Top Drive in 1982

Two things in common

- Operators
 - Trying to hire people as fast as possible
- Drilling Contractors
 - Hiring people as fast as possible

World Oil Prices



When Things Go Wrong

- Older rigs
 - New Rigs – Drillships
 - Coal Seam Methane
- 

When Things Go Wrong

Notification of order after chain deployment



- Deficient maintenance of anchor winches so that they cannot perform their intended function.
- Deficient knowledge of controlling documents for use of anchor winches.
- Deficient documentation of maintenance of anchor winches.

When Things Go Wrong

New Rigs – Drillships dropping BOPs

Between 1999 and 2001 a number of Drillships were built.

There were two BOP stacks dropped during their first wells.

Drive off occurrences by software bugs were a frequent event.

When Things Go Wrong

- Coal seam methane has gotten into water aquifers in Alberta
- The regulator is starting to examine the impact of the whole industry.



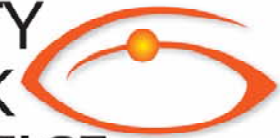
Fire water

Completing the story

What will happen in the future?

- More new rigs on the market which will start to depress rig rates
- Demand for personnel will continue meaning more inexperienced people
- Continued push to develop reserves as quickly as possible
- Strong oil prices for 3 more years

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Thank You

