

# Peak Oil Review

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**ASPO-USA's world oil conference is in Houston, October 17-20; visit [www.aspo-usa.com](http://www.aspo-usa.com)**

## 1. Gasoline and crude

This week's petroleum status report contained several surprises. Contrary to expectations, refinery utilization fell again to 87.6 percent vs. the 95 percent that would be desirable for this time of the year. Expansions at US refineries in recent years, however, resulted in gasoline production remaining the same as the previous week. Steady production and gasoline imports of 1.3 million b/d led to an increase of 1.8 million barrels in total US gasoline stockpiles which are still low considering that the peak summer driving season is nearly here. US gasoline consumption continues to be 9.5 million barrels a day – 1.5 percent above last year. An increase in crude imports coupled with the low refinery utilization resulted in an unusually large buildup of 6.9 million barrels in the US crude stockpile to an 11 year high.

Worldwide, the dispute between the IEA and OPEC continues, with the IEA forecasting a shortage for the 2<sup>nd</sup> half of 2007 and OPEC maintaining that all is well. Chinese imports for May were up 11 percent over last year and world oil production remains stagnant.

Last week even the *Wall Street Journal* expressed its concern by noting that, "World oil demand is rising twice as fast as a year ago, straining the petroleum industry's ability to keep up with global needs and likely resulting in higher and more-volatile prices for some time to come." The *Journal* concluded that the global economy has adapted to the doubling of oil prices during the past three years, bolstering demand and paving the way for higher prices in coming years.

## 2. Nigeria's general strike

Over the weekend, the government acceded to the demands of the unions, thereby ending the four-day general strike that brought the Nigerian economy to nearly a complete halt. Loading of crude on tankers apparently continued during most of the strike, but oil production was halted for at least two days. As the strike entered its third day, world oil prices began to rise on concerns that the strike would be prolonged, but will probably settle back this week.

The government's agreement to the strikers' demands marks the second major concession to pressure in two weeks. The settlement coupled with the recent release of an imprisoned militant leader suggests that the government is running scared in the face of rampant unrest. During the strike, the trade unions raised the larger issue of the division of the massive oil revenues between the ruling elite and the rest of the country's 140 million people.

Last week, the one-month ceasefire between the militants and the government was broken by a series of engagements between one of the militant organizations and government forces. At least two dozen militants were killed during the fighting, leading to threats of further reprisals against the vulnerable oil infrastructure.

The recently released militant leader Dokubo-Asari has begun to make public statements calling into question the viability of the Nigerian federation and demanding that the oil rich delta be given its independence.

### **3. Venezuela**

As the June 26<sup>th</sup> deadline for settling the details of Caracas's nationalization of the Oronoco heavy oil processing facilities nears, one or more of the major oil companies (Exxon, Conoco, Chevron, Statoil, BP and Total) seems to be on the verge of rejecting Venezuela's terms and pulling out of the country. On Friday, President Chavez, who had just met his energy minister to review the progress in negotiations, said "Well if they do not want (to accept the terms), I told the minister to tell them they can go, that they should leave, that we, in truth, do not need them."

The day before, ExxonMobil's CEO said he expected negotiations would go on beyond the June 26 deadline set by the government. Speculation centers on Conoco, which refused to sign preliminary agreements, and Exxon as the two most likely candidates to pull out of Venezuela and take the nationalization issue to the courts.

Despite much brave talk of going it alone on the part of Chavez, the departure of one or more major oil companies is likely to further reduce Venezuela's sagging oil production. The Oronoco heavy oil projects which have the capacity to produce 600,000 b/d are already reported to be producing less than 400,000 b/d.

### **4. Energy bills**

It was a busy week on Capitol Hill culminating with the Senate's passage of a new energy bill. After much contentious debate and compromise, the centerpiece of the bill became an increase in average fuel economy for all cars, SUVs, and light trucks, from 25 to 35 miles per gallon by model year 2020. The bill's passage was a major defeat for car manufacturers, which had fought for a much smaller increase in fuel economy standards.

A crucial component of the original plan that would have raised taxes on oil companies by about \$32 billion and used the money on tax breaks for wind power, solar power, ethanol and other renewable fuels was cut out in the compromise. Also lost was a provision that would have required electric utilities to greatly increase the share of power they get from renewable sources of energy.

The final bill calls for a vast expansion of renewable fuels over the next decade — to 36 billion gallons a year of alternatives to gasoline — but does little to actually promote those fuels through tax breaks or other subsidies.

From a peak oil perspective, the bill does little to prepare the country for imminent oil depletion and much higher energy costs. The whole issue will now be fought over again in the House of Representatives. Given the balance of forces and ideologies in the current Congress and the general perception that we still have some time to go before energy prices and shortages become much more painful, it is unlikely that much of a start on mitigating the consequences of peak oil will be made in this Congress.

## 5. Energy Briefs

- **Gazprom took control of BP's stake** in Siberia's Kovykta field, which holds enough natural gas to supply Asia for five years.
- **ExxonMobil** on Friday brushed aside fears that it could be the next western energy company targeted in Russia's efforts to reclaim control of its gas and oil industry. CEO Rex Tillerson warned that investment in the country would be jeopardized if the Kremlin did not honor contracts.
- With **Angola** joining OPEC, the prospect for crude-oil output growth in countries outside of OPEC is looking increasingly dim. Production is declining in mature areas such as the North Sea, while non-OPEC countries such as Russia are limiting access to reserves.
- The week before last, a gasoline shortage developed across southeastern **South Dakota** when the fuel terminals went dry. The executive director for the South Dakota Petroleum & Propane Marketers Association said the region has struggled with supply issues since May.
- The **US Air Force** is working on a plan to fuel its aircraft with a mixture of no more than 50 percent petroleum based fuel and the rest from other sources. Last week a European firm successfully tested a mixture containing 30 percent biofuels in the engine being developed for the next generation of Boeing airliners.
- **Kuwait** again is tendering for the construction of a new 615,000 b/d oil refinery. A tender in February was cancelled after the bids came in way above estimates. **Saudi Aramco's** new 400,000 b/d refinery at Ras Tanura will supply the country's rapidly growing domestic fuel market.
- Late this year, China will complete construction on the world's largest **coal-to-liquids plant** using direct gasification technology. It will require 3.5 tons of coal to create about 7 barrels of oil. The plant will be able to process 3.45 million tons of coal into 8 million barrels of oil annually (22,000 barrels/day).
- Riots broke out in **Karachi** last week to protest electricity load-shedding blackouts which in some cases lasted for 16 hours.
- A British firm announced a major discovery of oil off the coast of **Ghana**.
- A study by researchers from the University of California Energy Institute completed last year concludes that there has been a structural change in **consumer demand for gasoline**, with consumers appearing significantly less responsive to gasoline price increases than they were 25 years ago.
- **China** has overtaken the United States as the world's biggest producer of carbon dioxide, the chief greenhouse gas.
- A new player in the seasonal Atlantic **hurricane season** forecast game is the UK's Met Office, which issued its first Atlantic hurricane season forecast last week by predicting a slightly less active season than other forecasters

- In the first five months this year, **China's oil imports** increased 11.5 percent from the same period last year. At the same time, China's production increased 1.7 percent year-on-year.
- **Mexico's crude production fell** 6.6 percent in May from a year earlier and dropped to its lowest this year as the company struggles with declining output from its Cantarell field. Daily output was 3.11 million barrels, down from 3.33 million in May 2006. Cantarell, the world's third-largest oil field, produced 1.58 million barrels per day, a 15 percent decline from 1.86 million barrels daily in May last year.
- The world's major oil companies **replaced reserves** at levels below 100 percent for the third straight year in 2006, while costs to find and produce oil continued to rise. Reserve replacements last year, excluding acquisitions and divestitures, were 91 percent, slightly below the 92 percent replaced in 2005, according to a report released by investment bank Bear Stearns & Co.
- In August, the **world's largest tidal-current generator** will be installed on Northern Ireland's Strangford Lough. Next year, ScottishPower will start testing an underwater turbine in the Pentland Firth itself. ScottishPower believes its system could generate up to a gigawatt of electricity - equivalent to all of Scotland's wind farms put together, or the power produced by the Hunterston B nuclear power station.
- The **National Academy of Sciences** issued a report last week saying that the US may not have nearly as much coal as is popularly believed, and mining the remaining resources may be more dangerous for workers and the environment than current operations.
- **Rail is gaining a competitive edge** after losing ground to trucks for half a century. While automotive plant closings and reduced US housing construction have contributed to a 4.4-per-cent drop in rail shipments this year, higher oil prices and surging Asian imports along with congested highways will boost long-term demand.

### Quote of the Week

- ExxonMobil blames rising prices on consumers, who are using about 1.5 percent more gasoline this year than last despite high prices. "The industry is producing record volumes of gasoline today, but the consumer is burning record volumes of gasoline today."

Rex W. Tillerson, CEO ExxonMobil, at recent annual meeting.

### Commentary: "A Strategic Perspective on 21<sup>st</sup> Century Energy Challenges"

#### Notes from a presentation by Tom Petrie

June 18, 2007, in Denver; to the Institute of International Education, reported by Steve Andrews

*(Note: Commentaries do not necessarily represent ASPO-USA's positions; they are personal statements and observations by informed commentators.)*

Energy will be on of the two or three defining issues we'll face over the next decade. Since post-1999, we've essentially been in a crisis mode. That's the result of an accumulation of factors. The key strategic drivers are:

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## 1. Geopolitical events and instability.

- These are not the root causes of our problems but will be the catalysts for change.

## 2. The market's appreciation of resource maturity.

- Unlike the world of the 1980s and 1990s, there is little excess capacity to turn to in times of trouble. There isn't enough buffer. The loss of just 100,000 b/day of production is notable, and the loss of 400,000 to 500,000 b/day is a major market event.
- Back in 1967, the shutting of the Suez Canal and the slow-down in delivery of oil shipments from the Middle East was buffered by idle Texas production being brought on line. By the 1973 oil embargo, with no buffer, the same scale of problem caused a significant shortage of oil.
- Globally, we are approaching a peak in world oil production, if we haven't already reached it.
- Roughly 75% of the world's 85 mmb/day oil production is two or three decades old and is reaching a decline stage. Those mature fields are riding a decline curve and we can do little about it. As to the remaining 25%, much of it is 10-15 years old.
- Decline rates are inexorable. Between 2006 and 2010, if we stopped drilling today—an unrealistic but informative reference point—we would lose the following amount of production at these three different decline rates:
  - If 2.5% decline rate, then we lose 8.2 mmb/day;
  - If 5% decline rate, the new lose 15.7 mmb/day;
  - If 8% decline rate, then we lose 24.0 mmb/day. This is the rate that Schlumberger estimates in their most recent quarterly newsletter, and they are the most informed private-sector player in this arena.
- The finding costs to add natural gas reserves each year has increased 127% between 2000 (\$1.13) and 2006 (\$2.56), according to numbers from independent producers. We think their numbers understate what's really happening, and that the figure is closer to \$3.50 and up today.
- The finding costs for oil have increased from \$10-\$12/barrel in 2000 to \$20 to \$25/barrel today.

## 3. The realignment of economic and security interests is unprecedented.

- Russia and China have become linked today via economic and energy ties, and those links are becoming stronger than ever.
- China and Iran are becoming more closely linked; 11% of China's oil comes from Iran.

## 4. Rising resource nationalism

- Government-owned oil companies control between 90% and 95% (we calculate 93%) of the world's proven oil reserves. The 13 largest oil companies are national oil companies. This is triggering new behaviors. Venezuela is nationalizing oil-producing assets, and the majors are not optimistic about being paid anything close to fair market value for those assets. Bolivia, Ecuador and Peru are following Venezuela's lead.
- In West Africa, contracts are being honored, but China and India bring hospitals and roads and part of their equation, which gives them an advantage in negotiations.
- Russia is making the most interesting moves. There's a limited market for their stacking doll-sets, but there's an unlimited market for their energy resources. They are continuing to aggressively tighten the screws: first by renationalizing Yukos, then by holding a gun to Shell's head over some environmental issues at Sakhalin Island, then renegotiating with BP. They will continue to be very difficult to deal with.
- The bottom line here: this has caused a dramatic search in the world today for secure energy assets, such as Canada's oil sands and the deepwater Gulf of Mexico.

## 5. Much heightened environmental sensitivities.

- Al Gore's movie has struck a chord, regardless of what you believe about the climate change issue.

## 6. Capital and merger-and-acquisition markets

- There is no shortage of capital chasing energy resources.

### Likely trends going forward:

- A. Proscribed opportunities and limited project access in the international arena are increasingly motivating IOCs to refocus on the North American sector.
- B. Rising finding and development costs are re-emphasizing the case for corporate consolidation for all industry players (esp. larger capitalization independents).
- C. Abundant private equity is more actively considering expanding energy sector investments.
- D. Midstream gas infrastructure opportunities are enjoying rising appeal by the traditional upstream enterprises.
- E. Significantly depleted upstream prospect inventories are increasingly the interest of many large cap enterprises in resource play exposures both in the asset and corporate merger-and-acquisition markets.
- F. In sum, energy issues are likely to remain at center stage for the balance of this decade and well into the next.

### Responses to Q&A:

--Policy recommendations: The first rule is, "do no harm;" if they succeed, that would be a departure from historical policies; for example, during the early 1980s, policy made a bad situation worse. Second, on the positive side, we should shift to policies that have the least environmental impact via energy consumption, such as hybrid-electric vehicles. If we pursued this on a world-wide scale, we could cut up to 6 million barrels/day within six years; that's more than the combined output of Kuwait and Iran. Third, we need a Manhattan Project to bring north-slope gas to the lower 48 ASAP. Also, we'll need to obtain energy from new nuclear, clean coal, and renewable energy sources.

--Iraq production: the case for Iraq to produce 4 or 5 or even 6 million barrels a day is technically sound but is not imminent.

--The Saudi-US "special relationship:" That relationship has been significantly altered and impaired by 9/11. Our relationship with them is now one of many. China will become of co-equal importance to the US relationship.

--**Peak oil timing:** The practical limits of output—we're very close; if we're not at a peak, we're very close. We could get to 90 or 95 or 100 million barrels on paper (from 85 million today), but in the real world I doubt we'll get to 90 mmb/day. We'll need conservation and high prices to allocate scarce supply. Overcoming depletion is like trying to climb up the down escalator with the escalator mechanic using his screwdriver to ratchet up the speed.

--EIA's optimistic 10-year forecast for natural gas, which he had shown on a slide: When asked about it, he said, "dream on." He said the trouble is finding a credible third-party forecast that's more realistic.

*Tom Petrie co-founded Petrie-Parkman & Co. in Denver in 1989. The energy investment bank's track record included over \$140 billion in merger and acquisition activity plus a stint as advisor to Saudi Arabia on natural gas development. Global Finance named it the best investment bank in the oil and gas sector in both 2005 and 2006. Merrill Lynch acquired the firm in October 2006. Petrie has been invited to speak at the Houston ASPO-USA conference October 17-20.*