

***Outlook 2004:
Easy Questions...
Hard Answers***

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2004's Debut Sets A Different Tone

- Oil prices are far higher than expected.
- Natural gas prices are even higher.
- Some drilling areas are strong, others weak.
- U.S. (and OECD) oil inventories are low.
- Gas storage “seems okay”.
- Non-OPEC oil (excluding Russia) has been flat.
- Proven reserves are possibly not proven.

Other 2004 “Oddities” Add Further Confusion

- Tanker rates (VLCC, Aframax, Panamax) have “soared”.
 - Last 8 weeks = key areas have jumped 8 to 11 fold.
- U.S. crude inventories 3% below “minimal operating levels”.
- While gas storage seems okay,
 - New York cash prices hit \$76/mcf last week.
 - Northeast prices were \$11 to \$20 yesterday.

How Do All These “Dots Square”?

- What prices should oil and natural gas sell for?
- Is demand fickle or predictable?
- Does supply actually respond to high prices?
- How much spare capacity is left in rig fleet?
- Have certain key regions now been “drilled up”?

10-Year Historical Prices

Henry Hub And WTI Spot To Present



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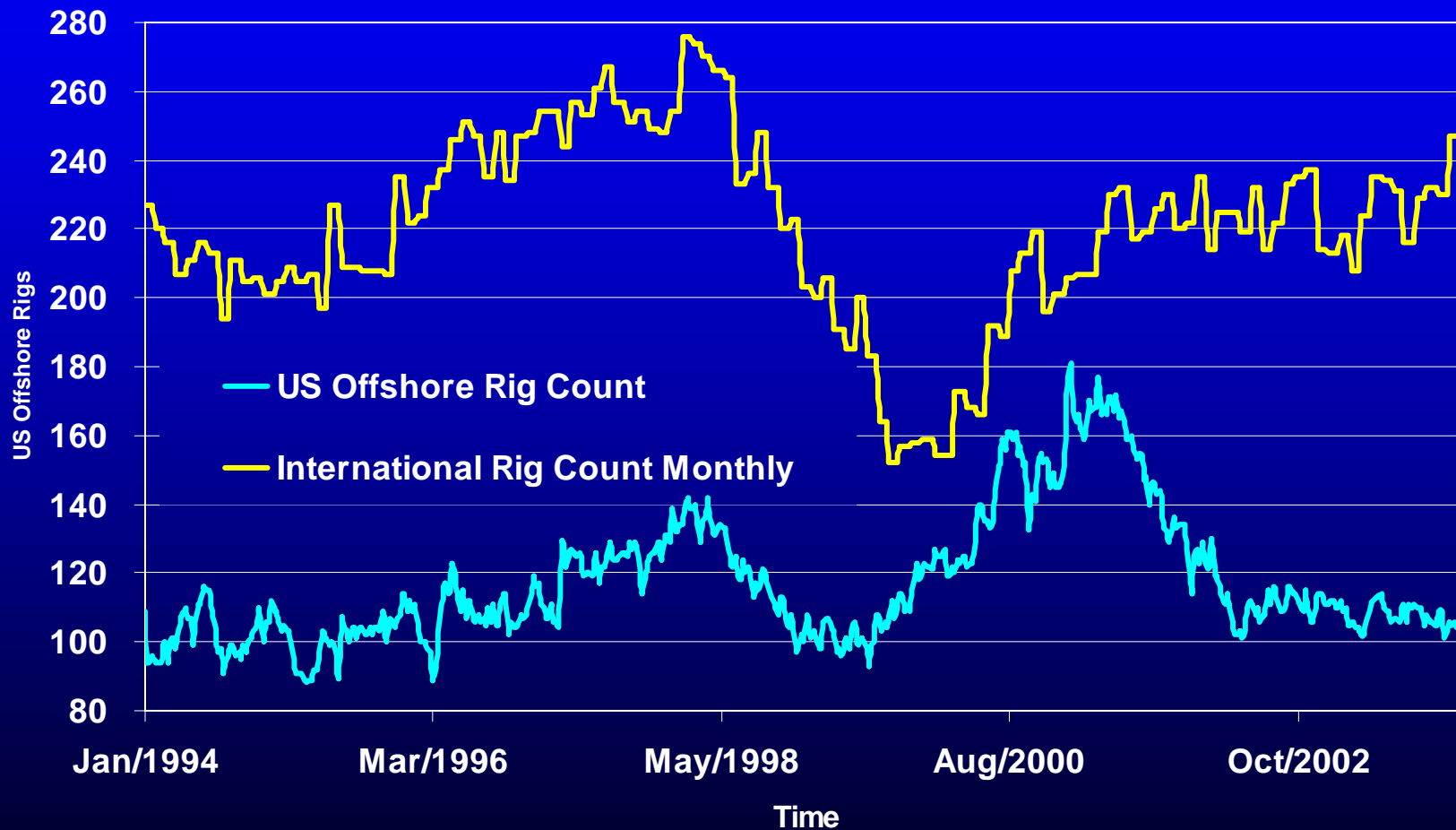
6-Month Historical Prices

Henry Hub And WTI Spot To Present



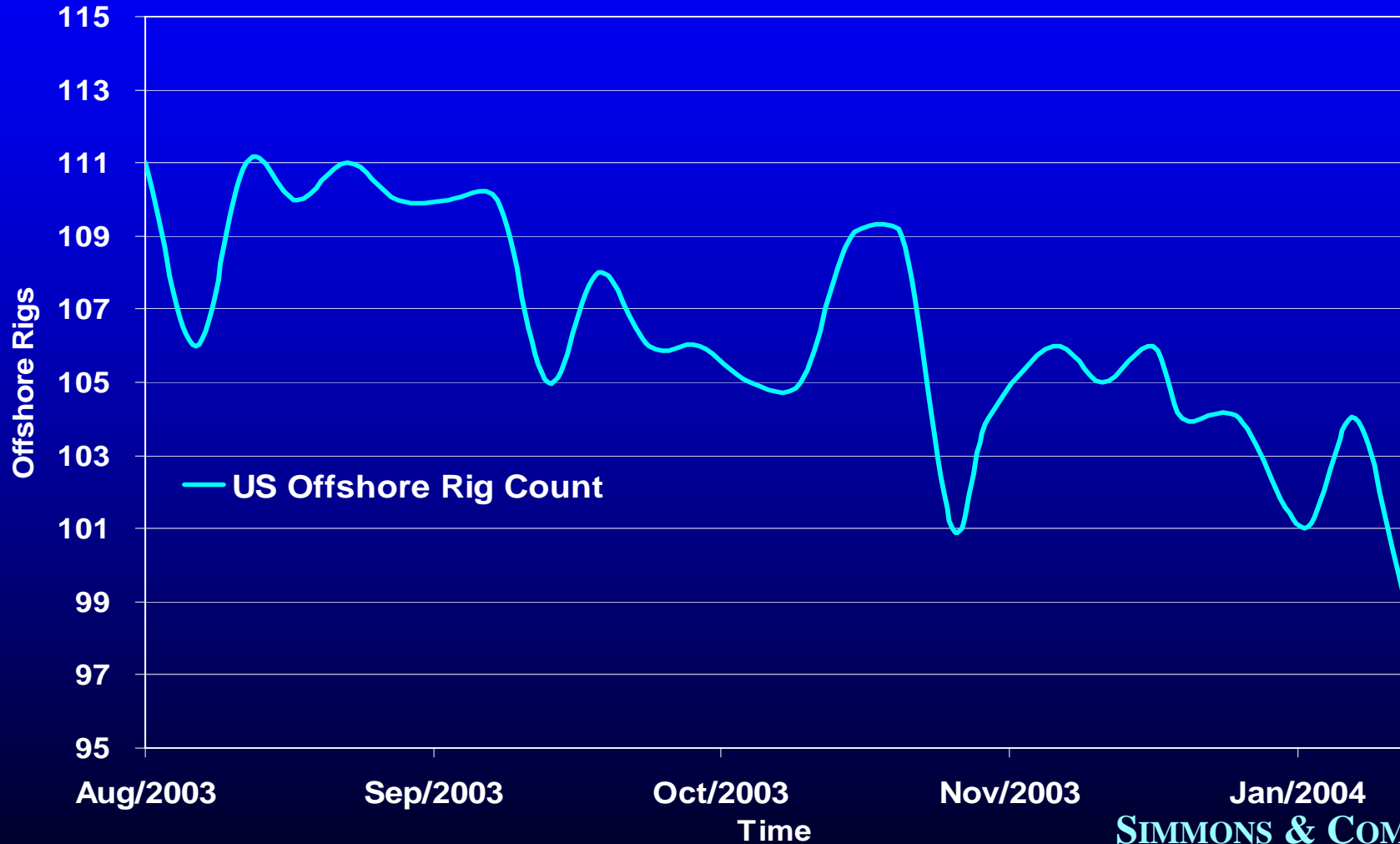
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10-Year Historical U.S. And International Offshore Rig Count



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6-Month Historical U.S. Offshore Rig Count



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The Data Is Puzzling

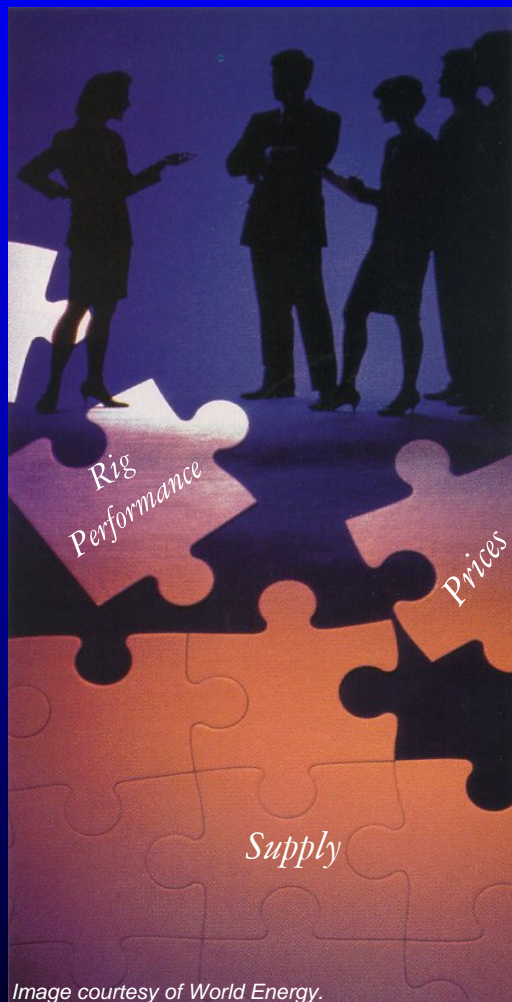


Image courtesy of World Energy.

- Prices are puzzling.
- Rig performance is puzzling.
- Has price now become a “one-way street”?
 - Price collapse hurts new drilling and supply.
 - Perhaps price rise no longer increases supply.
 - These dynamics “end the commodity cycle”.

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The Key Questions For 2004

- How does the U.S. gas market “regroup”?
- How do oil stocks get rebuilt?
- How secure is the world’s (or just North America’s) oil and gas resource base?
- How much do we know about future demand and supply?

Natural Gas Markets Face Steep Challenges

- Inherent U.S. gas demand needs to grow by 35% to 50%.
- North American natural gas supply is likely now in decline.
- Gas users are resilient to high prices.
 - Residential and commercial: Have to get gas.
 - Power generation: Gas is the only way to expand electrical use.
 - “Net industrial users”: Remaining core, hard to displace.
 - Pipeline/plant: First user
- If supply cannot grow, how does this sort out?

All
Demand
Gas

Are Low Oil Stocks Reason For Alarm?

- U.S. oil stocks at 30-year lows.
- U.S. oil demand at all-time high.
- Minimum operating levels are important.
- The system now has zero tolerance.
- Can these low stocks get rebuilt?
- OECD total stocks not much better.



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Shell's Proven Reserve Write-down Was Important

- When Shell reclassified 20% of its proven reserves, was this “business as usual” or an important tremor?
- The whole industry added 5 to 10 times more proven reserves than its production growth.
- Was E&P “technology” the panacea everyone thought?
- Or did it make the E&P game far more difficult?
- Are BIG reserve write-downs ahead?
- Does it matter?

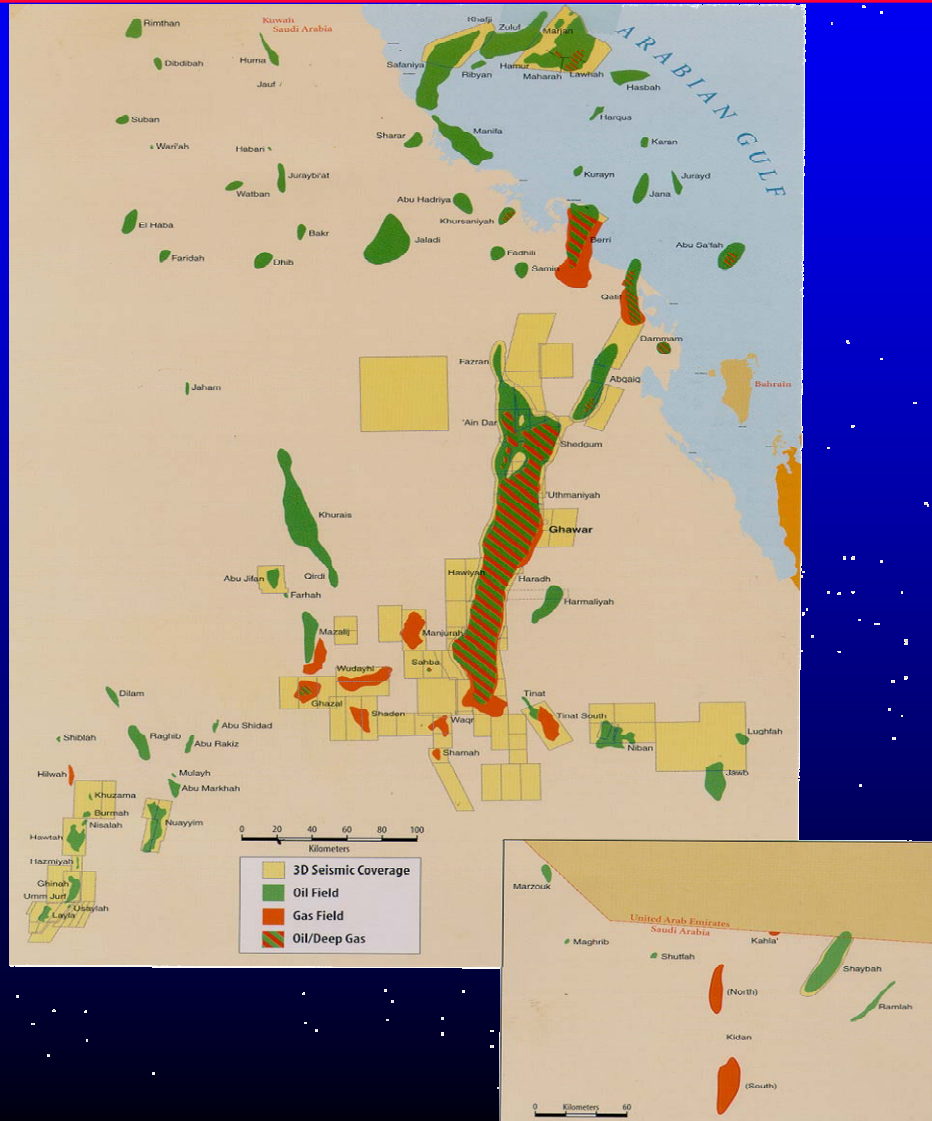
Is The System Stretched Too Hard?

- A high percent of the global energy system now at effective peak capacity.
- The majority of the energy “system” is also very old.
- Can demand really grow as it needs to?
- Are we now facing genuine “limits to growth”?

The Resource Base Is Ultimate Question

- Non-OPEC supply is tenuous.
- Declining production base is offsetting most new growth.
- FSU supply growth is primarily “oil left behind”.
- The Middle East seems to hold “all the cards”.
- How safe is Middle East resource base?

My Saudi Arabian Research Project



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Preliminary Conclusions

- Almost all current production comes from six old fields.
- Most have maintained steady reservoir pressure through water drive/water injection.
- Once this program ends, all fields face risk of steep decline.
- Few other discovered fields have certain promise.
- Intense exploration found few other fields.
- Predicting Saudi Arabia's energy future is more confusing/uncertain than most think.

The World Faces Serious Energy Challenges

- Low prices lulled people into massive energy complacency.
- Low prices created awful financial returns.
- Low prices prevented any serious energy R&D.
- Low prices encouraged energy use.
- This era needs to end.
- It probably has.
- Was the ending too late?

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