

SPT MIRROR

FEBRUARY-2015



- SPT Alumni Meet
- Petrocup-2015
- Guest Lecture : Dr. Subhash SHAH
[University Of Oklahoma]
- Interview : Captain Ashwin M. KHANDKE
[Sr. Vice President, Asian Oil Field Services]
- Fall Of Oil Prices : Turmoil In The World



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MESSAGE FROM THE EDITORIAL BOARD

A warm welcome to our readers and reviewers. It happens to be a matter of immense elation and glory for all of us to greet you with this issue of SPT Mirror. SPT Mirror, right from its inception, has been a flagship achievement of the School of Petroleum Technology. We indeed feel the pride and joy of sharing our laurels with all our readers and reviewers. SPT Mirror today, stands as an important medium of connect between all the affairs of the SPT and our beholders. It is actually gratifying to receive appreciation and accolades from different quarters of industry and academy. SPT Mirror has been providing platforms to the burgeoning cocoon of thoughts, ideas and opinions from our readers and will continue to carry this benign mantle in the coming years of future. This issue offers glimpses into the unprecedented SPT Alumni Meet. Covering the marvels of the Petrocup, the issue celebrates a wonderful throughput produced by the PDPU students in the tournament. The issue features the insights of the esteemed guest lecture of Dr. Subhash Shah of University of Oklahoma and excerpts from an exclusive interview of Captain Ashwin M. Khandke, Senior Vice President QHSE, Asian Oilfield Services. This issue also encompasses the conflagrant topic of slump in the oil prices that have wreaked havoc in the upstream industry worldwide. We sincerely hope that you would appreciate our endeavours and find this issue worthwhile. We humbly beseech your feedbacks.



MESSAGE FROM THE EDITOR-IN-CHIEF

I would begin by extending a wholehearted welcome to all our readers and reviewers. I would also like to congratulate and thanks the editorial board for putting up their unflagging efforts in materializing this issue of SPT Mirror. It imbues me with content and warm fuzzes to witness the heights of readership that the periodical has managed to attain in its past issues. I sincerely hope that it would burgeon and bag unprecedented laurels from its growing readership.



This issue of SPT Mirror attempts to illustriously cover all the major events that the University was privileged to host in its premises. Furthermore, it also encourages and invites participation from all the readers of the periodical. SPT Mirror has been providing a flagship podium to all the budding thinking caps and the future of this humongous oil and gas sector. It has indeed been a very promising gesture to serve as a receptacle of worthy articles from all of you. I hope that the this trend would flourish and there would be more contribution from your side. Conclusively, I would take this moment to thank all our readers and reviewers. I hope that you would appreciate this issue of SPT Mirror. I along with the entire editorial board of SPT Mirror humbly welcome your suggestion and feedbacks.

With Regards

R. Balasubramanian



**CAPTAIN ASHWIN M. KHANDKE, SENIOR VICE PRESIDENT QHSE
ASIAN OILFIELD SERVICES.**

By Yatharth Shukla, Shivam Pandey

Q- How was your stay in PDPU?

I've quite enjoyed it. I loved the environment in which the university has been build, the green, maintained open spaces, and if I would get a second chance to get back, I would love to study here.

Q-And are you looking forward to build a strong partnership with university?

Absolutely , in fact I first met students of PDPU at petrotech delhi, this year; and you have followed it up by organising the conclave, and I was happy to accept this invitation , I hope In future too I would be coming here

Q-What are the main measures that we can take to mitigate risks and reduce the causalities?

See, the fact is, one has to look at both- prevention and mitigation, very often people club both together, so they either do too much of prevention or too much of mitigation. For ex. In a factory where hot metal works are been done,, like welding, there they look mainly in preventing the fire, but if a fire takes place, do they have good firefighting capability; so prevention is one thing, but when a fire takes place fire resisting capability becomes mitigation, so we got to have a good balance between these two. Very often people assume and miss the both part that I told you, so you have to have the balance of both.

Q-And what are the major challenges in employing those measures in industries?

The major challenges I usually link up with mind-sets. People are little averse to any change, they think that why so we need it. One thought process or the mentality that this has never happened before so far, so why why worry about it, however, they forget that there is always a first time and you to be ready for it. If my father drove cars for 30 years, without wearing a seat belt, that doesn't mean I can now justify it showing him as an example, because now we have the knowledge, the information that seatbelt does helps. So your mind set is going to be our 1st big challenge and later on u can shift to other challenges like budgetary constraint, or other economic pressure on you, in which u still got to try and innovate, and just be true to our ideal that u got to do your exercise of duty and care, and YOU WILL REDUCE YOUR RISK TO AS LOW AS PRACTICALLY POSSIBLE.

Q-Has the government given any specific rule or policy regarding safety of hazards or the company his supposed to do it by themselves?

“Just be true to our ideal that u got to do your exercise of duty and care, AND YOU WILL REDUCE YOUR RISK TO AS LOW AS PRACTICALLY POSSIBLE.”

It is up to company, see government is not needed to come for this, and industry should come forward. Some people say that, there are not any rules so why to bother, no it should not be like this after all it's the industry who is performing methods, so it itself has to take the preventive measures also. You need to decide based on your risk assessment that what things you really need, the regulatory agencies do set some measures, but you have to think above it, as per your need. You got to show your performance standards.

Q-Do you consider terrorism as a hazard for oil and gas industry?

See terrorism is defined under security. There is a very fine line between safety and security. Safety is that what is under your control, you can anytime pause any machine if you feel to do so. i.e. hazards that you can easily modify, including the selection of human resource, their working and almost everything, the oil rig, pipeline being used etc. And in security, it is something which is not in your control, it comes from any other commander, and that's why security has always been a challenge, and so, certain layers of protection are always required.

Q-Sir, your job is actually imagine the worst case scenario and work over it?

Yes, that's one of the many things. You go through every activity and ask yourself, what could be the worst thing happen. Like looking for the consequences assuming that there is no protection, then creating the steps that would help to make it safe, also making the people aware, who are involved in the tasks going on.

Q-In industry, is it human's life is the main thing to worry about?

Absolutely, HUMAN RESOURCE IS PARAMOUNT. We always calculate a number of Threat to life, mathematically which is best when it's minimum. One needs to establish steps to ensure there is no risk to a life. One has to always try to eliminate the possibility of anything going wrong to ensure right, like making the work a bit automatic, and reducing the risk on life.

Q-Making the machines automatic increases the dependence on machines, and as no machine is 100% accurate, do they increase chance of a risk?

Yes of course nothing in the world works 100%, everything has a fault, and we calculate their probability of failure. Or taking an example, in an onshore rig, there is always a need of fire pumps, but instead of having one, install two pumps for betterment. Or three, as if one has stopped working, it takes time to repair it, and at that moment you have no backup. And it should be kept always in practice.

Q-According to you, which company has set very high standards for its safety?

All the major oil companies, whether it is Chevron, BP, Exxon Mobil. In India, ONGC, IOCL, Cairn, and rest all the companies have set a good standard, and those standards should be improvised regularly.

SPECIAL LECTURE ON DRILLING/ COMPLETION AND SHALE GAS

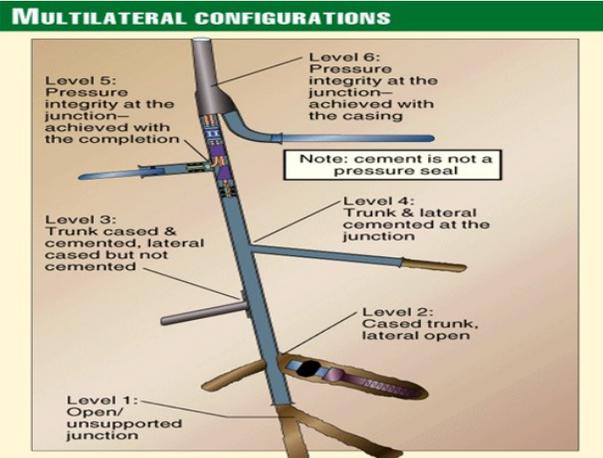
**-Conducted by
Dr. Subhash Shah,
Stephenson Chair Professor,
Mewbourne School of Petroleum and Geological Engineering,
University of Oklahoma, USA.**



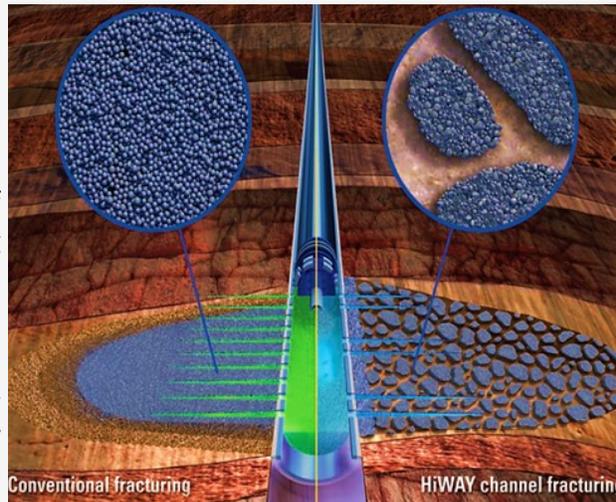
Hubbert's Curve Predicted that US oil production would be peaked in 1970 but what happened in early 2015 when US became a net exporter of oil. The "shale revolution" has stimulated tremendous production of oil and natural gas in the United States. The revolution is the product of advances in oil and natural gas production technology—notably, a new combination of horizontal drilling and hydraulic fracturing. New Frontiers in well drilling and well completions made it possible to do fracturing at a depth of 1.5 mile within the shale formations. Various Technologies like Rotary Steerable system, Pad Drilling, Managed Pressure Drilling and most advanced Geo Steering Technique helped to optimize the risk and cost involved in drilling a directional well. With the application of Geo Steering Technique Smooth trajectory creation is possible with very less torque and drag. The Geo Steering encompasses the principle of Rotary Steerable System that Works on "Push the Bit" Technique to direct the well path. Push-the-bit tools use pads on the outside of the tool which press against the well bore thereby causing the bit to press on the opposite side causing a direction change. Adjustments in the well bore path is now based on real time reservoir or lithological data that employs the principle of "Point the Bit". Point-the-bit technologies cause the direction of the bit to change relative to the rest of the tool by bending the main shaft running through it. It requires some kind of non-rotating housing or reference housing in order to create this deflection within the shaft. In simple sentence we can say that "Geo-Steering Keeps Drillers on the Right Track". Drilling and Completion in Shale Reservoir is quite challenging due to uneven orientation of geological stresses. The orientation of fractures whether vertical or horizontal depends on the direction of least principle stress. Horizontal drilling in the direction of least principle stress helps in creating the transverse fractures that enhances the connectivity with high permeable natural fracture and hence drain out a large part of the reservoir. Fracability Index helps to identify the sweet spot and barriers and made possible the multistage fracturing within the Shale Reservoir in order to avoid flow convergence.

Multi Stage Completions with horizontal wells and multilateral wells help to drain the reservoir from toe to heel of the well. Different levels of multilateral configurations

can be adopted for tight and unconsolidated formations. It also mitigates the trouble of water coning and sand production. Based on multilateral wells various completion and perforation techniques are used like plug and perforation Multi stage system, Packer and Sleeves multi stage system and open hole multi stage fracturing system.



The planning of fracturing operation with taken into consideration of three Cs that is Connectivity, Conductivity and Contact Area helps in controlling the shale reservoir stimulated volume and effective proppant placements. The Permeability of Propped fracture and the permeability of formation determine the capacity of the formation to transmit fluid. The application of HiWAY Flow-Channel Fracturing Technique increases fracture conductivity while reducing water and proppant consumption. This means higher short- and long-term production, simpler logistics, and a smaller operational footprint. Advancements in fracturing dictate the initiation of fracturing by slick water followed by high viscous fracturing fluid in order to increase the width.

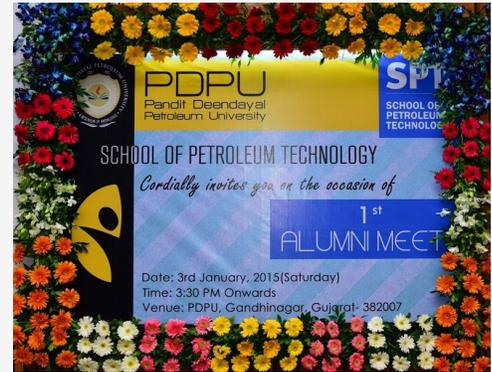


Shale reservoir characterisation plays a crucial role in the placement of fractures. Remember that more the lime content means more brittle the shale formation and more clay means low brittleness of the shale formation. So, optimum mechanical stratigraphy need to be analysed in order to have contained fractures with high permeability.

“After all permeability matters a lot”

SPT ALUMNI REUNION 2015

It was organized on 3th January, 2015 in PDPU campus. It was the first time SPT students gathered from various batches along with the current final year students to make their reunion experience a remarkable one. Preparation for the same started in the mid of October with searching and contacting as many pass out students and inviting them in advance. This was to assure that they plan their schedule accordingly.



The objective of the meet was to create a platform for current SPT students to know and interact with the SPT alumni in understanding the current scenario in Oil & Gas industry, seek their help in internships and placements. After the completion of marking their presence at the desk and greeted by roses, the alumni took their places in assembly room. The hubbub in the room showed the extent of merriment the alumni had for the delightful memories they shared with the campus and their classmates.

Dignitaries of the first session were the Director of School of Petroleum Technology Dr. Anirbid Sircar, the Director of School of Petroleum Management Dr. Hemant Trivedi, the Manager Cooperate Relation Mr. Vineet Bagaria and the Director General of PDPU Dr. H.B Raghavendra. All the dignitaries directed towards encouraging such events and keeping them on regular basis. They even highlighted about the benefits of such events in professional and personal lives. They cheered alumni to cooperate with their fellow juniors and thus explained the significance of the thought "knowledge increases with sharing not with saving".

After the warm welcome by dignitaries students embraced them with cultural session. Cultural session encompassed of awesome dances performed by some students. It also included amazing singing by Manika Tiwari and Dhananjay Bansal. At the completion of this there was a reflection session arranged in



which Alumni were given the opportunity to share their experience in terms of advices and panacea to problems they faced. Alumni expressed themselves to the fullest by sharing every minute information related to industrial problems at the starting of their job career along with the future plans students should start building at the very moment. They informed the procedure one need to undergo for admissions in top engineering college in India as well as abroad. They discussed the industrial insights. They even cleared doubts regarding the different courses that should be opted for better future. At the end alumni were gifted memento.



Then embarked the fun section. It entwined different fun games arranged for alumni like tug of war, balloon popping, two legged race and "who has it". Alumni were rewarded with exciting gifts. These events made the Alumni and current students to get intimate. There was a photo booth for the photogenic people. Outcome of the event was creating a bond between Alumni and current students and also refreshing the memories alumni carried with them from PDPU. The event ended with a gossipy dinner and group photo session.



PETRO CUP '15

Sports, like life evokes a huge array of emotions. Petro Cup'14 was no different with memorable moments and high-end competition. So, now building on the legacy of years of excellence in sports, we had Petro Cup'15-the annual sports festival of PDPU during 5th february 2015 to 9th february 2015.

The event itinerary comprises of Nine main Sports, i.e. Football, Basketball, Volley-ball, Cricket, Chess, Carrom, Table Tennis, Lawn Tennis and Athletics along with void filling Add-On events like Arm Wrestling, Dart, Tug of War etcetera, which will ran over a span of 5 days.



“Train like an Athlete, Eat like a Nutritionist, Sleep like a Baby, and Win like a Champion.”

Participation of over 2300 players from all over the country showcased their abilities and team spirit at a multitude of indoor and outdoor games which added to the vibrancy of the Annual Sports Fest of Pandit Deendayal Petroleum University for 2014.

PDPU sports played very well in all the games giving tough time to opponents . We also won gold medal in Basketball boys defeating LJiet boys in the final and Athletics proved to be a game changer. The players also glorified the event by winning silver medals in games like Football, Chess . After all it is participation that is more important than winning.



PDPU's PETRO CUP'15 has evidently seen a period of team spirit and wonderful sportsmanship throughout the game that genuinely played as a family. The sports committee members were thanked exceptionally by the players and everyone for their tireless efforts for continuous 5 days. The Closing Ceremony held on February 10th, 2015 at the Auditorium was graced by the presence of Sir T.P Singh, Anil Markana Sir and our honourable coaches of football, volleyball, cricket and basketball. PDPU emerged as the overall proud victors in football (girls), basketball (girls and boys), volleyball (girls), TT, Chess and athletics.

Overall it was great experience for players and participation of others competitors. With hopes to bring the Petrocup bigger and better in 2016 five days of exuberance came to end.



FALL OF OIL PRICES: TURMOIL IN THE WORLD

“We don't care if prices crash to \$20 or \$40 per barrel, we aren't going to budge from this position. It is not in the interest of OPEC producers to cut their production, whatever the price is,” – Ali al-Naimi, Saudi -Arabian Minister of Petroleum and Mineral Resources

The plummeting price of oil is currently the biggest energy story in the world. It's bringing back cheap gasoline to India, USA etc other countries while wreaking havoc on oil-producing countries like Russia and Venezuela. Expectations of continued USD 100/bbl of oil were shattered by a sharp price drop last year that eventually halved the prices of benchmark crudes. Prices were still sinking at the start of the year to lows not seen since 2009 due to a global oversupply of oil. Back in June 2014, the price of Brent crude was up around \$115 per barrel. As of January 23, 2015, it had fallen by more than half, down to \$49 per barrel.

But *why* does the price of oil keep falling?

This article is a guide to how we got here — and how countries around the world could be affected by the oil crash.

Why oil prices plummeted in 2014?

The short version of the story goes like this: For much of the past decade, oil prices have been high — bouncing around \$100 per barrel since 2010 — because of soaring oil consumption in countries like China and conflicts in key oil nations like Iraq. Oil production in conventional fields couldn't keep up with demand, so prices spiked. High prices spurred companies in the US and Canada to start drilling for new, hard-to-extract crude in North Dakota's shale formations and Alberta's oil sands. Then, over the last year, demand for oil in places like Europe, Asia, and the US began tapering off, thanks to weakening economies and new efficiency measures.

By late 2014, world oil supply was on track to rise much higher than actual demand, as analysed by the International Energy Agency. A lot of unused oil was simply being stockpiled away for later. So, in September, prices started falling sharply. As prices slid, many observers waited to see whether OPEC, the world's largest oil cartel, would cut back on production to push prices back up. (Many OPEC states, like Saudi Arabia and Iran, need higher prices to balance their budgets.) But at its big meeting last November, OPEC did nothing. *Saudi Arabia didn't want to give up market share and refused to cut production — in the hopes that lower prices would help throttle the US shale boom. That was a surprise. So oil went into free-fall.*

This combination of weaker-than-expected demand and steadily rising supply caused oil prices to start dropping from their June peak of \$115 per barrel down to around \$80 per barrel by mid-November. And that was only the start...

OPEC's surprising response: Let prices keep falling

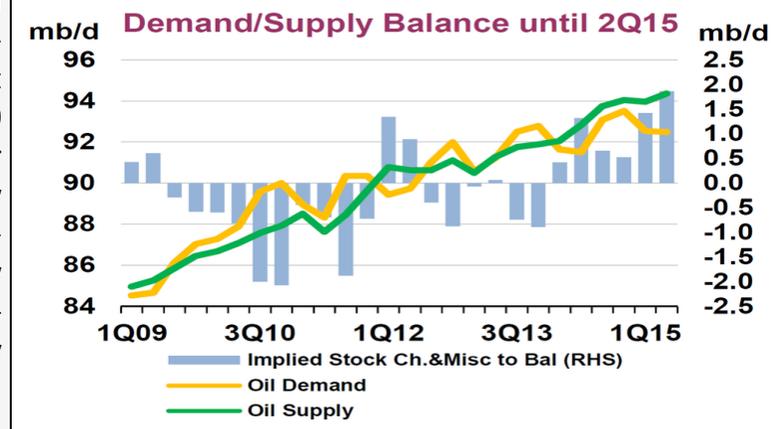
That brings us to OPEC, a collection of oil-producing nations that pumps out about 40 percent of the world's oil. At its big meeting in Vienna on November 27, there was a lot of heated debate among OPEC members about how best to respond to the drop in oil prices. Some countries, like Venezuela and Iran, wanted the cartel (mainly Saudi Arabia) to cut back on production in order to prop up the price, while on the other side of the debate was Saudi Arabia, the world's second-largest crude oil producer, which was opposed to cutting production and seemed willing to let prices keep dropping.

Why was that?

Firstly, officials in Saudi Arabia remember what happened in the 1980s, when prices fell and the country tried to cut back on production to prop them up. The result was that prices kept declining anyway and Saudi Arabia simply lost market share to its competitors.

Secondly, the Saudis have signalled that they can live with lower prices in the short term. (The government has built up \$750 billion in foreign-exchange reserves to finance deficits.)

In the end, OPEC couldn't quite agree on a response and ended up keeping production unchanged. "We will produce 30 million barrels a day for the next 6 months, and we will watch to see how the market behaves," said OPEC Secretary-General Abdalla El-Badri after the meeting. *The implication of OPEC's decision*, therefore, went way beyond sending the oil price crashing even further. The price of Brent crude went from \$80 per barrel to \$70 per barrel in just a few days. And it kept tumbling to down below \$60 per barrel by mid-December and \$50 by January.



How falling oil prices can affect Russia, US and most importantly India?

Low prices are excellent news for oil consumers in places like Japan or the US, where gasoline is the cheapest it's been in years. But it's a different story for nations reliant on oil sales.

Russia's economy is facing a potential meltdown. Economists now estimate that Russia's GDP will shrink at least 4.5 percent in 2015 if oil stays below \$60 per barrel.

Venezuela is facing unrest and may default on its debt. The nation's economy - heavily dependent on oil revenue is set to shrink some 3 percent this year and inflation is rampant.

North Sea oil production is also at serious risk, certainly in terms of new wells that need an oil price of about \$70-\$80 to justify drilling. Indeed in a recent interview with Platts, the head of Oil & Gas UK said at \$50, North Sea oil production could fall by 20%, dealing a hammer blow not just to the companies involved but to the Scottish economy as a whole.

The United States: In the US, meanwhile, a fall in crude prices will have both positive and negative impacts. For many people, it will offer an excellent economic boost: cheaper oil means lower gasoline prices — which have fallen to \$2.04 per gallon, the lowest since 2009: But it's not all good news. Oil-producing states like Texas and North Dakota are likely to see a drop in revenues and economic activity. US shale projects are especially vulnerable when oil dips below \$60 per barrel.

A fall in global oil prices provides India with the opportunity to strengthen its balance sheet, a deputy governor of the RBI said, alluding to the need to use savings to invest, build reserves and cut subsidies. India imports nearly two-thirds of its oil requirements and a lower oil import bill is likely to help slash the country's current account deficit, as well as help ease inflation.

Will global oil prices continue to stay low?

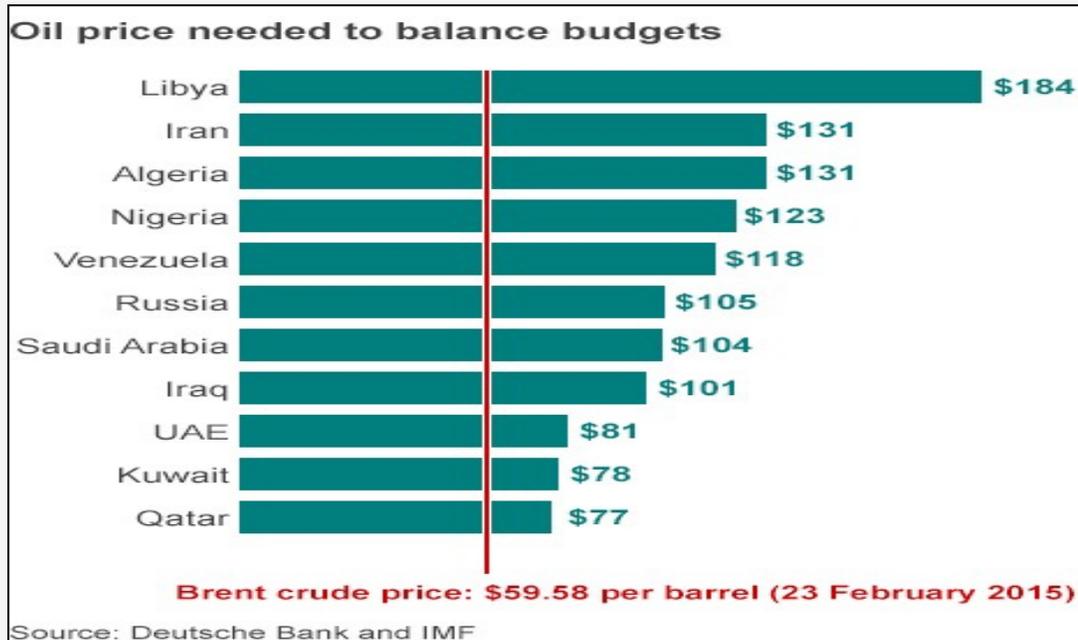
This is very hard to predict. If oil demand remains weak and production stays high, prices might not bounce back for some time. But the world is full of potential surprises.

Conflict could break out again in Libya or Iraq, which would hamper oil production.

China's economy could come roaring back.

Europe could suddenly rebound out of its malaise.

Saudi Arabia could decide that enough is enough and cut back on production all of the sudden. Any of those things could increase prices.



So far, we haven't seen any of those shocks. In fact, all the surprises have gone the other way — in January, both Iraq and Russia announced that they were exporting more oil than ever, and prices slumped even further.

Future predictions of oil prices

Without OPEC artificially supporting the oil price, and with potentially weaker demand due to sluggish global economic growth, the oil price is likely to remain below \$100 for years to come. The futures market suggests the price will recover slowly to hit about \$70 by 2019, while most experts forecast a range of \$40-\$80 for the next few years. At these kinds of prices, a great many oil wells become uneconomic. First at risk are those developing hard to access reserves, such as deepwater wells. Arctic oil, for example, does not work at less than \$100 a barrel, says Brendan Cronin at Poyry Managing Consultants, so any plans for polar drilling are likely to be shelved for the foreseeable future.

If history is any indication, oil prices will eventually rise again, though it could take some time. And some experts think we should be preparing for that day.

“The oil market is undergoing significant transformation, but more fundamental change is on the horizon”

OIL AND GAS JOBS AND SALARIES UNDER PRESSURE,

BUT GULF STABLE



The Middle East remains an oasis of stability in the oil and gas jobs market, even as the oil price rout in the past few months has taken its toll on the industry worldwide, according to the head of oil and gas at Hays, the recruitment consultant. Hays, in its global quarterly oil and gas jobs survey released today, says a fairly buoyant market for skilled personnel across the board in last year's fourth quarter has since turned sour after a large number of international oil companies have announced swingeing cuts to their capital spending budgets and broad-based layoffs.

"Most of the big international oil companies have announced that they are not going ahead with some [development] programmes and will be making redundancies, but the Middle East is not seeing any of that," at least for projects under way, Mr Ward says.

In the Middle East, therefore, there is not the same downwards pressure on salaries, but remuneration is expected to flat-line in the coming year and perhaps beyond if oil prices stay in the US\$50 to \$70 per barrel range, which is assumed by several major forecasters. The Hays survey was carried out in November, when oil prices had begun to fall from the average of above \$100 during the past four years but had not yet begun the steepest part of their descent.

Consequently, the survey reflects the more optimistic mood that had prevailed for most of the year, including the expectation among a large majority (about 85 per cent) of at least a modest increase in salary. The evidence in the past couple of months, however, has run counter to that, Hays said.

Taking offshore drilling as an example, the recruitment company said this market could deteriorate further because of weak demand and a flood of new vessels. Rig rates have fallen sharply over the past 18 months as oil companies cut capital spending just as dozens of new offshore rigs ordered during the boom come on line. Day rates for most advanced ultra-deep rigs, which peaked at \$650,000 per day last year, are now down to \$375,000 to \$500,000. The specific jobs that are being affected depend on the region, Mr Ward said. In Mexico, for example, the country had been looking to attract international oil companies after it opened up its sector to foreign investment.

But international oil companies have cooled on potential projects in Mexico's offshore oil sector as they re-prioritise budgets, and it is the exploration and production (E&P) sector there that has suffered. But in the mature North Sea area, where there is little new E&P, operating budgets have come in for cuts, affecting a different group of skilled workers.



STATOIL BRINGS OSEBERG DELTA 2 ON STREAM

STAVANGER, Norway -- Statoil and its partners started production from Oseberg Delta 2 in the North Sea on Saturday. The field's recoverable reserves are estimated at 77 MMboe.

The field, which is tied back to the Oseberg Field Centre, has been developed using two subsea templates with capacity for a total of eight wells. The initial phase of the plan involves three oil producers and two gas injectors. Arild Dybvig, V.P. for fast-track development projects in Development & Production Norway, said, "Delta 2 is an important element in extending the lifetime of Oseberg. It provides a good example of how we can make lesser discoveries profitable by using existing infrastructure while it is still available."

The start-up of the first well is in line with the development plan and takes place 38 months after the discovery became part of the fast-track portfolio. The total investment is slightly less than \$920 million (NOK 7 billion), well below the estimated investment cost when the project was sanctioned.

Oseberg Delta 2 marks a further development on the Delta terrace where oil from two wells on an existing template has been produced since 2008. Terje Gunnar Hauge, V.P. operations on Oseberg East, said, "The new development includes gas injection that will give us a substantially greater recovery rate. There are also some good opportunities for the further

development of the area and an exploration well has already been planned in the southern part of the Delta terrace."

The plan for development and operation was submitted to the Ministry of Petroleum and Energy on May 30, 2013.

BP LOSES BID TO CUT MAXIMUM \$13.7B GULF SPILL FIN

A U.S. judge rejected BP Plc's attempt to reduce the maximum civil fine it could face for its role in the 2010 Gulf of Mexico oil spill, leaving it potentially liable to pay \$13.7 billion under the federal Clean Water Act. U.S. District Judge Carl Barbier in New Orleans agreed with the federal government that the maximum civil penalty that BP could face is \$4,300 per barrel spilled. BP had sought a \$3,000 per barrel maximum, equal to a maximum \$9.57 billion civil fine. Barbier has not decided how much BP should pay, and it is unclear when he will. Setting a fine is the last step in a civil trial overseen by Barbier to determine responsibility and penalties for the April 20, 2010 blowout of the Macondo oil well, which killed 11 workers and caused the largest U.S. offshore oil spill. BP spokesman Geoff Morrell said the company disagrees with the decision and is considering its legal options. Barbier previously ruled that BP had acted with gross negligence or willful misconduct and that 3.19 million barrels of oil were spilled. These factors are used to set the maximum civil fine. BP had argued that the Clean Water Act in 1990 capped the maximum fine at \$3,000 per barrel in cases of gross negligence or willful misconduct. But the judge agreed with the



ernment that the U.S. Environmental Protection Agency could raise the maximum to account for inflation and was required to do so by Congress. Accepting BP's position "would invalidate nearly every agency's attempt to inflate civil penalties that can be sought in federal court," Barbier said. BP has incurred more than \$42 billion of costs for the spill, including for cleanup, fines and compensation to victims. It has said any Clean Water Act penalty should reflect the company's extensive cleanup efforts and that the Gulf region has had a solid recovery from the spill. The case is *In re: Oil Spill by the Oil Rig "Deepwater Horizon" in the Gulf of Mexico, on April 20, 2010*, U.S. District Court, Eastern District of Louisiana, No. 10-md-02179.

OMAN CALLING FOR MAXIMUM OIL PRODUCTION, SAYING "OIL PRICE ROUT OVER"

MUSCAT (Bloomberg) -- Oman, the biggest Middle Eastern oil producer that's not a member of OPEC, is boosting crude output to as much as possible with the global price rout over, Salim Al Aufi, undersecretary of the oil and gas ministry, said.

Oman will produce 980,000 bopd, Al Aufi said in an interview in Muscat. That would be 4% higher than in 2013, according to BP data. Oman will provide 2014 production figures in April, Al Aufi said.

"It's crucial that we continue executing the future projects," Al Aufi said. "It's cru-

cial that we continue the seismic activities

and the exploration activities because when the market turns around, we need to have these opportunities identified and ready to go."

Rising supply from the U.S. to Russia is contributing to a worldwide crude surplus that Oman estimates at 1 MMBopd. Brent crude futures have climbed 5% this year to \$60.22/bbl after falling 48% last year.

"Has it bottomed?," Al Aufi said, when asked about the oil price. "It probably did."

Governments in the region have had to reduce subsidies on diesel, natural gas and utilities while companies cut billions from capital budgets because of low oil prices. Qatar Petroleum and Royal Dutch Shell Plc called off plans to build a \$6.5 billion petrochemical plant.

Oman's Budget

Oil and gas accounts for 79% of Oman's revenue, Al Aufi said. With a projected deficit of 2.5 billion rials (\$6.49 billion), Oman's 2015 budget assumes an oil price of \$75/bbl, he said. A balanced budget would need oil to be over \$100/bbl, he said.

Oman has no plans to join the Organization of Petroleum Exporting Countries, which controls about 40% of the world's crude output, he said. Saudi Arabia, the world's biggest oil exporter, led OPEC's decision to keep output targets unchanged rather than cut production to boost prices.

"If you're a member of OPEC, then you



will follow,” Al Afi said. “We like to stay independent as much as possible unless we can influence the decision that will be taken by whatever organization.”

Oman’s oil ministry asked energy companies about three weeks ago to review their costs to ensure production is still economical, he said. “There are indications that there will be some cost reduction,” he said. “Not activity reduction, cost reduction.”

The government is still in talks with Iran to build a natural gas pipeline, he said. In March, Iran announced that it signed an agreement to build a \$1 billion pipeline to transport natural gas from the South Pars field to Oman.

“The intentions are still there, that at some point in time we start importing gas from Iran,” Al Afi said. Natural gas demand in Oman is growing six to 10% a year and domestic prices will increase at least 3% a year, he said.

CANADIAN OIL SANDS OUTPUT GROWTH DEFIES PRICE PLUNGE

CALGARY, Alberta -- The deluge of Canadian oil that’s adding to a global glut and driving prices lower is showing few signs of slowing.

Even with crude down 52% since June, output will grow 3.5% this year from the world’s fifth-biggest producer. The Canadian dollar is near a six-year low and ma-

terials cost less, helping oil sands producers cut costs and keep pumping. Oil would have to stay between \$30/bbl and \$35/bbl for at least six months, down from about \$50/bbl now, before wells and mines are shut, according to the Canadian Energy Research Institute.

Surging North American production has contributed to a global glut, pushing U.S. supply to the highest in three decades. OPEC opted in November to maintain output to hold on to market share. Oil sands supply is growing even as the number of rigs drilling for oil in the U.S. has fallen to the lowest in almost four years. RBC Dominion Securities estimates that oil companies have cut \$86 billion from spending plans.

“We are above the price where existing projects” get shut down, Robert Johnston, CEO of risk consultants Eurasia Group, said in Calgary Feb. 4. “Even projects that are under construction will continue.”

Western Canadian Select, the heavy crude that serves as the benchmark for oil sands, traded at \$37.30/bbl on Friday, according to data compiled by Bloomberg. It was \$13.50 below West Texas Intermediate, the U.S. benchmark.



**PETROLEUM MINISTRY LEAK:
5 EXECUTIVES ARRESTED FOR
CORPORATE ESPIONAGE**

The Delhi Police arrested seven more people including former journalist **Santanu Saikia** and energy consultant **Prayas Jain** on Friday as the row involving alleged stealing of confidential oil ministry documents snowballed into a major controversy engulfing energy majors.

The police arrested five officials of corporate houses including Reliance Industries Limited (RIL) and Essar amid evidence that stolen papers contained details of likely budget proposals involving billions of dollars slated for announcement next week.

Sources told HT that reams of documents that have been recovered included a classified status report on the national gas grid, a confidential letter from Prime Minister's principal secretary Nripendra Mishra to the oil ministry, and global energy cooperation draft pacts including one between India and Sri Lanka, reinforcing concerns about rising threat of espionage in India's corporate world as companies jostle against each other to get ahead in an emerging economy.

The Delhi Police have so far arrested 12 persons whom they believe were involved in the scam to steal and sell secret government documents to private energy companies and consultancies for a hefty premium.

They also sealed seven offices in **Shastri**

Bhawan, which houses several important offices including the petroleum and natural gas ministry.

On Thursday, the police had **arrested five persons**, including two oil ministry employees, alleged to have used duplicate keys and forged identity cards to gain access to the ministry at night and photocopy documents related to high-value bids and pricing policies

**CAIRN INDIA SHUNT'S 250
JOBS IN INDIA**

MUMBAI: Cairn India, a part of the Anil Agarwal-led Vedanta Group, has cut 250 jobs, or about 14 per cent of its headcount, as a steep fall in crude oil price dented the company's profit and the outlook on oil remained cloudy, industry sources said.

While the company confirmed the downsizing, it declined to comment on the number of employees who were let go of or other details. It had more than 1,800 employees.

'The past few months have brought significant changes in the global oil and gas space.'

The reductions in crude oil prices have deleteriously impacted the sector, globally. At Cairn, we are aligning our working to enable a sustainable competitive business and to deliver our business goals,' the firm said in a response to ET's query.



Energy for India

Crude oil prices have plummeted almost 60 per cent since June due to oversupply in the market. Benchmark Brent crude touched lows of \$45 per barrel ..

Cairn India's net profit plummeted 53 per cent year-on-year to Rs 1,350 crore in the quarter through December, due to the fall in crude prices and lower production. Its revenue fell 30 per cent to Rs 3,504 crore during October-December.

Its shares have been under pressure too, taking cues from global crude prices. Since June, the time when crude oil prices started falling, shares of the company have fallen 26 per cent on the BSE to end at Rs 254 on Thursday. In the same period, the Sensex has gained 19 per cent.

INDIA'S IOC TO INVEST IN PROCESSING-RELATED UPGRADES, EXPANSION

Indian Oil Corp. Ltd. (IOC) has approved a series of expansions and upgrades designed to improve fuel quality and production at several of its refining and petrochemical operations in India. The company's board at its Feb. 13 meeting approved a total investment of 78.18 billion rupees (\$1.259 billion) for the projects, IOC said in a filing to India's BSE Ltd. (formerly Bombay Stock Exchange).

At its 13.7 million-tonne/year Koyali refinery in Gujarat, the company will invest 18.43 billion rupees (\$297 million) to implement a project that would equip the

plant to produce gasoline and diesel that conforms to Euro 4 quality standards in order to increase national supplies ahead of the Indian government's Euro 4 fuel quality compliance deadline of Apr. 1, 2017, IOC said.

The company will invest 13.27 billion rupees (\$213.8 million) for a similar fuel quality upgrading project to be implemented at its 6 million-tpy Barauni refinery in Bihar. To help meet naphtha feedstock requirements at its 2.3 million-tpy naphtha cracker complex at Panipat in Haryana, the company will invest 8.9 billion rupees (\$143 million) both for the construction of a dedicated naphtha pipeline from Jaipur, Rajasthan, to Panipat, as well as for augmentation of IOC's 1,056-km Koyali-Sanganer products pipeline, according to the filing.

At Paradip, on India's northeastern coast, the company will invest 37.52 billion rupees (\$604.5 million) on an ethylene glycol project, along with associated installations, IOC said.

Designed to help IOC consolidate its glycol business, the project would result in the production of low-cost monoethylene glycol using off gas from fluid catalytic cracking operations at the company's Paradip refinery, which is scheduled to reach its full-processing capacity of 15 million tpy later this year .



PETROZOATHE QUIZ

Q1. Hydraulic fracturing has led US surplus shale oil and gas the past few years but requires water in huge quantities. India's state-run petroleum explorer Oil and Natural Gas Corporation (ONGC) recently, has signed a Memorandum of Understanding with Super Wave Technology (SWTPL) for development of an alternative to hydraulic fracturing or fracking technology. If proven effective as a substitute to hydraulic fracturing, in particular for shale gas exploitation, it will be a game changer for the oil and gas industry," ONGC said in a statement. *Name the fracking technology that they would be developing.*

Q2. Apart from the conventional Overbalanced Drilling, operators have developed a second type of drilling called Underbalanced Drilling, which is used in wells or sections with very narrow drilling margins. But there are wells e.g. where flaring is forbidden, or while drilling through high permeability formations where conventional overbalanced or underbalanced methods fail. *Name the drilling technique which is developed primarily for these types of wells.*

Q3. The Druzhba pipeline is the world's longest oil pipeline and in fact one of the biggest oil pipeline networks in the world. It carries oil some 4,000 kilometres (2,500 mi) from the eastern part of the European Russia to various points in Europe. *Name the country in Europe which has the farthest port from Eastern Russia to receive oil via this pipeline.*

Q4. X is a country with the highest technically recoverable **Shale Oil** resources in the world and Y is the world's largest gas exploration and production company. If Y is related to X in a certain manner then which company is the analogous of Y if X was India?

Q5. Which amongst the following logos is not the logo of an oil & gas company?



Q6 (a) Identify the common drilling problem shown in the figure.

(b) Which amongst the following is **not** a correct measure to reduce the probability of occurrence of this problem?

- Lubricating the well much
- Reducing mud cake formation
- Increasing the overburden of drilling fluid
- Using spiral drill collars

Q7. Complete the following blanks:

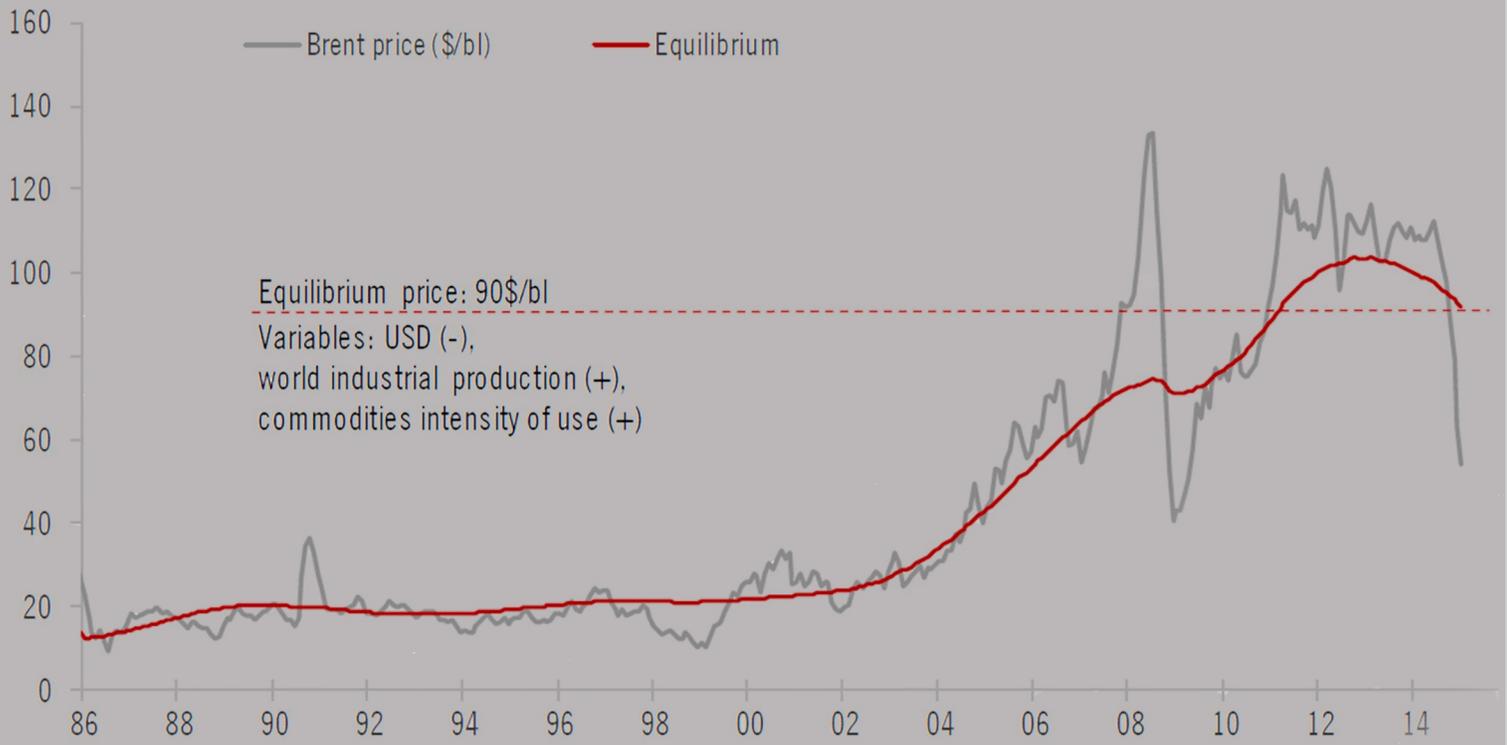
a) _____ is the largest field in China based on reserves and production, according to the US Energy Information Administration (EIA). It has also long been a symbol of China's drive to become a world economic power. The field has its own oil company, b) _____. Maintaining its production has tested the energy and ingenuity of those running it because there is little gas pressure or natural water drive pushing the oil out of the ground. c) _____ was started early on. Without it, its production would have been minimal.

Q8. This photograph shows ONGC Videsh Ltd. receiving the prestigious SCOPE award by Govt. of India. This photo has two ONGC CEO's. Name the retired one.



Answers:

- 1) Shock Wave assisted Fracking Technology
- 2) Managed Pressure Drilling or MPD
- 3) Germany
- 4) ONGC- National Oil Company
- 5) D
- 6) a) Differential Sticking b) 3, as it increases the differential force.
- 7) a) Daqing b) PetroChina's Daqing Oilfield Company c) Waterflooding
- 8) Sudhir Vasudeva



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