Tom Whipple, Editor

ASPO USA PEAK OIL REVIEW

Association for the Study of Peak Oil & Gas USA

September 30, 2013

Contents

1. Oil and the Global Economy

Oil prices were little changed last week with New York crude trading around $103 a barrel and London around $108. While several of the usual factors moved prices last week – stronger Chinese manufacturing numbers, a falling dollar, and a rebound in Libyan exports – most attention was focused on negotiations over chemical and nuclear weapons in the Middle East and the possibility of a federal government shutdown in the US. Developments in either of these situations could eventually more bring pressure on oil prices, probably downwards, than the usual effects of supply and demand. With tensions easing in the Middle East and a US strike on Syria off the table for a while, fears of a reduction of Middle Eastern oil exports in the near term have receded. While the prospects for progress in the Iranian nuclear weapon standoff seem to be better than they have been for many years, there have been many disappointments before and some tough decisions in many world capitals are ahead.

The EIA reported last week that the US refined record amounts of crude during July as US domestic oil production continued to increase and foreign demand for US distillates surged, climbing 32 percent from a year earlier to a record 1.4 million b/d. As the EIA does not collect oil product export data each week, and bases its estimates on historical data, in times of rapidly rising or falling export demand these estimates can be way off as has happened recently. The Agency was forced to revise early data showing marked increases in domestic distillate consumption that was actually increases in the exports of distillates.

US demand for gasoline, however, did increase in August by 2.8 percent or 246,000 b/d over 2012 despite gradually increasing fuel economy and a rather weak economy.

US natural gas prices traded in a narrow range last week around $3.56 per million BTUs as cooler weather, relatively high prices which stemmed utility demand and a higher-than-expected build in reserves were offset by the prospect of winter coming.

2. The Middle East & North Africa

Syria: The UN Security Council adopted a resolution on Friday that calls for the elimination of Syria's chemical weapon stockpile, but at Moscow's insistence does not authorize the use of force should Damascus fail to comply with the UN demand. President Assad announced on Sunday, however, that Syria will respect the resolution. Considering that it is Moscow's resolution and the Russians are paying his bills at the minute, this assertion has a ring of truth about it.

In the meantime, the fighting drags on and on taking a toll on the Syrian economy which is shrinking rapidly. More than half the country's 20 million people are now refugees either inside or outside of the country and will need foreign assistance to survive. The various Syrian rebel groups are starting to fragment as Arabs fight Kurds and the rebels suffering hardships inside the country are becoming disenchanted with the exile leadership who are detached from the situation. This will make it increasingly difficult to negotiate an end to the fighting which appears set to drag on indefinitely.

The elimination of chemical weapons from Syria, however, will reduce fears that they will fall into the hands of terrorist groups and at least temporarily reduces the threat that the war will spread to areas where it could threaten Middle Eastern oil exports.

Iran: While Tehran's current "charm offensive" is one of the most hopeful developments in Iran's relations with the West for many years, there is still a ways to go before we know whether some sort of lasting agreement can be established. Last week the US and Iran agreed to speed up talks on various issues including nuclear weapons.

Although Iran's top leaders publically proclaim they do not want nuclear arms, desire better relations with the West, and genuinely seek agreements that will relieve the onerous sanctions, many in Iran's leadership do not share these goals. In recent years Tehran has spent billions of its oil wealth on building the infrastructure to support its nuclear program. Thousands of Iranians are employed in this initiative and much of Iran's leadership have their careers invested in it. Whether Tehran is willing to dismantle or open all this to highly intrusive inspections remains to be seen. Future progress in negotiating a settlement of the nuclear issue will depend largely on political maneuvering among the various power blocs that make up Iran's leadership.

A new issue is arising as to whether the US can convince the Republican-dominated Congress to ease up on the sanctions in return for anything less than a complete Iranian surrender to US and Israeli demands – an unlikely proposition. Demands are growing that simply increasing UN inspectors of Iran's a large and robust nuclear program will not be enough. UN Inspectors can be thrown out at any time and weapons can be built quickly once enough fissile material has been accumulated so that some hold that the only real guarantee is to reduce Iran's enrichment capability to the point where rapid fabrication of nuclear weapons becomes technically impossible.

Iran's Oil Ministry announced last week that it is gradually increasing its oil exports. With the loss of much Libyan and Nigerian production in recent weeks, the global oil situation has become tighter even with slowly increasing US production. Given this situation many Asian oil exporters have been desperately seeking ways to get around the UN, EU, and US sanctions.

Iraq: As Sunni bombs continue to kill and maim scores of Shiites each week, grieving Shiites are beginning to call for revenge attacks in retaliation for what has been a largely one-sided civil war directed increasingly at soft civilian targets – over 4,000 people have been killed so far this year. Lately Shiite funeral services seem to have become a favored target of suicide and car bombers and it is clear that the government military and security services are increasingly incapable of dealing with the situation.

Iraq's arm of al Qaeda is believed to be behind many of the attacks and the organization has made clear that it wants a civil war in Iraq which will bring down the US-installed government. Al Qaeda is joined in this effort by former Baathists and other Sunni extremists who want to bring back Sunni domination of the country. Some see Iraq going the way of Syria. Iraq's economy is slowly deteriorating with some 70 percent of the $250 million a day Iraq earns from oil sales going for government salaries that are largely allocated on political grounds. Little is going to rebuild the infrastructure of the war-torn country or investment in its future.

Over the weekend, four car bombs exploded in front of the Kurds' military intelligence headquarters in Erbil, Kurdistan's capital, killing at least six. This is unusual as Erbil, deeply in Kurdish controlled territory, has been relatively free of trouble.

All this leads to the future of Iraq's oil industry. Last week, Iraq's oil minister announced that production will increase by some 300,000-400,000 b/d as newly upgraded oil fields come into production and improvements to port facilities are completed. Long range plans envision the country producing some 9 million b/d by the end of the decade.

There are clearly some contrasting views of the future of Iraq at work here. While the country has some of the last easy and cheap-to-produce oil left on the planet, the political situation both inside Iraq and in several of its neighbors continues to deteriorate and insurgency is on the upswing. To count on increases in Iraqi exports in the next year or even the next five seems premature.

Libya: Last week, the Libyan province of Fezzan, which covers the southwestern region of the country, joined the eastern province of Cyrenaica in declaring itself an "autonomous federal province" in charge of its own natural resources. This leaves the federal government in Tripoli left with only the third province of Tripolitania, unless it can find a way to reassert its authority over the other two provinces which contain most of the oil.

Most sources are saying that Libya's oil production is now back to about 600,000 b/d, still down about 1 million b/d from pre-war production. The country's two most important export terminals Es Sidar and Ras Lanuf remained closed as are Hariga and Zueitina. For now foreign oil companies remain reluctant to invest or keep many of their people in the country given the security situation.

Egypt: Cairo's courts shut down the Muslim Brotherhood and seized its assets last week bringing to a close another chapter in Egypt's increasingly turbulent history. Although large Brotherhood demonstrations against the new government have dwindled in recent days, bloody clashes between rival student groups on university campuses continue.

Cairo announced on Sunday that it has received $7 billion of $12 billion it expects from the heredity rulers in Saudi Arabia, Kuwait, and the UAE, who fear that a revived Muslim Brotherhood would foment unrest in their countries. This aid will help Cairo pay for the desperately needed food and oil necessary to keep the country going – at least for a while.

The Egyptians currently owe international energy companies some $6 billion for the oil and gas it has bought from them. It now says it will begin repaying this debt before the end of the year so that companies will continue shipping oil and gas into Egypt. One of the options considered is for foreign companies to increase Egypt's domestic oil and gas production that could in turn be used to repay the debt.

In the meantime, foreign firms continue to shy away from investing in Egypt and some are pulling out foreign staff due to the security situation.

3. Quote of the Week

- "China's increasing consumption of transportation fuels, combined with increases in India, other developing countries, and ongoing demand in the rest of the developed world, will lead to oil shortages within the next five years. Demand will exceed supply leading to ever higher prices and, for those nations heavily dependent upon imported oil, actual oil outages. China will thus drive a frenetic race to create alternative transportation fuels so mobility carries on."

  -- *John Hofmeister, former president of Shell Oil Co.*

4. The Briefs

- **Uganda** has awarded a production license for the Kingfisher Oil Field in Lake Albert to China's National Offshore Oil Corporation. The development of the field will cost over $2 billion and will produce between 30,000 and 40,000 barrels of oil per day. (9/27 #17)
- Tullow Oil announced Thursday it made a new oil discovery in Northern Kenya. Tullow said it made the discovery in an area not known to contain a proven oil field. The company said it encountered a

"potential" net oil layer measuring at least 190 feet thick. It said future testing was needed to confirm the productivity potential. (9/27 #14)

- **Libya,** holder of Africa's largest crude reserves, is weighing its first bank loans as the OPEC member seeks financing to more than double refining and expand chemical production in projects forecast to cost $60 billion. (9/25 #8)
- **In Libya**, crude oil started reaching the Zawiya export terminal, Libya's second-largest export terminal (230,000 bpd), for the first time in nearly a month. A European trader told energy news website Platts the oil sector still had a ways to go before it resembles some form of normalcy. (9/26 #8)
- **Nigeria's** planned production for 2013 was 2.45 million b/d but year-to-date July 2013 production has averaged 2.19 million b/d. Output and revenue could have been higher if not for large-scale oil theft, pipeline vandalism and illegal bunkering in the Niger Delta region, which severely disrupted production and exports. (9/27 #15)
- **In Brazil**, the emphasis has switched from a focus on their growing oil and ethanol economy...perhaps because it has stopped growing. The EIA had been projecting that Brazil would produce up to 2.8 mbd by the start of this year, rising to 3.0 mbd at the end of the year. An OPEC report suggests they will only make 2.67 million b/d by the end of this year, but production actually declined and as recently as March of this year was at 2 million b/d. (9/26 #12)
- The once-promising **Brazilian** offshore oil market is proving a thorn in the side of drilling contractors who are either leaving it or trying to shift some of their rigs elsewhere, according to fleet updates out this week. The rigs in question are older and less capable than the newer ultra-deepwater models currently in high demand worldwide, and the availability of more standard "deepwater" rigs on the market will only add to concerns about downward pressure on rates paid for that class. (9/23 #8)
- Norwegian oil company **Statoil** said it had discovered between 300 and 600 million barrels of recoverable oil off Canada's coast. It is the third discovery in a potential new core production area where production might start as soon as 2020.
- **Statoil** said Monday it discovered natural gas but no oil—its main goal—at a prospect in the Johan Castberg complex in the Barents Sea. (9/24 #18)
- Provincial officials have called on Canadian Natural Resources Ltd. to stem the environmental impact from a heavy oil seep in **Alberta**. More than 7,000 barrels of oil sands have been removed from four sites. Some of the oil has migrated to a nearby lake where heavy oil is sinking to the bottom. (9/26 #17)
- Oil tanker **shipping rates** spiked before the financial crisis, which led to a slew of new ship orders. Those ships are just now being delivered, resulting in overcapacity. Meanwhile, economic recovery in the developed world isn't happening as expected, clouding the demand forecast. (9/23 #3)
- **China** said Monday that consumers will need to bear some of the costs of tighter fuel standards, opening the door to higher prices at fuel pumps as the nation balances growing public concern over the environment with worries about inflation. (9/24 #13)
- In **Canada,** delivering oil by rail to export terminals along the western Canadian coast is just as safe as pipelines, according to the Canadian National Railway. Canadian Prime Minister Stephen Harper said the economy needs to diversify beyond its U.S. base by courting energy-hungry Asian economies. (9/25 #14)
- Oil production from the Bakken Shale grew by 24% over the first six months of 2012**.** Production, however, has grown by only 7% over the first six months of 2013—a dramatic slowdown in the previously impressive rate of growth. (9/24 #17)

- Production from the **Eagle Ford** shale formation grew dramatically from the year before in July. The nine fields that make up the majority of Eagle Ford yielded 569,191 barrels of crude a day; that is 36 percent more than the fields produced in July 2012. (9/24 #16)
- California's **Monterey shale** formation holds an estimated 15.4 billion barrels of recoverable shale oil, or as much as five times the amount in North Dakota's Bakken field, according to 2011 estimates by the Dept. of Energy. The problem is, the same forces that helped stockpile the oil have tucked it into layers of rock seemingly as impenetrable as another limiting factor: California's famously rigid regulatory climate…. Venoco of Los Angeles said in a report that after drilling 29 wells in the Monterey shale from 2010 to 2012, no "material levels of production or reserves" resulted. (9/23 #12)
- On Tuesday, **Shell** announced it will shut down its oil shale research operations in Colorado. The company had been trying various ways to turn layers of rock called oil shale into crude oil since 1981. That era will be shut down and the area decommissioned and reclaimed. (9/27 #20)
- Royal Dutch Shell has selected a site south of Baton Rouge, La., for a multibillion-dollar project to convert natural **gas into liquid fuels** such as diesel and gasoline. The gas-to-liquids project, in the very earliest planning stages, is predicated on plentiful supplies of natural gas and would be similar to the company's Pearl project in Qatar. (9/26 #14)
- The AAA reported Monday the **national price for a gallon of regular unleaded** gasoline was $3.47, the lowest since February and down 4 cents for the week and 34 cents lower than last year. (9/24 #15)
- **BP** will battle to hold down fines that could hit $18 billion in a new phase of the Gulf of Mexico trial that will rule on how much oil it spilled in 2010 and judge its efforts to plug the leaking well. (9/27 #21)
- Pakistani Prime Minister Nawaz Sharif said he would proceed with a plan to build **a gas pipeline from Iran**, despite objections from the U.S. (/27 #11)
- **In the Netherlands,** a government move to delay a decision on allowing shale gas drilling was hailed by local communities but "regretted" by energy boosters. (9/23 #14)
- **India** cleared the way for shale-gas exploration and the country's first-ever auction of coal-mining licenses Tuesday, two long-awaited reforms aimed at bolstering investment in the energy sector. (9/26 #14)
- **Natural gas** use for electric power generation in the US slipped 14% during the first 7 months of 2013 compared with the same period last year, mainly because of higher gas prices relative to coal prices, according to the EIA. (9/27 #24)
- A University of Texas computer model of the **Barnett Shale** natural gas play concludes that the "sweet spots" in the 4,172-square-mile formation underneath Fort Worth are even sweeter and potentially more prolific than earlier studies assumed. (9/27 #22)
- Coming US regulations on engine exhaust and cheap **natural gas** are encouraging some commercial marine operators to power their vessels with liquefied natural gas instead of diesel. (9/27 #23)
- **Mega coal mines** planned for the Australian state of Queensland would adversely affect the region's water supply, a new report "Draining the Life-blood" says. In the desert area, nine coal mines would need 13 billion to 18 billion gallons of water each year for washing coal and other operations. (9/25 #9)
- **China's** appetite for coal is starting to wane. Economic growth in China is slowing, and rising public anger over air pollution is increasing pressure on utilities running the country's coal-burning power plants to shift to nuclear power and natural gas. (9/23 #11)

- According to the latest report by the **Intergovernmental Panel on Climate Change**, it is now virtually certain that humans have been the main cause of the "unequivocal" global warming recorded in the past 60 years. This claim in the UN panel's latest report will likely rekindle debate over the use of fossil fuels powering the world's economies. (9/27 #4)
- **India** says it is planning the world's largest solar power plant in the northwestern state of Rajasthan. The project will have a total power generation capacity of 4,000 megawatts, which is more than double the present total solar power generation capacity in the country. (9/24 #20)
- Just five years after **China's** high-speed rail system opened, it is carrying nearly twice as many passengers each month as the country's domestic airline industry. With traffic growing 28 percent a year for the last several years, China's high-speed rail network will handle more passengers by early next year than the 54 million people a month who board domestic flights in the United States. (9/24 #14)
- **In Venezuela**, despite their revenues from being an oil country, severe food shortages have gone on for almost a year and certain items long gone from the shelves are hitting a particular nerve with Venezuelans. Toilet paper, rice, coffee, and cornflour, used to make arepas, Venezuela's national dish, have become emblematic of more than just an economic crisis. (9/27 #18)
- Commodity supply constraints and demand from emerging markets mean it's premature to talk about the death of the **super cycle** that brought a longer-than-average period of rising prices, McKinsey & Co. said. Energy, metal and agricultural prices that more than doubled since 2000 are still close to highs reached before the financial crisis, even after commodities from gold to wheat dropped into bear markets. (9/27 #5)
- In **Sudan,** deadly protests rocked several cities last week, when the government lifted subsidies on gasoline, nearly doubling the price in an increase that is bound to create a domino effect on other goods. (9/27 #16)
- Iraq's semi-autonomous **Kurdish region** is moving ever closer to declaring independence, thanks largely to its oil reserves of 45 billion barrels and increasingly close energy links with neighboring Turkey. The Kurdish enclave already operates like a de facto state with its own legislative, executive and judicial branches, its own army, and firm economic foundations provided by the oil and large reserves of natural gas as well. (9/27 #12)

5. Commentary: Shell's Shale Oil Shutdown—1-800-Dry-Hole

By Steve Andrews

Early last week, Shell Oil announced it was shutting down its oil shale research project in western Colorado. Combine their departure with Chevron's exit back in February 2012 and you can count another nail in oil shale's coffin.

Yet since this unconventional resource ranks among the largest in the world, estimated by some at 1+ trillion barrels of potential liquid energy, this might well *not* be the final chapter in efforts to develop it. But it probably should be.

Shale oil may be the fool's gold of the energy world. As long-time friend, energy writer and commentator Randy Udall wrote back in 2005, "If crude oil is king, oil shale is a pauper. It's the dregs. The mystery is not that we lack an oil shale industry; it's that we've spent billions trying to develop one." His most pointed question: are such development efforts acts of inspiration or desperation?

A badly-kept secret is that there is no oil in oil shale. The rock is actually called marlstone and the hydrocarbon it contains is a waxy substance that never went through the "oil window"—the heat and pressure applied over millions of years to turn the solid into liquid energy. Instead, developers such as Shell cooked the kerogen into petroleum by injecting heat energy. A *lot* of heat energy. Gigabunches of heat energy. In fact, so much was needed—one very large new power plant per 100,000 barrels/day of liquid produced—that the process, despite extensive R&D, never made economic sense.

Shell was guarded with the details of their energy balance analysis, also known as Energy Return on Energy Invested. But it seemed likely that for every unit of energy input to produce liquid from kerogen, the output was just two units, maybe 2.5 units best case. (For comparison, conventional oil in the USA is likely to result in roughly 10 units of energy output for every one unit input.) Further, while Shell claimed they owned enough water rights to supply the substantial amounts required during production, residents of arid western Colorado expected large impacts on their water supply.

The high energy and water requirements undoubtedly contributed to Shell's exit, though the company tended to speak in terms of "evolving priorities" and "other opportunities. In Shell's comments to journalists, they didn't exactly say, "it's over. Kaput. Finito." After all, that would be fessing up to the fact that their "tens of millions of dollars" invested in oil shale R&D as of mid-2005 came up way short—a high-stakes gamble with some learning spinoffs, but mostly money down a rathole.

If misery loves company, Shell has plenty of it. During the 1915-1920 era, oil shale promoters endured the first of many investment boom and bust cycles.   Half a century later, the most infamous of these crashes hit western Colorado hard; it was the flaming out of our $8 billion federal investment in oil shale started during the late 1970s. When Exxon Mobil Corp. pulled the plug on its $5 billion project on May 2, 1982 (called "Bloody Sunday"), it cut 2,200 jobs and sent west-central Colorado into a decade-long depression. Today, Shell's decision only impacts perhaps a few dozen Coloradans. But it deals a body blow to the latest round of oil shale hype.

As recently as 2005, one California Congressman—who must have been either blind, dumb or devious—intoned that if we would just get with the oil shale program, as a US Dept. of Energy report claimed, the USA could be producing 10 million barrels a day of the stuff in a couple of decades. Given that our oil production of the $3/barrel variety actually peaked at close to 10 million b/d some 40+ years ago, the notion that we could ever produce that much from very expensive shale oil was delusional.

Randy ranked in the top tier of oil shale skeptics. Our tour together of Shell's Mahogany Creek research site in August 2005 kick-started his concerns. Over the next eight years, he penned a number of brutally frank op-eds, wrote "The Illusive Bonanza: Pulling the Sword from the Stone," and started speaking out about the challenges and downsides of oil shale. He rarely pulled his punches.

During our visit to Shell's R&D site, company personnel showed us the small area, a footprint about the size of a two-car garage, from which they had produced 2000 barrels of high-quality petroleum liquids. That was the culmination of 25 years of R&D efforts. They opined that after another five years of R&D, by 2010 they should be able to make a go/no-go decision about commercialization. But in 2010, Shell admitted they needed more time. Now we have their answer: we're outta here.

Before Randy died this past June, it may be that his last publication was his article questioning a recent twist in the oil shale story: the entrance by Estonia's government-owned oil company Enefit into the US oil shale saga. Estonia apparently agreed to subsidize Enefit's efforts to export its oil shale technology to the US and elsewhere. An Estonian mining engineer wondered why Estonian taxpayers were subsidizing half a billion kroons for such development. Randy went on as follows:

“But what is a ‘kroon,’ you might ask. Kroons were once the local currency in Estonia. Then, when the country adopted the Euro, the old banknotes were compressed into bricks and burned for heating fuel. Smarter to burn those, in my view, than to burn oil shale.”

Yet the sheer size of this illusive prize and the high price of petroleum products make it likely that some level of R&D will continue, with or without oil majors like Shell and Chevron. So, as Yogi Berra might put it, it ain’t over til it’s over…though it probably should be.

Steve Andrews is a retired energy consultant and analyst.