



# Tough Energy Era Ahead

Society Of Independent Professional Earth Scientists

February 16, 2006  
Houston, Texas

by  
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# Optimists Think Current Era Is An Aberration

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- High oil and gas prices are starting to kill demand.
- New supplies will soon flow faster.
- Rig shortage will be overwhelmed by new rig glut.
- Non-Conventional energy now works and is abundant.
- Technology advances will create cheap new supply.
- Resources are easy to turn into reserves.

# The Core Optimistic Creed

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- Oil and gas fields appreciate in size over time.
- Technology is starting to recover great amounts of oil-in-place.
- Technology advances reduce number of wells.
- New technologies are “around the corner.”

# “Peak Oil” Alarmists Are “Doom Sayers”

- “Pessimists,” “Nay sayers” and “Doom sayers” are worried.
- Growing number of analysts and scientists believe oil is peaking.
- Its timing, is their debate
- Most peak oil analysts use Hubbert’s 50% gone thesis.
- Reserve data is “fuzzy.”
- “Peak Oil” advocates growing in size.
- Media covering peak oil topic intensifying.
- Peak natural gas just emerging as problem.

## ‘The West is deluded to rely on Saudi oil’

Matthew Simmons doesn't look like a contrarian. He comes across as what he is: an oil-industry magnate. Over the past 30 years, the Texas-based investment bank he founded – Simmons & Co International – has guided countless blue-chip clients through oil deals worth \$60bn (£23bn), writes Liam Halligan.

Despite these credentials, Simmons holds controversial views that pit him against almost the entire Western oil establishment. In his London offices last week, he told me he is “deeply concerned” that Saudi Arabia’s oil will run out.

“For decades, Saudi has been the most important producer on earth,” he says. “They have been the only country able to pump extra crude when the West needs it, and everyone just assumes that spare capacity will last.”

With oil prices above \$50 a barrel, having risen by 80 per cent this year, the West is indeed relying on yet more Saudi crude. “This is delusion,” says Simmons. “Saudi oil output may soon start declining – imminently, in my view, in the next six to 36 months.”

Simmons’ warning is based on “a very close study of hundreds of technical reports” produced by the Desert Kingdom’s own engineers. Saudi’s oil capacity is “dangerously concentrated,” he says. “Six fields have yielded 85 per cent of all Saudi oil ever produced, with a single field – Ghawar – pumping 60 per cent. But the Saudis have pushed these fields hard. And when you push big fields, reservoir pressures fall.”

His analysis, if correct, is scary. It would exert severe

upward pressure on already sky-high oil prices – with devastating implications for financial markets and economic growth worldwide.

“But the conventional wisdom,” Simmons says, “that we can rely on Saudi oil indefinitely is driven only by ‘group-think’ and vested interests.”

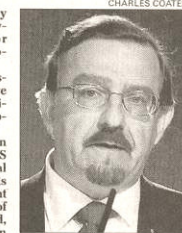
The Energy Information Administration, part of the US government, forecasts global oil demand of 120m barrels daily by 2025 – up 50 per cent on the current consumption of 80m. Over the same period, the EIA says, Saudi production will rise from 9m bpd to 22m. Put simply, in 20 years’ time the world will rely on Saudi for 19 per cent of all oil production – a dramatic increase on the country’s current 11 per cent share.

Having served on vice president Dick Cheney’s energy task force, Simmons knows these forecasts well. “The EIA numbers are the global economy’s energy roadmap,” he says. “But while their demand estimates are real, they basically invent the future production numbers as they go along.”

So what of US government claims that Saudi will pump 22m bpd in 2025? “If, by some miracle, they find some huge fields that have defied discovery for 50 years,” Simmons says, “it might happen. Then again, I could be living on the moon in 2025.”

“I would say the probability of me living on the moon is higher than Saudi reaching 22m barrels.”

Officially, the Saudis dismiss Simmons’ analysis. “Matt is talking rubbish,” oil minister Ali Al-Naimi has said. So when I went from Sim-



Al-Husseini: forecast concerns

mons’ office to meet Sadad Al-Husseini, I expected him to trot out the same line.

After all, until March, Al-Husseini was head of exploration and production at Aramco, the state-owned oil monolith which accounts for 97 per cent of Saudi’s crude output. Yet, astonishingly, Al-Husseini lent some credence to Simmons’ views.

“The question isn’t ‘can we pump 15m or 20m barrels daily?’” he says. “The question is, how long it can be sustained? We could only manage 22m bpd for a very short time – maybe 10 years. And that would mean an awful lot of depletion, which isn’t in the best interests of the global economy.”

What does Al-Husseini make of US estimates of future Saudi production? “These are US numbers, not ours,” he says. “The American production outlook is much too high.”

When I ask Al-Husseini where the EIA is going wrong, he echoes Simmons: “The EIA focuses only on demand. That

is why they overestimate not only future Middle East supplies but non-Opec and Russian supplies too.”

We agree the production outlook for the Middle East as a whole – which the EIA predicts will almost double, from 21m bpd today to 40m in 2025 – depends crucially on Iraq.

“The country does have substantial reserves,” says Al-Husseini. “But after years of neglect, it will take a long time for Iraq’s oil infrastructure to make a significant contribution to global supplies.” How long? “I doubt they can exceed 3m barrels a day by the end of this decade.”

Al-Husseini refutes Simmons’ claims that the Saudis have partly squandered capacity by pumping too quickly in the past. “The Kingdom’s oil is managed in a highly professional manner,” he says. “But Simmons’ concerns over US output forecasts are legitimate concerns.”

Where do these two very different oilmen think prices are going next? Simmons thinks prices are unlikely to ease. “This winter, global demand will considerably exceed supply,” he says. “So it is inconceivable prices could fall by much.”

Again, Al-Husseini’s view is similar. “I suspect prices around \$50 will be with us for a while,” he says. And then he issues his own Saudi-related warning. “The excess capacity is no longer there. That will mean more of the volatility and price surges. And the financial markets have yet to wake up to that.”

● Liam Halligan is Economics Correspondent at Channel 4 News

Source: The Sunday Telegraph, ‘The West Is Deluded To Rely On Saudi Oil’, October 31, 2004

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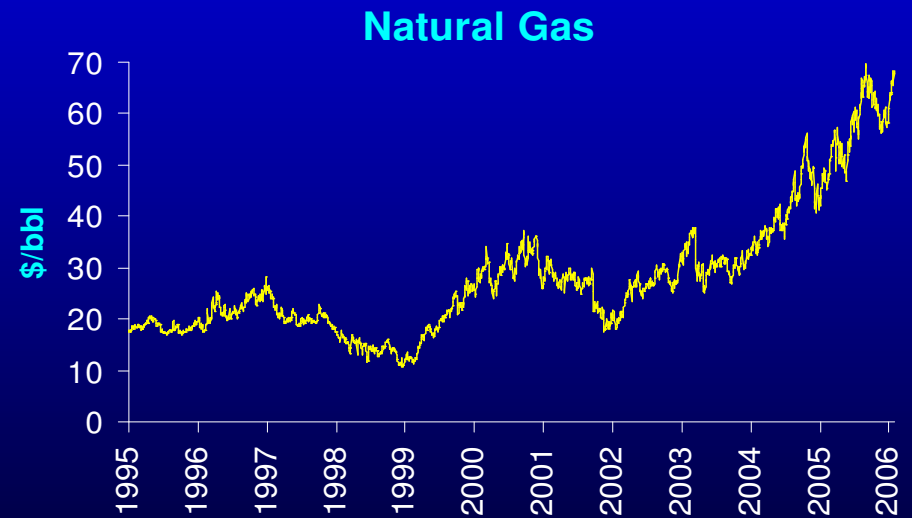
# The Core Issues Need Better Analysis

- Do proven reserves appreciate?
- Does appreciation forestall peak production?
- Does technology postpone peaking?
- Does technology accelerate when peaking occurs?
- Did most advances merely “manage the tail?”
- Did industry overbook reserves by drilling too few wells?
- If problem is real, price signals will work.



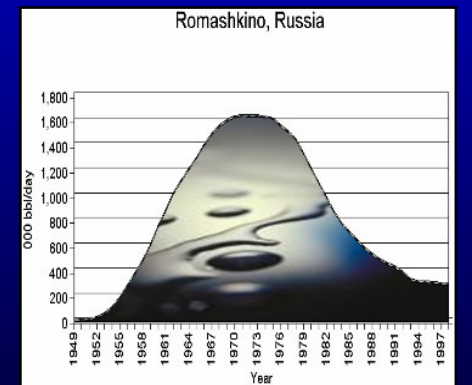
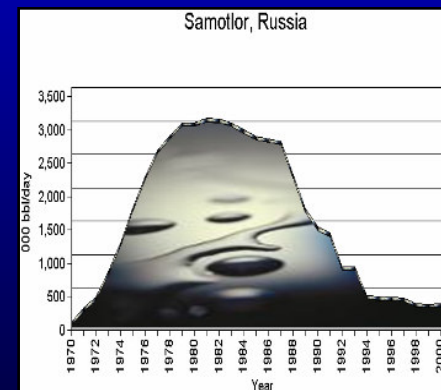
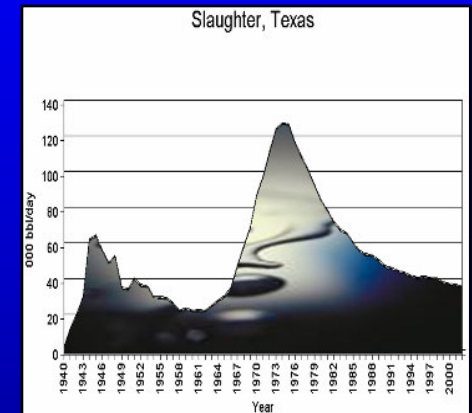
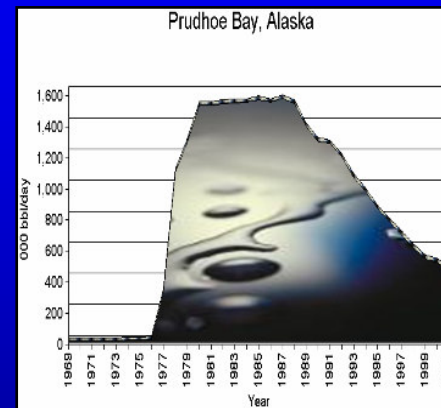
# High Price Volatility Destroyed Price Signals

- Long-term oil and gas prices grew.
- Too many pundits thought “high prices” were aberrations.
- Many energy experts bet their reputations that energy prices would “soon fall to normal levels.”



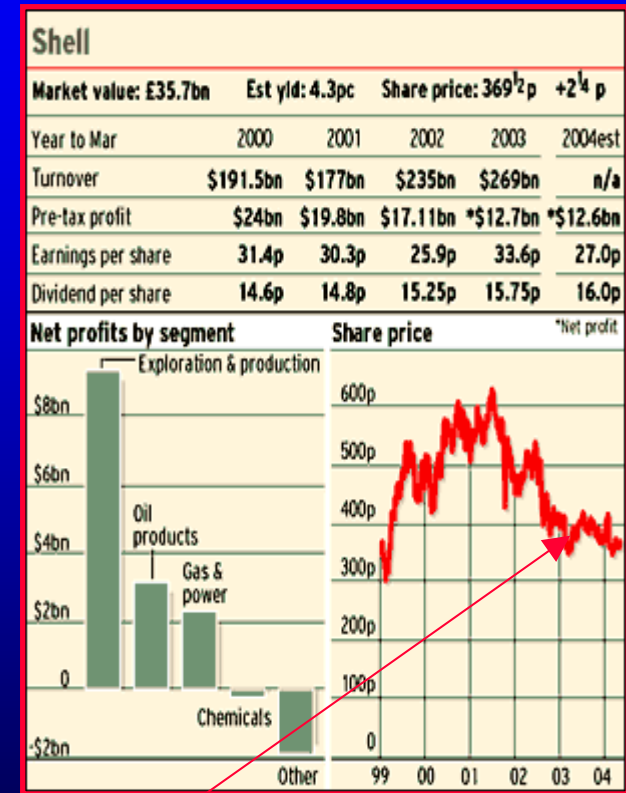
# Real Case Studies Abound, But Hard To Find

- UK North Sea field-by-field data.
- Peaking of USA's oil and natural gas.
- Classic case by case field studies:
  - Alaska's Endicott field
  - 1976 Brazilian offshore field \$180 million water project
  - Oman's Yibal field
  - Canada's Redwater field
- New field disaster stories abound.
  - Sable Island
  - Leadon field
  - Etc. etc.



# Could Sizable Proven Reserves Be Illusory?

- Shell, Repsol, El Paso, etc, etc. all found answer.
- Last 15 years, 85% of US proven reserve gains came through appreciation.
- Are OPEC's "paper barrels" real?
- Are tar and oil sands just like conventional oil?
- "A barrel" is not always "a barrel":
  - Energy intensity to convert to use
  - Hydrocarbon quality
  - Productivity index differentials
  - API gravity



Big mistakes happen without data transparency!

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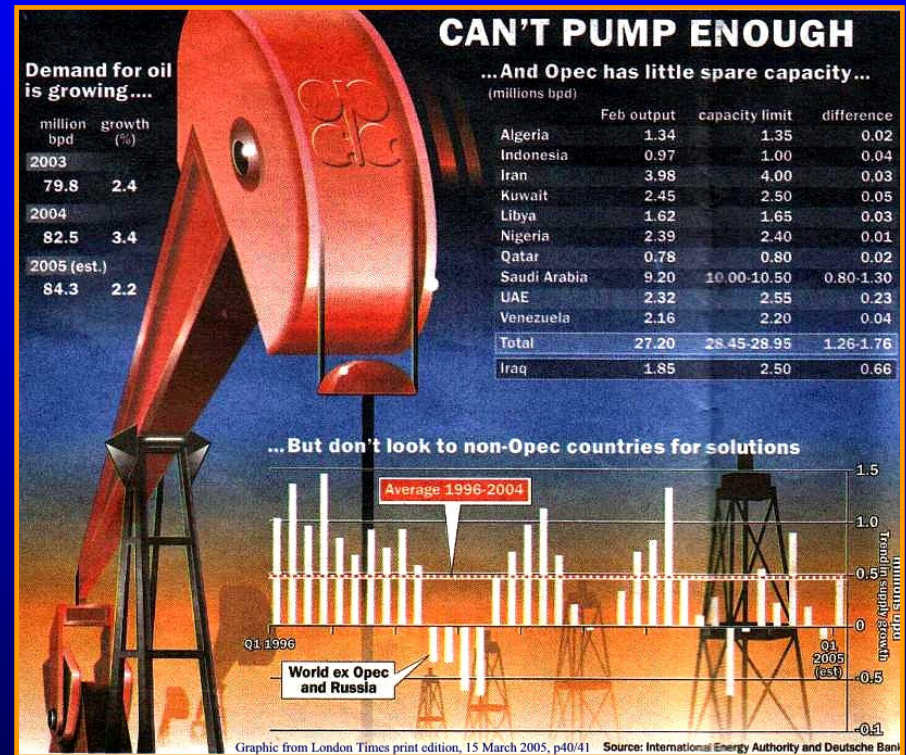
# Industry Needs Massive Data Reform

- Every key player needs quarterly field-by-field data report:
  - Current production
  - Number of wellbores
  - Production per well
  - Remaining proven reserves
- Data needs independent verification.
- All key players have this data.
- No one wants to “show their cards.”



# Industry Needs To Drill More Wells

- Last two decades saw “technology” replace appraisal data/core sample.
- These abound that technology now sees more accurate pictures of reservoirs.
- Without adequate well penetration, assessment becomes volumetric.
- With core samples, assessment is dependent on rock quality assumptions.



# No Reservoir Is The Same

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- Almost all reservoirs are different.
- Most remaining tapable reservoirs are highly fractured.
- Quality of producible oil is rapidly declining.
- Sweet spot oil is different than “oil left behind.”
- Analogue analysis assumes good comparable data from other fields.
- It is easy to simulate and make a big mistake.

# The Industry's Boasts Got Carried Away

- “A rig of today is like eight old rigs.”
- 3-D Seismic is eliminating dry holes.
- I replaced 150% of my production last year.
- My production was flat but will soon grow.
- Technology creates perfect picture of a reservoir.

**Most claims were an exaggeration**

# Oil's Fair Value Is Also Broken Model

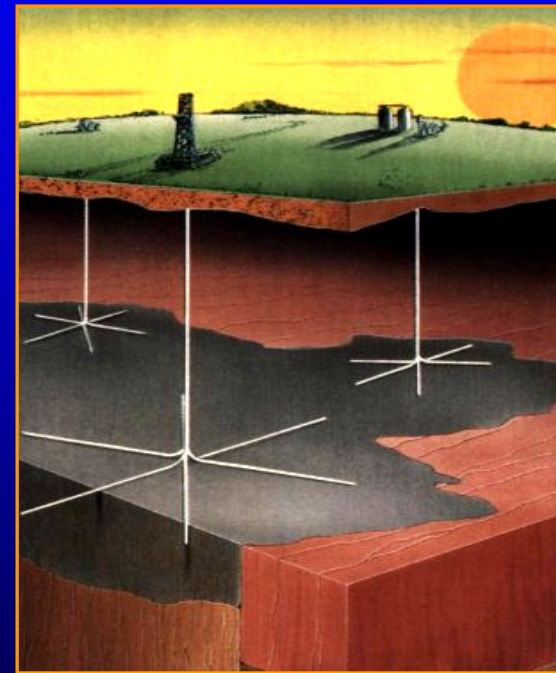
- For 95% of last century, oil has been a “buyer’s market.”
- Pricing the product became “marginal lowest cost barrel.”
- Cost of creating producing field got capitalized.
- Cost to maintain steady production rose exponentially.
- Oil is now becoming a “seller’s market.”
- What is oil’s fair price?



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# Why Do We Leave So Much Oil “Behind?”

- “If recovery rates improve by 5%, this creates 200 – 300 billion more usable barrels.”
- “Recovery rates now far higher through technology.”
- “The sweet spot is produced first.”
- The “dregs” are hard to extract.
- Sunset Midway field (1888 discovery) might last another 100 years.
- Augustine Chalk came and went in a decade.



# How Did The Industry Get So Confused?

- “Oil” is world’s largest business.
- Data is boundless.
- 2005 oil earnings were highest in global history.
- Thousands of “oil experts” have strong opinions.
- Conventional oil wisdom has always been wrong.

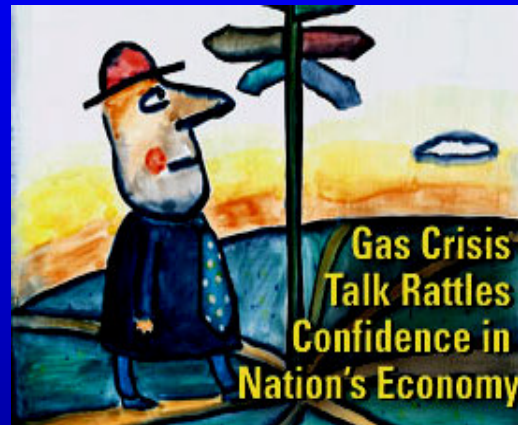
How can this be?



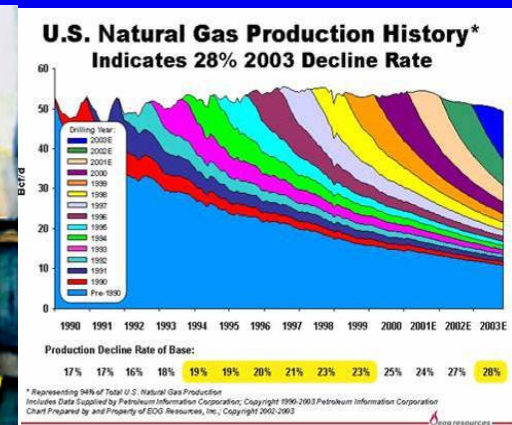
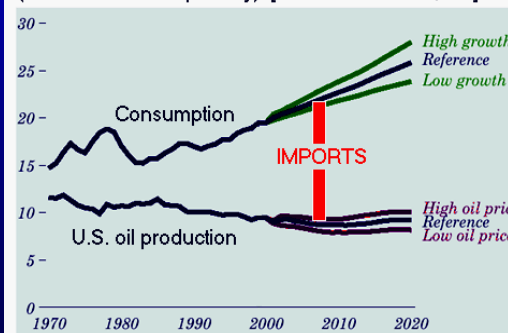
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# Summation: Tough Times Are Ahead

- Oil and gas demand is “insatiable.”
- Oil and gas supply is “too old.”
- New discoveries are “poor quality” or “too small.”
- Decline rate of existing base is accelerating.
- Rig and people shortage are real.
- Oil and gas is peaking.



U.S. oil consumption, production & imports (millions of barrels per day) [source: U.S. DOE/EIA]



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