

General insurance pricing seminar
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Offshore Energy

Black Swan events or just white covered in oil?

21 June 2011

What is upstream energy?

Exploration

- Seismic



- Exploration drilling



Development

- Development drilling
- Field development



Production

- Production facilities



- Transportation



- Drilling/workover

Abandonment

- Facilities removal
- Well abandonment

Upstream energy coverages

Covered

- Construction All Risks
- Property damage
- Removal of wreck
- Sue and labour
- Business interruption
- Loss of production or loss of hire
- Well related expenses:
 - Control of well
 - Redrill
 - Pollution clean up / liability
- Collision liability

Not Covered

- Geological risk
- Technology risk
- Commodity Price
- Regulatory risk
- Political risk

Industry features

Oil Industry Characteristics

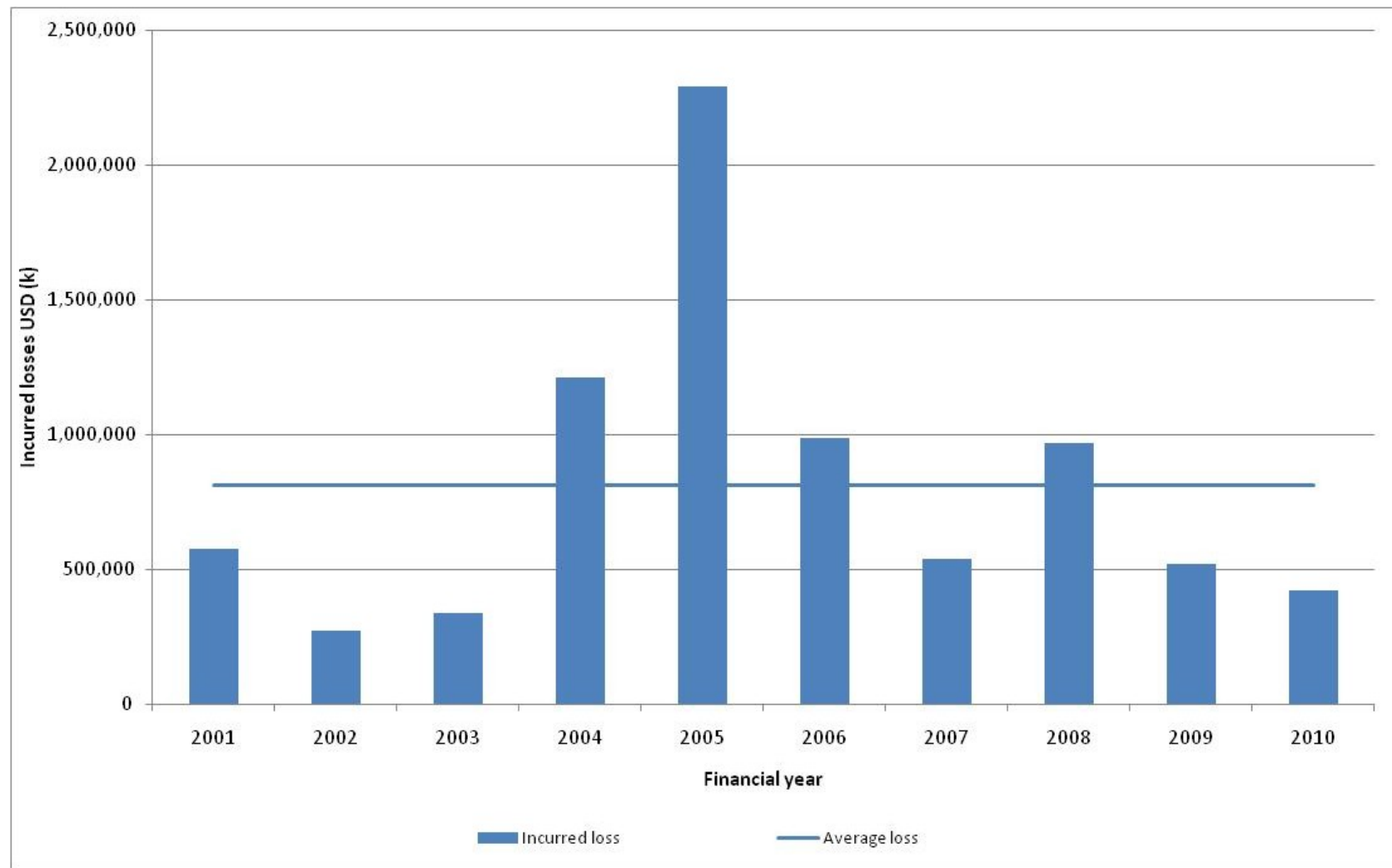
- Technology
- New frontiers
- Price Volatility
 - Commodity
 - Resource availability
- High impact
 - Upside / downside
- Cat exposure
- Asset life
- Jurisdictions / regulations
- 'Coal face' with nature



Impact for Insurers

- Limited risk population
- Large vertical exposures
- Unpredictability
- Claims inflationary effects

Oil Insurance Limited incurred losses

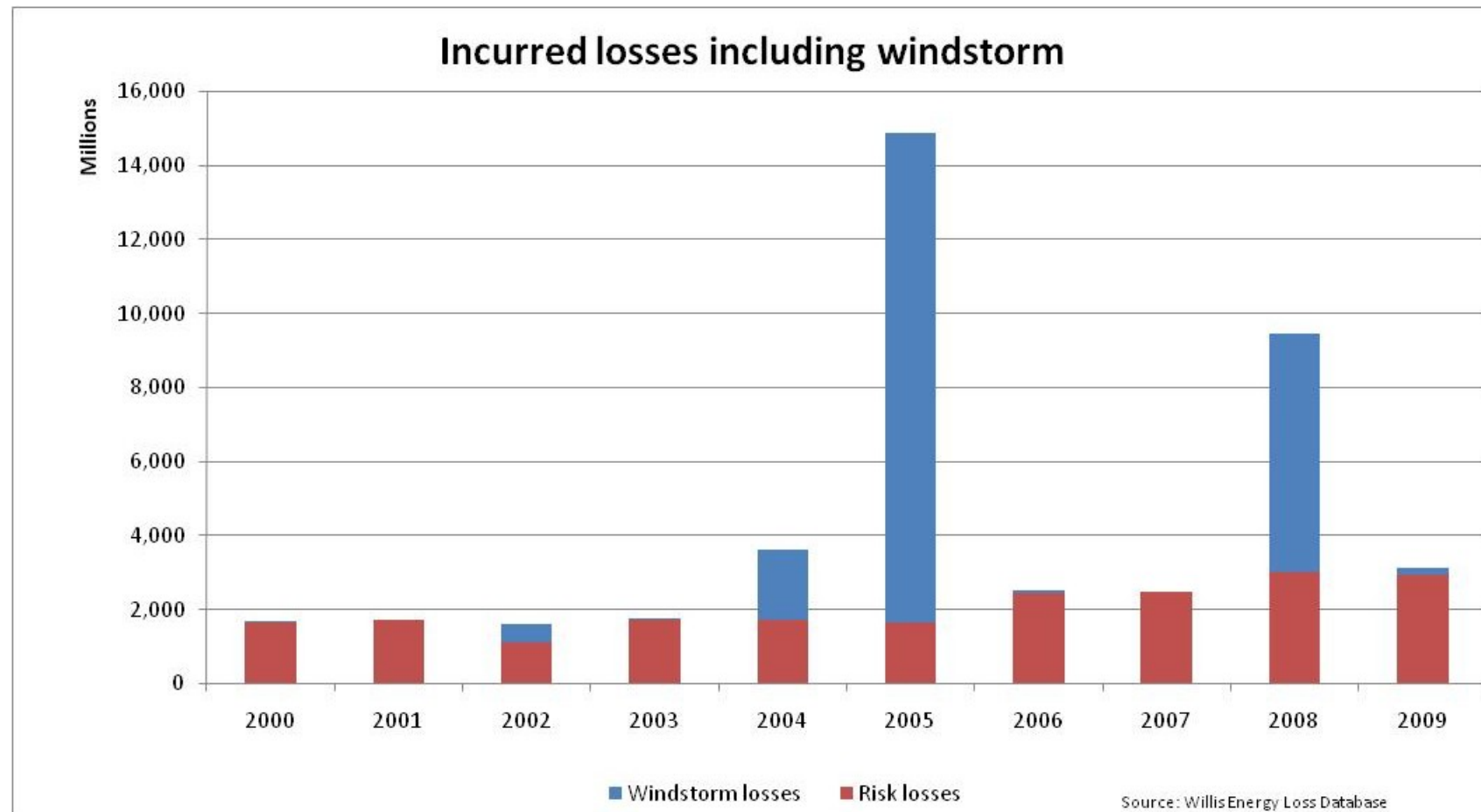


1988 - Piper Alpha Disaster

Oil: \$15 per barrel



Industry losses – high volatility

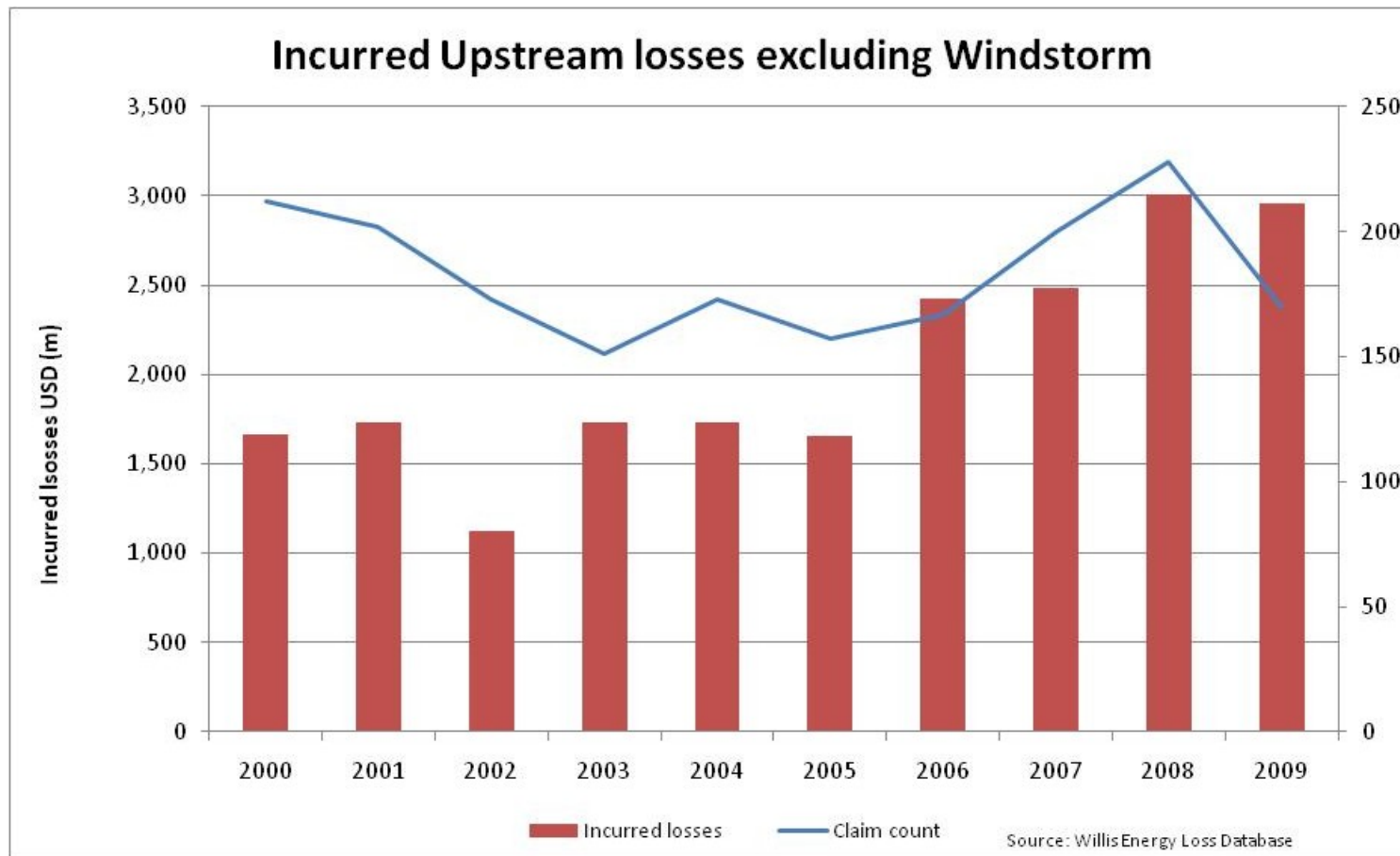


1995 - Brent Spar high profile abandonment



Oil:
\$17

Frequency fairly stable, incurred claims increasing

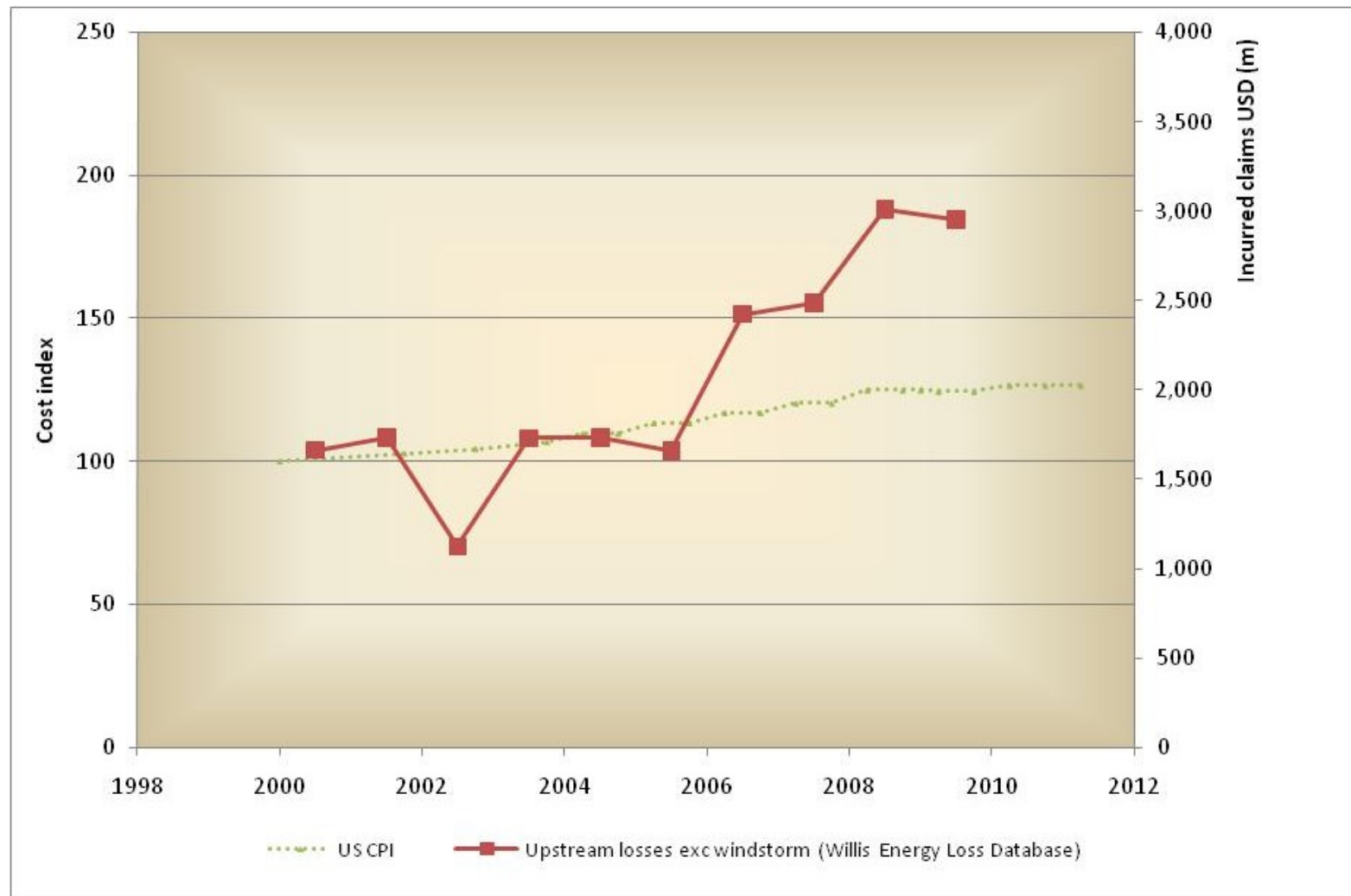


1996 - Largest ever object moved (Troll Platform)

Oil: \$21



Industry losses rising faster than CPI



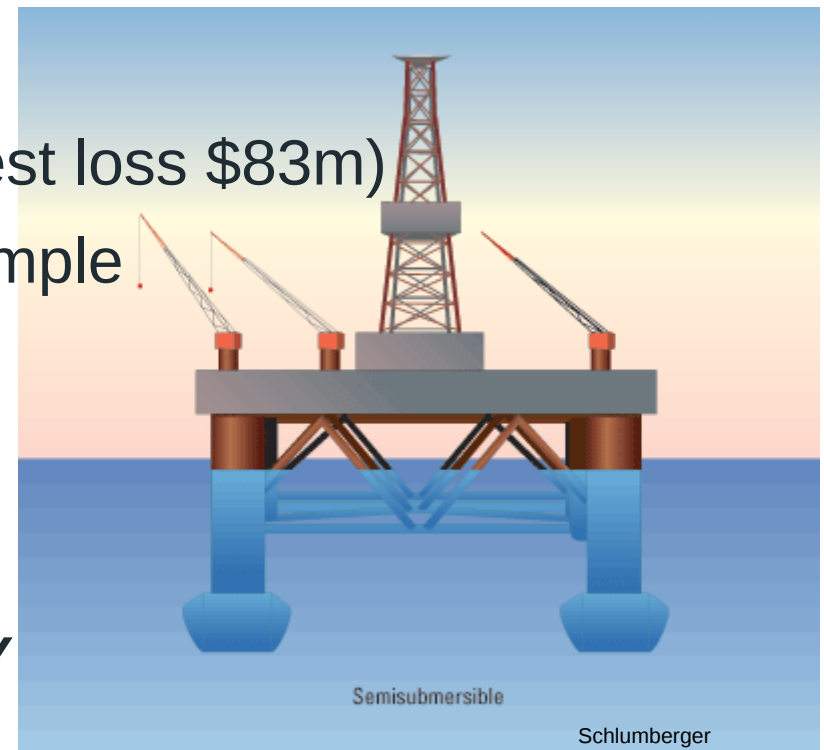
2003 - First well drilled in 10,000 feet of water



Modelling losses – case study

- Semi-submersible units
- Roughly 300 in global fleet
- Typical values USD 150m – 750m
- 10 years of data used 2000-09 (largest loss \$83m)
- No IBNR or inflation used in this example
- Excludes Hurricane losses

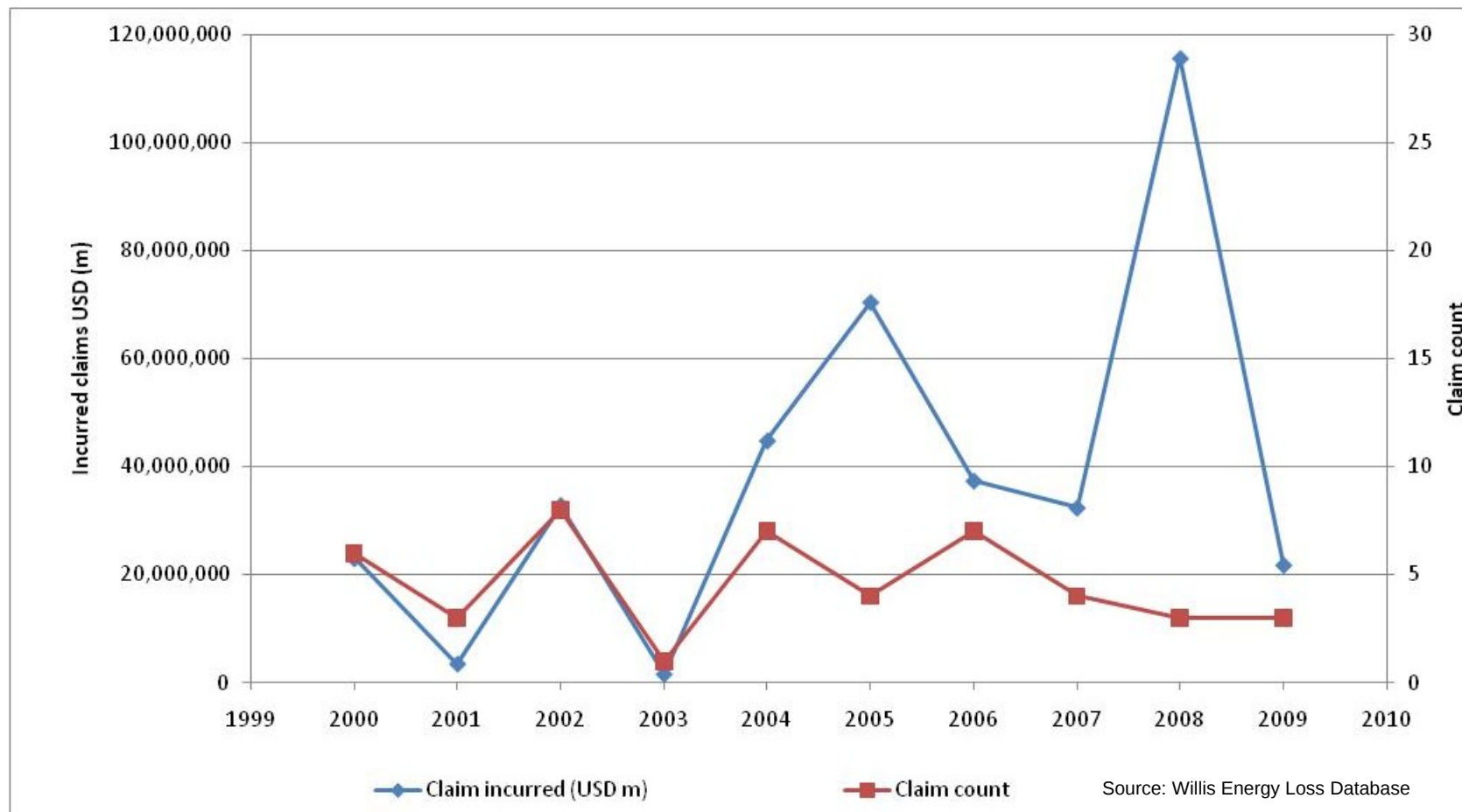
• FOR ILLUSTRATION ONLY



2004 - Magnolia ETLP is World's deepest TLP



10 year industry loss record for Semi-submersibles



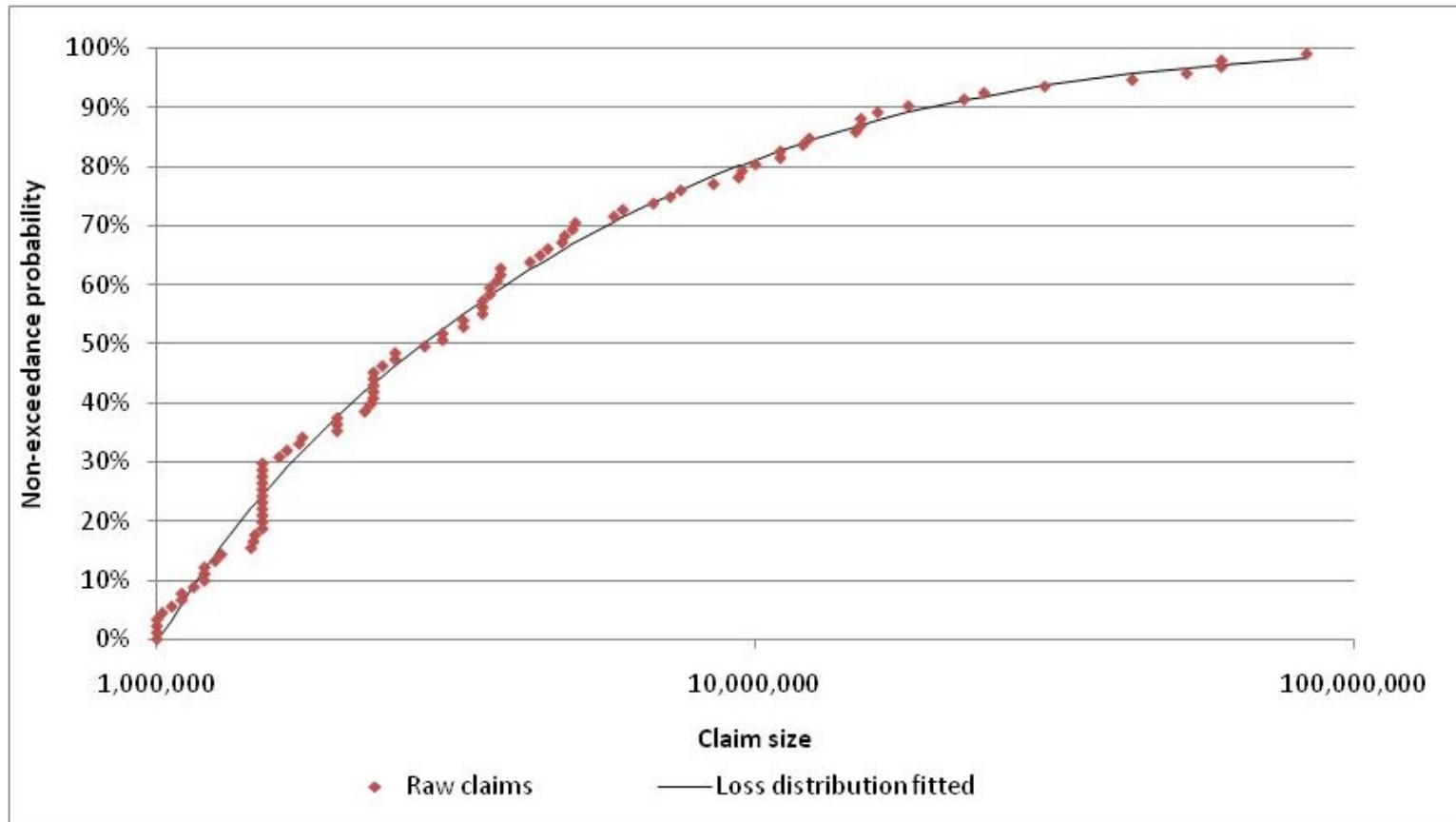
2005 - Hurricanes (Katrina & Rita)



Oil: \$55



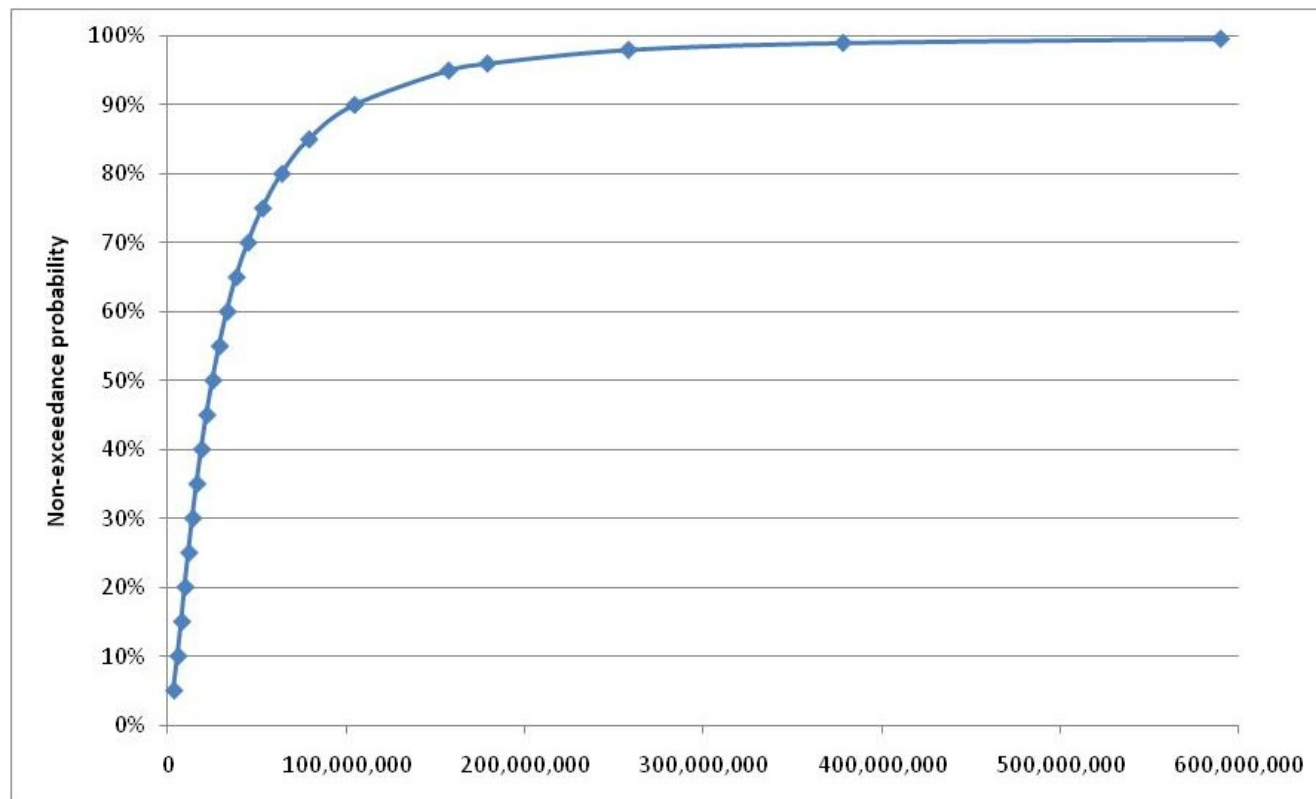
Severity distribution fitted to claims



• Source: Willis Energy Loss Database

Aggregate annual losses modelled

- 1 in 250 year loss modelled at \$580m
- 1 in 10 year loss modelled at \$105m

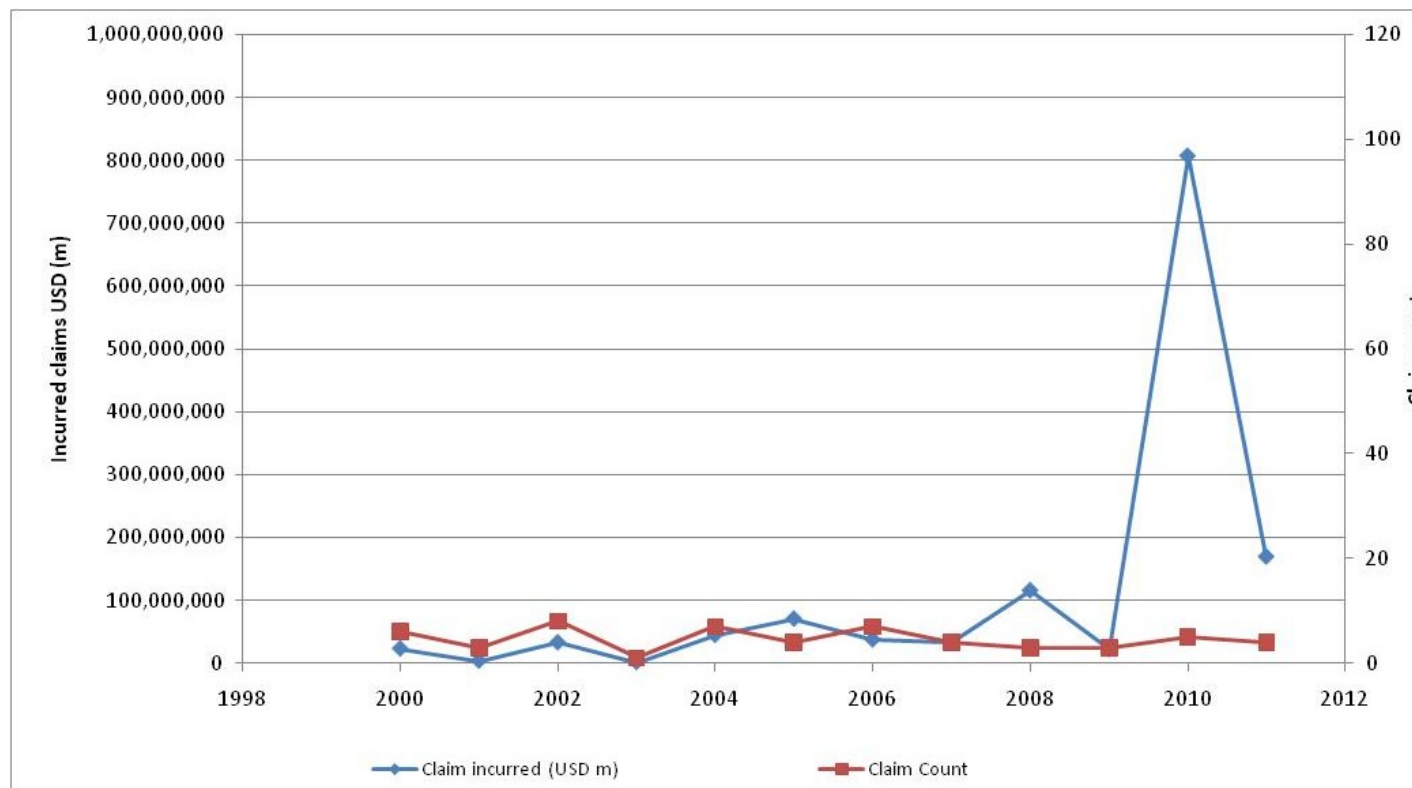


And then...



How does model perform for 2010 and 2011?

- 2010 accident year is 1 in 500 year event
- 2011 is 1 in 20 return period already



2008 - Deepest extended reach well drilled (12,298m)



Oil: \$97

Lessons from case study

- 10 year loss record didn't include a total loss of a unit
- Need to adjust experience for potential extreme losses
- Estimate of volatility should include exposure rather than just historic losses

2009 - BW Peace sets new record for offshore production (2,500m water depth)



Oil: \$62

Extreme event modelling

- Look at potential exposures to events
- One event can wipe out many years of profit
- Clash events such as loss of platform and drilling rig
- Insured exposures in excess of USD 3.5bn

2010 - Macondo blowout



Oil: \$80

Summary

- Rapidly changing industry
 - The ‘pioneering spirit’
- Scope to use actuarial techniques
 - But qualitative judgement needed
- Exposure to extreme events
 - Reliance on historic data is insufficient

Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

The views expressed in this presentation are those of the presenter.

