



- The price of crude oil slipped earlier this week, as the US-led military strike over Syria last week came to an end. These strikes were carried out by the US, UK and France in response to Syrian leader Bashar al-Assad's suspected chemical attack on civilians. President Trump said 'mission accomplished'. The crude oil price also retreated a bit as the number oil rigs in the US reached 820 this week, per Baker Hughes data, and the US oil production rose to a fresh 10.5 mb/d, per EIA.

The other concern has been the tension between Saudi Arabia and Iran-backed rebels in Yemen. In addition to this, the American Petroleum Institute said in this report on Tuesday that the US crude and gasoline inventories fell last week by 1.05 mb. This saw the price of the barrel increase.

The increase also continued in anticipation of the forthcoming meeting of OPEC and its allies in Jeddah, Saudi Arabia yesterday, where they were expected to explore ways to prolong the production cuts to keep reducing the global glut. The crude price fell a bit on Friday, still traded in positive territory. This happened as President Trump tweeted that there are 'record amounts of oil all over the place, including the fully loaded ships at sea; oil prices are artificially very high'.

- Per the Kuwaiti Oil Minister, Bakheet Al-Rashidi, OPEC and allied producers are expected to consider extending the agreement to cut production into 2019, when they meet in Vienna at the end of June. Speaking at an event in Kuwait City, the Minister said, this will depend on the market situation, even though over the last 16 months of production cuts have reduced the excess supply in the market, and the oil inventories are on a decline. The OPEC Secretary General, Mohammad Barkindo said at the same event that no decision has been taken on extending the production cuts so far.
- Hanging out there is President Trump's threat to get out of the agreement on Iran's nuclear activity, with a high probability of its going ahead. Added to this is the oil production from Venezuela, which has continued to fall. These developments are likely to impact the price of the barrel in the near term.
- The head of Libya's National Oil Corporation, Mustafa Sanalla, has said smuggling of crude oil is costing the country about \$750 million a year. The large sums of money available from smuggling have corrupted the Libyan society, and has sought help from international institutions such as Interpol, by way of aiding domestic agencies in smashing the smuggling rings in the country.
- The oil production from the Permian Basin in the US is expected to increase in April (3.11 mb/d), and reach the highest in May 2018 (3.18 mb/d), as per the EIA, which is 30% of the total US oil production. 130 drilled-but-uncompleted wells were added in February 2018, followed by 122 in March. The question that comes to mind is why is this basin so prolific? I will try and answer this question in my next post.

So much for the industry news this week.

There are some deep wells that have been drilled into the Permian, and so I was curious to find out how deep have the wells been drilled into the earth's crust, not necessarily for oil and gas exploration and production. The information is what I collected.

We know the basic facts about the structure of the Earth. It consists of a core with an outer layer made of molten iron. Outside the core is the mantle which is made up of solid rock and is at high temperature. The layer of rock surrounding the mantle is the crust. While the core forms 15% of the Earth's volume, the mantle makes up 84%, and the remaining 1% is occupied by the crust. The average thickness of the mantle is close to 2900 km. The thickness of the crust depends on the type of crust. The oceanic crust is about 5 to 10 km in thickness, and is composed of basalt, diabase and gabbro. The thickness of the continental crust varies between 30 to 50 km, and is composed of less dense rocks.

Better knowledge about the crust and the mantle can help the scientists understand the occurrence of earthquakes better. Thus, scientists have made attempts have been made to drill into the Earth's crust, with hopes to go down deeper.

The first drilling attempt was made in 1961, when the US engineers drilled through the Pacific Ocean floor off Guadalupe Island, Mexico. The 'Project Mohole' was designed to drill through the Earth's crust and into the Mohorovičić (Moho for short) discontinuity, at which the seismic waves change velocity. It is named after the Croatian geologist, Andrija Mohorovičić, who first proposed its existence. A hole was drilled to a depth of 183 m below the sea floor in 3,566 m of water, which at the time was not heard of. The project was later abandoned due to funding issues.

Then, in 1970, the then Soviet Union started drilling the Kola Superdeep Borehole project, and by 1983 had drilled to a depth of 12 km. This was a milestone, and when the project was resumed the following year, after drilling the next 66 m, 5 km of the drill string got twisted in the borehole. Another hole was started at 7 km, which reached a depth of 12.262 km (7.6 miles), and remains a record. The high temperature at that depth (180°C) was unexpected, and the drilling at these high temperatures was fraught with problems. There was a lot of data collected from this novel experimental project. The project was eventually closed down in 2006 due to lack of funding.

There was another deep drilling project that was started in 1990 by the German scientists, and called the 'German Continental Deep Drilling Program'. The borehole was drilled at a place called Windischenschenbach in the German state of Bavaria. The hole was drilled to a depth of 9,101m in the continental crust, and then the project closed due to lack of funds.

The SloMo project to drill to the Moho in the Indian Ocean at Atlantis Bank was started in December 2015. The site was selected as there is less rock to drill through to reach the Moho. The drilling was carried out to a depth of 809.4 m beneath the sea floor, and recovered at 3.3 m core of gabbro from beneath the ocean floor. But this was only half the depth the project was expected to drill, but problems at sea prevented this from happening.

The above description is by no means complete, and as we notice, the different projects have encountered problems, but the data collected in these experiments is invaluable. It is this quest for knowledge that will drive scientists to even greater depths in the years to come.

As kids, we have the habit of collecting things, e.g. stamps, flowers (pressed in notebooks), coins, comics, etc. As adults, people have a craze for collecting unique articles, from bottle caps, cutting boards, watches, etc. Such habits serve as hobbies, allow us to collect memories, enhance our knowledge, learning, and help us experience personal pleasure.

Scientists collect facts, knowledge and explore for the unknown. That is how scientific advances are made for the betterment of society and the world around us.

I hope you find this information interesting. So much for this post!

Till the next post, stay safe and happy!

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