

# SPT MIRROR

APRIL-2015



- FLARE '15
- KUTCH FIELD TRIP'15
- CAIRN INDIA-ACE III
- THE RIL STORY
- ARTICLE ON CHOKE POINT
- CEGE [UPCOMING EVENT]



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## MESSAGE FROM THE EDITORIAL BOARD

The hiatus gets over here with the next issue of SPT Mirror. Amiable greetings to our readers and reviewers. It is a matter of colossal pride for us to bring up the with this issue of SPT Mirror. The beginning stones laid by School of Petroleum Technology for the SPT mirror and turning platform achieved till date shows the endeavour by each and every one associated with it. It is the Immense pleasure to share laurels with all our readers, reviewers and connoisseurs. 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 academe. SPT Mirror has always been a reflection of the activities going on in PDPU together with a stage to baffle brains and respond with different perception and will continue to carry this benign mantle in the coming years of future.

This issue provides insights of the awaited and stupendous Geothermal Conference under the aegis of CEGE. It comprises the glimpses of the éclat of Flare-2015- The annual cultural fest of PDPU that parallels to brilliant work performed by the students of SPT at different rostrum. Cairn ACE Season-3 winners are again cheered up in deep cognizance about the works of the participants who registered touchstone achievements in the contest. This issue also encompasses the motley collection of topics in a reader-friendly manner. Sweeping through the story of securing choke points, the issue covers exciting games and some of the well acclaimed papers presented by the students of SPT that have won accolades for our college at the international platform.

We sincerely hope that you would appreciate our endeavours and find this issue worthwhile. We humbly beseech your feedbacks.

With regards,

Editorial board

## 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 thank 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

## PH. D AWARDED

**Name:** Mr. Jwngsar Brahma

**Guide:** Dr Anirbid Sircar

**Title:** Geological and Geophysical Integrated Study of Western and Central Tripura for Identification of Hydrocarbon Plays and Prospects



**Name:** Mr. Biswajit Thander

**Guide:** Dr Anirbid Sircar

**Title:** Comparison of Various Stochastic Inversion Techniques and its Application to Hydrocarbon Resource / Reserve Estimation.



## RESEARCH & DEVELOPMENT PROJECTS

### Completed:-

Sr. No.	Principal Investigator	Title of the Projects	Project Sanctioned By	Duration
1	Dr. Bhawani Singh Desai/ Dr. Anirbid Sircar	Permeability Characterization and Modelling of Tight Gas Sandstone Reservoirs	GSPC	1.5 Years
2	Dr. Bhawanisingh Desai	Ichnofabric Mapping of the Mundhan and Guneri section with special Reference to (Umian-Mundhanian Kutch Stages), Kachchh, Gujarat	DST	3 Years
3	Dr. Bhawanisingh Desai	Ichnology of the Jurassic rocks of the Jara dome, Western Mainland, Kachchh, India	DST	3 Years

### Ongoing:-

Sr. No.	Principal Investigator	Title of the Projects	Project Sanctioned By	Duration
1.	Dr. Bhawanisingh Desai	Ichnofabric analysis, Event Stratigraphy and Depositional Environment of the Cretaceous sediments of Western India	DST	3 Years
2.	Dr. Anirbid Sircar, Ms. Shreya Sahajpal	Geothermal Energy: Development of Excellence Centre	GOG	--
3.	Dr. Bhawanisingh Desai and Rajendra Saklani	High Resolution Sequence stratigraphy of Oligocene sediments of Western India	CSIR	1.8 Years

### Centre of Excellence for Geothermal Energy

As we all know that in India, the potential Geothermal Energy has not yet been tapped. There are various researches going on to conquer and use this clean resource. As per the studies conducted by Geological Survey of India (GSI), Gujarat also has a potential of geothermal energy, which is yet to be explored. Prefeasibility studies were conducted by PDPU together with GPCL, primarily through remote sensing and Landsat imageries to narrow down on the potentially Identified sites. In order to put Gujarat on unconventional energy basket in India, Government of Gujarat (GOG) took an initiative of establishing a center dedicated to research & development activities in the area of exploration and exploitation of geothermal energy. In this light, with the support of GOG, PDPU established Centre of Excellence for Geothermal Energy (CEGE) on 10th of October, 2013. For smooth functioning of the center, PDPU faculties took a lead and started developmental activities for the center. With time, research professionals were also inducted into the center in order to fulfill the aspirations of GOG as well as the center. The members of CEGE are Dr. Anirbid Sircar (Head, CEGE), Ms. Shreya Sahajpal (Coordinator), Ms. Anjali Choudhary (Research Associate), Mr. Dwijen Vaidya, Ms. Shubhra Dhale (Research Assistant), Mr. Manan Shah (Research Executive).

CEGE has used techniques such as Geo-chemical studies, Magneto telluric (MT) survey, and Gravity survey to identify the location of geothermal reserves in the study areas. 2D Magneto telluric survey was carried out with the help of M/s PBG Geophysical Exploration Ltd., Poland at all the three locations. Apart from commercial success, this project has many students and budding academician's association. Thus CEGE organizes field visits, workshops and trainings for students to give them a hands-on learning experience on various software and instruments used in the project for data acquisition and processing.

Field visit to Tulsishyam hot spring was arranged by students in order to understand geology and geochemical analysis of the hot spring of Tulsishyam. Field Visit for Gravity Survey was assembled at Dholera geothermal location for acquiring Gravity data. CEGE has numerous training programs for research like Gravimeter Training, GPS and DGPS training, Magneto telluric (MT) Training and Seismic Training. CEGE organized an International Geothermal Seminar on Geothermal Energy Initiative & Development on 26th July, 2013. The seminar provided an opportunity for industries, academicians, researchers and geothermal experts from all parts of the world to contribute towards the development of geothermal energy. The seminar witnessed talks on interesting topics related to 'Trends & Challenges in Geothermal Exploration', 'Sustainable Geothermal Utilization' and 'Analysis and Case Studies on Geothermal Systems'.

Training and Seismic Training. CEGE organized an International Geothermal Seminar on Geothermal Energy Initiative & Development on 26th July, 2013. The seminar provided an opportunity for industries, academicians, researchers and geothermal experts from all parts of the world to contribute towards the development of geothermal energy. The seminar witnessed talks on interesting topics related to 'Trends & Challenges in Geothermal Exploration', 'Sustainable Geothermal Utilization' and 'Analysis and Case Studies on Geothermal Systems'.

In the upcoming events of Centre of Excellence Geothermal Energy (CEGE), Pandit Deendayal Petroleum University (PDPU) is conducting an International Conference on Geothermal Energy and is convened on 1<sup>st</sup> May, 2015. This conference pertains to discuss on issues and challenges on geothermal energy. The Energy sector is booming and growing at a sustained rate with exciting new opportunities arising around the globe. Many countries acknowledge the threats caused by the climate change and realize the value of renewable energy. Geothermal energy is one such clean, sustainable and renewable source of energy. Geothermal energy can be used both for commercial power generation and direct uses such as heating and cooling applications.

This conference will provide a unique platform where experts from different spectra of geothermal fraternity will be discussing issues and challenges in geothermal exploration and exploitation. In India, many research activities have been carried out in the area of geothermal exploration, primarily magnetotellurics and shallow boreholes. However, there is no commercial production till date. The conference aims to focus on challenges in geothermal energy exploitation and its use for power generation as well as domestic usage. The conference will focus on exploitation and exploration of geothermal energy adopting a multidisciplinary approach along with sharing of experiences, information and ideas with industry experts and delivering global networking and business opportunities.

**Seismic Training**



## CAIRN INDIA- AMAZING CHAMPIONS OF ENERGY III

The Cairn India Amazing Champions of Energy third edition was organized in PDPU. Near about 100 teams registered for the competition in which they had to submit an abstract for the case study on the issue of oil and gas policy framework in India. 63 teams from PDPU (SPM, SOT, SPT) had sent their abstracts online to Cairn India - ACE website from which 5 teams were shortlisted from those entries. They were asked to present their views on the pricing framework along with supporting figures, charts in their presentations. The team from SPM won the first prize and a cash prize of 1 lakh rupees, second position and a cash prize of fifty thousand was bagged by Mr. Kumar Abhishek Singh, Mr. Sudarshan Sai Gogineni and Mr. Yatharth Shukla from SPT-3<sup>rd</sup> year, third position and a cash prize of ten thousand rupees was bagged by Mr. Meet Shah, Mr. Abhishek Rastogi, Mr. Rutul Rathod from SOT-2<sup>nd</sup> year (electrical branch).



Some of the experiences shared by the winners:

## **Sudarshan Sai Gogineni (SPT 2<sup>ND</sup> year)**

Such competitions build a strong alliance between the industry and the academia. I , along-with my team mates Abhishek and Yatharth explained about the energy mix of India based on mainly four types of surveys : 1) least effort 2) aggressive effort 3)determined effort 4) heroic effort .we also conducted surveys both online and on campus on the issue of the limitations in the exploration and production sector pertaining to the indian context and recommend few models in order to boost the economy of the oil and gas sector in India.I would sincerely like to thank the PDCU administration and CAIRN INDIA for promoting these motivating initiatives for budding engineers like us.



Team Barmerian CrUdEr\$ during the presentation round of the competition

## FLARE '15 –REVIVING THE PANTHEON

Flare'15 is a young college festival, but never less for putting up a great show year after year and keep going upwards. The valiant, exceptional and the talented stand a chance to take their place in the celebrated pantheon, that is flare, and lay an important milestone in their lifelong journey of artistry. This year, it emerged even bigger and better entertainer.

### **Amethyst:**

Elixir-the fashion club of PDPU has put up the most extravagant auditions in the auditorium of the college campus that has received a thunderous response from the students in and outside campus. It was the model hunt auditions at PDPU Auditorium where over 70 students registered along with an appreciable response from other prestigious colleges. The students were seen walking with beautiful and dazzling outfits on the ramp to reflect their personality and confidence. The judges asked them an array of questions which brought about their own illustrative virtues on stage highlighting everyone's inner panache.



### **Melodia:**

The auditorium was enthralled by the huge number of participants and audience for the inter college auditions of Melodia on the evening of 30th March. An epic response was delivered by the students on campus, when over 100 participants participated.

## At-Mosh-Sphere:

‘To Play Music without Passion is Inexcusable.’

At-MOSH-Sphere 3.0 was back with a bang at national level. Last year it was just 60k prize money and a recording deal. This time it was bigger, better and brutal. The battle was between the survivors of the Audition rounds. And Cosmic Truth, a band hailing all the way from Delhi surpassed all the odds and bagged 70k prize money clubbed with a recording deal. The headlining band—Live Banned, left the students dancing on their unique mixture of tunes and the weirdest of outfits you can imagine. Well as its said, MISS IT | MOSH IT !



## Pro-Nite:

The campus of PDPU was covered with glitterati on the night of 12th April, 2015, when one of the most loved Bollywood singer of all time, Sonu Nigam turned up the heat and performed his Bollywood hits for the crowd. The energy and charisma he possessed, left all of the spectators dancing and mesmerized to his tunes and mellifluous voice.



**RELIANCE**  
Mobile

## **The Reliance Story**

-Mudit

### **MODEST BEGINNINGS**

## **ASPIRATIONS**

Dhirubhai Ambani returns to India in 1957 after a stint with A. Besse & Co., Aden, Yemen. He starts a yarn trading business from a small 500 sq. ft. office in Masjid Bunder, Mumbai, but dreams of establishing India's largest company.

### **WEALTH CREATION**

## **FOR ALL INDIANS**

In 1977, Reliance Textile Industries' IPO creates history by introducing the equity cult in India. The issue is oversubscribed seven times, strengthening Reliance's growth ambitions.

### **INTEGRATING BACKWARD**

## **RACING FORWARD**

Reliance sets up a mill in Naroda, Gujarat, sparking off Reliance's backward integration journey. Mukesh Ambani leads the establishment of Reliance's first mega manufacturing project at Patal-

## **ENHANCING THE LIFESTYLE OF EVERY INDIAN**

Reliance's backward integration journey continues. The Hazira plant coming on stream in 1991 laid the foundation for Reliance becoming the world's largest integrated producer of polyester.

## **INDIA ARRIVES ON THE GLOBAL REFINING MAP**

In 2000, Reliance commissions the world's largest grassroots refinery in a record 36 months: the Jamnagar petrochemicals and integrated refinery complex. With the development of the associated green belt, the desert surrounding Jamnagar becomes home to another man-made wonder – Asia's largest mango orchard!

## **TRIGGERING A TELECOM REVOLUTION**

In 2002, Reliance enters the Infocomm business and brings about a revolution in mobile telephony in India. In 2005, Reliance makes a strategic decision to reorganise its businesses through a demerger. Power generation and distribution, financial services and telecommunication services are demerged into separate entities.

## **JOINING THE GLOBAL GIANTS CLUB**

In 2004, Reliance emerges as the first and only private Indian or-

also the first private sector company to be rated by international credit rating agencies - including Moody's, Standard and Poor's.

## INVESTING IN THE

# ENERGY SECURITY OF INDIA

In 2009, Reliance commences production of hydrocarbons in its KGD6 block - against all odds - in just over two years of its discovery, making it the world's fastest green-field deepwater oil development project. With this development, Reliance completes an unprecedented backward integration journey.

## LARGEST RETAILER

# SERVING INDIA

Reliance Retail becomes the largest retailer by revenue in 2014, fulfilling the aspirations of millions across the country and bringing international experiences at affordable prices to every corner of India.

## INNOVATION-LED

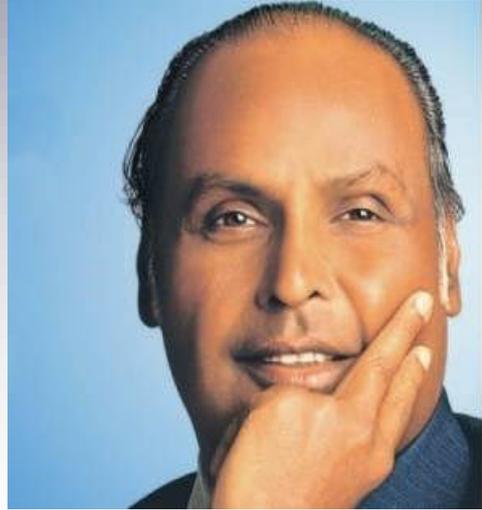
# GROWTH CONTINUES

Reliance Jio Infocomm Ltd., ushers in a pan-India digital revolution through state-of-the-art wireless broadband 4G services, promising to bridge the digital divide

**WHAT'S GOOD FOR INDIA**



**Reliance  
Industries Limited**



**IS GOOD FOR RELIANCE**



# "Palaeocommunity Dynamics and Behavioral Analysis of *Conichnus*: Bhuj Formation (Lower Cretaceous), Kachchh-India"

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## Palaeocommunity Dynamics and Behavioral Analysis of *Conichnus*: Bhuj Formation (Lower Cretaceous), Kachchh-India

Bhawanisingh G. Desai and Rajendra Dutt Saklani

School of Petroleum Technology, Pandit Deendayal Petroleum University, Gandhinagar, India

A palaeocommunity of large *Conichnus conicus*, a conical, cone-in-cone shaped burrow, created by sea anemones, occurs in medium-grained, crossbedded, well-sorted sandstone in the middle part of the Cretaceous Guneri Member of the Bhuj Formation in India. The trace fossil *Conichnus* is considered to be a common element of the *Skolithos* ichnofacies and is interpreted to reflect equilibrium movement in response to substrate aggradation. In the present study, three different varieties of *Conichnus conicus* are distinguished based on morphology and internal fabric. Community dynamics and burrowing behavior are revealed by inter-burrow relationships, burrow initiation levels and sedimentology. Three types of behavior are envisaged: retrusive equilibrium, protrusive equilibrium response, and escape behavior. Palaeocommunity dynamics show that the tracemakers consisted of only adult organisms that initiated burrows during neap tides and are adapted to feed effectively during weak flow conditions. The occurrence of *Conichnus* palaeocommunity in the Guneri Member indicates the tidal conditions in a fully marine setting. Results presented herein may aid in the understanding of palaeocommunity dynamics in other shallow marine sequences.

**Keywords** Trace fossils, *Conichnus*, Community dynamics, Behavior, Bhuj Formation, Kachchh, India

### INTRODUCTION

The ichnogenus *Conichnus* Männil 1966, is a vertical conical trace with internal filling and rounded base, is usually made by sea anemones and has been previously reported from the Ordovician (Männil, 1966) to recent (Shinn, 1968). These are considered to be important elements of the *Skolithos* ichnofacies (MacEachern et al., 2007; Curran, 2007). Previously, they have been reported only as single, solitary, or isolated examples (Frey and Howard, 1981) from sediments deposited

in high-energy environments such as back-reef lagoons (Pemberton and Jones, 1988; Curran, 1994), oolitic shoals (Halley and Evans, 1983), wave/tide influenced subtidal (Curran and White, 1997), and tidal settings (Savrda, 2002). In this paper, we attempt to describe a palaeocommunity of *Conichnus* composed of 13 individual traces in Early Cretaceous sediments of the Bhuj Formation of Kachchh Paleorift Basin, Western India. The objectives of the paper are to summarize the palaeocommunity dynamics of the *Conichnus*-making organisms, to infer tracemaker behavior as expressed in burrow morphology, and to discuss the environmental significance of this trace fossil occurrence.

### GEOLOGY AND SEDIMENTOLOGY

The Kachchh basin is a pericratonic, paleorift basin on the westernmost fringe of the Indian peninsula. It is famous for its Jurassic-Cretaceous sediments (Biswas, 1987) and is considered to be found at the southernmost end of the Indus shelf, bordered on the north by the fossil rifts of the Thar and Southern Indus basins (Zaigham and Malick, 2000). The basin contains a thick succession of Mesozoic strata (+3000 m) overlain by a thinner sequence of Tertiary sediments (+900 m). Mesozoic sediments are exposed in six areas: Kachchh Mainland, Pachham Island, Khadir Island, Bela Island, Chorar Island, and Wagad (Fig. 1). All of these are tectonic highland areas and are separated by vast covered plains. In the Kachchh Mainland, the Bajocian and the Albian rocks are exposed in two east-west chains marking elongate domes: the Northern Flexure Zone (Fig. 1) and the Katrol Hill Range (Biswas, 1993). The Mesozoic sequences in these areas include, in an ascending order, the Jhurio, Jumara, Jhuran, and Bhuj formations.

The Bhuj Formation is exposed in two wide belts (Fig. 1), one striking nearly east-west in the central part of Kachchh mainland and the other striking northwest-southeast on the western part of the Kachchh mainland (Biswas 1993). The Bhuj Formation comprises of thick beds of brown, orange to

Address correspondence to Bhawanisingh G. Desai, School of Petroleum Technology, Pandit Deendayal Petroleum University, Raisan Village, Gandhinagar-382009, India. E-mail: bhawanigd@gmail.com

Color versions of one or more of the figures in the article can be found online at [www.tandfonline.com/gich](http://www.tandfonline.com/gich).

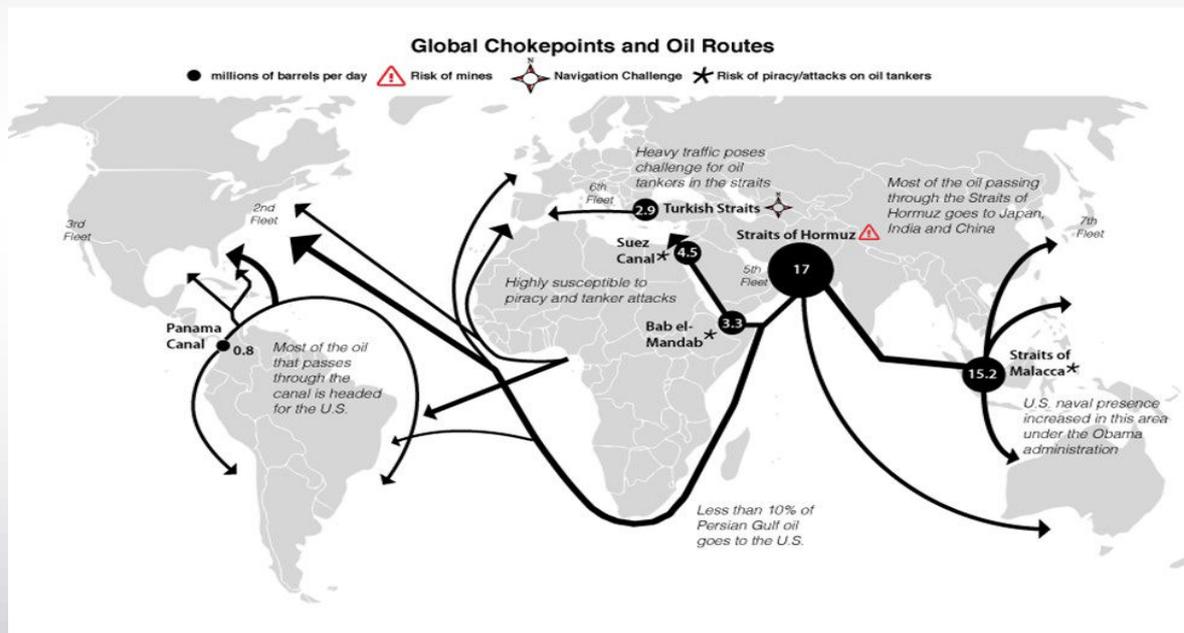
Paleontology deals with study of direct and indirect evidences of the lifeforms in the past. Two ways of studying the biological evolution is by BODY FOSSILS and TRACE FOSSILS. Dr. Bhawanisingh.G.Desai published a paper on the trace fossils found near Mata no Madh in Kachchh, Gujarat. According to him, this trace fossils helping in the analysis paleodynamics. Sea Anemone is a soft bodied, very fragile organism, Benthic in nature. As turbulence occur it raise above the new batch of sediment brought by turbulence. So it grows in a manner which accounts for its greater height. It forms V shaped burrows in the sand. These burrows had also been discovered but they were all isolated in nature. For the first time in the world these trace fossils were found in bunch. All burrows found were more than 1m. long. Total of 13 such burrows were discovered by Dr. Bhawanisingh near Mata no Madh from 17m. long bed. All these burrows were found in sediments aged cretaceous. The implications of these burrows give idea about behavior of community at that time. These burrows were found at finite distance explaining which Dr. Bhawanisingh quoted," This community supported each other to stand when the turbulence occurred and prevented their collapse." Dr Bhawanisingh explained that the interpretation of this trace fossils would help in understanding the Echology, Environment, Energy of the turbulence, Rate of Deposition etc.



## CHOKE POINTS: The Curse to Stable Oil Trade

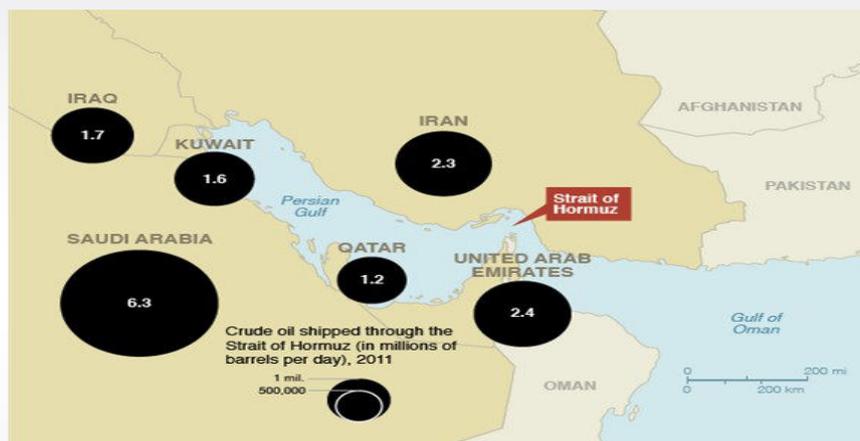
-PRANSHU PRALEYA  
PRAKHAR SARKAR

“Choke Points”, as could be inferred superficially from the term, refers to narrow channels or geographical features at sea typically straits. They are the spots that pose restrictions and difficulties to large-scale transit of commodities and people through them. Oil Chokepoints are narrow channels along widely used global sea routes, some so narrow that restrictions are placed on the size of the vessel that can navigate through them. They are a critical part of global energy security due to the high volume of oil traded through them.



Right from influencing war outcomes to forming a critical part of global energy security, Oil Choke Points wield a substantial leverage over the realm of Oil Trading and Transit. Since their historic inception, they have been the critical flare-up points that have led to the use of alternative routes particularly the pipelines for safer and more stable avenues of oil trading. In context of oil transit volume, the Strait of Hormuz(16 MMbbls/d) leading out to the Persian Gulf and the Strait of Malacca(15.2 MMbbl/d) linking the Indian and Pacific Oceans are the world’s most strategic and po-

Apart from these, the Suez Canal (2.97 MMbbls/d) of Egypt and the Bab-el-Mandab (3.4 MMbbls/d) of Somalia are the other important choke points. The blockage of a choke point, even temporarily, can lead to substantial increases in total energy costs. For instance, the significance of Strait of Hormuz is repeatedly reminded by constant threats delivered by Iran implying abrupt closure and mining of the strait that would have a calamitous impact on oil prices for the countries that depend on Middle Eastern oil. Hence, in order to maintain unhindered oil trade through these routes, America maintains its 5<sup>th</sup> Fleet to maintain the sanctity of these waters while other global powers deploy their navies to patrol and prevent sea piracy.



The Strait of Hormuz alone can be associated with about 20% percent of oil traded worldwide. More than 85 percent of these crude oil exports go to Asian markets, with Japan, India, South Korea, and China representing the largest destinations. India alone carries out 71% of its oil trade through these waters. In an effort to ensure uninterrupted supply of oil and gas and subsequently exert geopolitical influence, China is proactively implementing its “String of Pearls” Doctrine. The situation sounds similar in the other states also who are actively looking forward to safeguard their own interests. The status quo of current developments call for commensurate action by India to secure its oil trade routes and take immediate steps to develop alternate routes like the Iran-India Pipeline. It would be interesting to observe how present day ambitious global powers seek to achieve unhindered oil trade through the shortest possible routes avoiding potential skirmishes escalating to crises.

## Oil price hovers at four-month high

The price of oil is hovering at a four-and-a-half month high amid concerns over disruption to supplies from the Middle East. Brent crude oil is at \$65.37 per barrel and has gained around \$9 since March. A slowdown in US shale oil production and the conflict in Yemen have been cited as the main reasons for the rise in the oil price in recent weeks. It comes as BP, Shell and Exxon Mobil are expected to report sharp falls in first quarter earnings this week.



## Scientists certain that drilling is causing earthquakes

With the evidence coming in from one study after another, scientists are now more certain than ever that oil and gas drilling is causing hundreds upon hundreds of earthquakes across the U.S. So far, the quakes have been mostly small and have done little damage beyond cracking plaster, toppling bricks and rattling nerves. But seismologists warn that the shaking can dramatically increase the chances of bigger, more dangerous quakes.

## Canada oil growth output poised to fall 59% after price collapse



Canada's crude output growth will slow to 17,000 bpd by next year after oil lost half its value, according to the Canadian Energy Research Institute. Growth in production will slow from 41,000 bpd this year amid declining conventional oil output, CERI

President Emeritus Peter Howard said in a presentation at a conference in Calgary Tuesday. The slowdown delays by two years Canada's need for one of four major oil export pipelines planned, Howard said.

## Gazprom and YPF ink Argentina upstream collaboration agreement

The ceremony was held in the presence of Vladimir Putin, president of the Russian Federation and Cristina Fernandez de Kirchner, president of the Republic of Argentina.

YPF is the main oil and gas producer in Argentina, with a market share of more than 43 per cent. It employs 74,000 people directly and indirectly. It operates three strategically located refineries in the country and a network of over 1500 service stations. YPF is the leader in all the segments of the industry (exploration, production, refinery, distribution and sales).

In 2013 Gazprom won an international tender for the supply of 15 LNG cargoes with a total volume of one million tons from Gazprom's portfolio to Argentina between 2014 and 2015.



## **Indian petrochemical industry may touch \$100 billion by 2020: ASSOCHAM**

The domestic petrochemical industry is in the process of investing over \$25 bn to meet the surging demand, besides to overcome the broad problems of infrastructure, power, water availability and others

the Govt initiative of PCPIRs will greatly motivate the companies to invest them, ASSOCHAM said.



## **After blowing \$3 billion, GSPC runs out of gas**



Gujarat State Petroleum Corporation has decided to systematically withdraw from gas exploration and focus only on gas distribution — its core business earlier. The move comes after the state-owned company has spent more than Rs 19,000 crore (\$3 billion) of public money on exploring for gas.

## **Shell acquires BG in India**

Shell's acquisition of BG will have only a marginal impact in India for the time being as BG's operations here are confined to PMT fields, MGL and a couple of PSC blocks. But coming as it does in the wake of Shell's attempts to expand its presence in Indian market, the development can be a matter of concern for a business rival like BP. Prime Minister Modi's dream of a 10 per cent import reduction in hydrocarbons can be realised provided he takes some hard decisions. .

## ONGC planning 'Relief well' at Olpad blow-out

ONGC is planning to spud a 'relief' well to contain a blazing fire from a 'blow-out'. At the olpad well at its Ankleshwar asset in Gujarat on April 18 that left 12 injured. ONGC wants to prevent the gas settling to the bottom of the well as this will make it difficult to flow into the relief well, further fuelling the raging underground fire.



## Government seeks first cut in LNG imports under Qatar deal

India is in talks with Qatar to import at least 10 per cent less liquefied natural gas (LNG) under a long-term deal after a slide in spot prices has cut demand by local buyers. New Delhi would for the first time use a 10 per cent reduction permissible under a 25-year contract with Qatar's RasGas to import up to 7.5 million tonnes a year of the super cooled fuel.



## PETROZOA .....THE QUIZ

### **Section 1 : General Knowledge**

Q1. Over 12 persons, including three technical team officials, of the ONGC were injured after fire erupted in its natural gas well in an agricultural field recently, at Dihen village in Olpad taluka of Surat district. Meanwhile, the ONGC's Crisis Management Team (CMT) has stepped up efforts to drill a relief well at a nearby place which will be directionally drilled to reach the affected well sub-surface. This will allow CMT to plug the affected well at the bottom and stop further gas flow. *Which globally renowned oil and gas blow out control expert company has ONGC called to contain the crisis at well Olpad-31?*

Q2. Brent Crude is a major trading classification of sweet light crude oil that serves as a major benchmark price for purchases of oil worldwide. *Which amongst the following is NOT another well-known classification (also called references or benchmarks) - OPEC Reference Basket, Dubai Crude, Nigerian Crude, Urals oil and West Texas Intermediate (WTI). Also fill the following blank - Brent is the leading global price benchmark for \_\_\_\_\_ crude oils.*

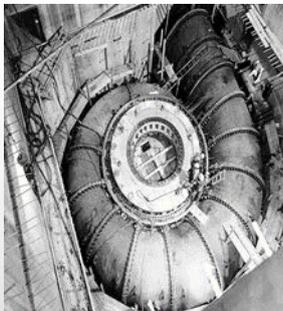
Q3. Japan is a country that lacks significant domestic reserves of fossil fuel, except coal, and must import substantial amounts of crude oil, natural gas, and other energy resources, including uranium. Japan is the world's largest liquefied natural gas importer, second-largest coal importer, and third-largest net importer of crude oil and oil products and moreover the cost of importing fuel has increased after a backlash against nuclear power following the Fukushima nuclear disaster four years ago. Even then Japanese energy companies have actively pursued participation in upstream oil and natural gas projects and one Japanese company is the world's first to successfully extract methane hydrate from seabed deposits using depressurisation method that turns methane hydrate into methane gas. *Name this company.*

# QUIZ

Q4. 'X' is a company which took over 'Y', recently, following which it became the company with the second highest market value in the world after 'Z'. Also 'Z' is now seen as the frontrunner in purchasing A's multi-billion dollar stake in Mozambique's giant gas reserves in offshore Area 1 license in the Rovuma Basin, which 'A' is considering selling, as the previous likely frontrunner X dropped out following its planned merger with Y. Interestingly India's State-run ONGC, OIL and 'B' will in the next four years invest \$6 billion in developing the same gas field off the Mozambique coast and converting the fuel into LNG for export to nations like India. *Identify the companies X-Y-Z-A-B.*

## Section 2 : Upstream

Q1. Which amongst the following instruments is NOT an instrument used in exploration and production of oil & gas?



A)



B)



C)



D)

Q2. Which amongst the following is NOT a proven and tested Enhanced Oil Recovery technique?

- a) Steam Flooding
- b) Microbial Injection
- c) High Saline Waterflooding
- d) CO<sub>2</sub> Flooding

### Section 3 : Downstream

Q1 Identify the refinery (shown in the picture), which is the world's largest oil refinery with an aggregate capacity of 1.24 million barrels per day (bpd). What is the nelson complexity index of this refinery?



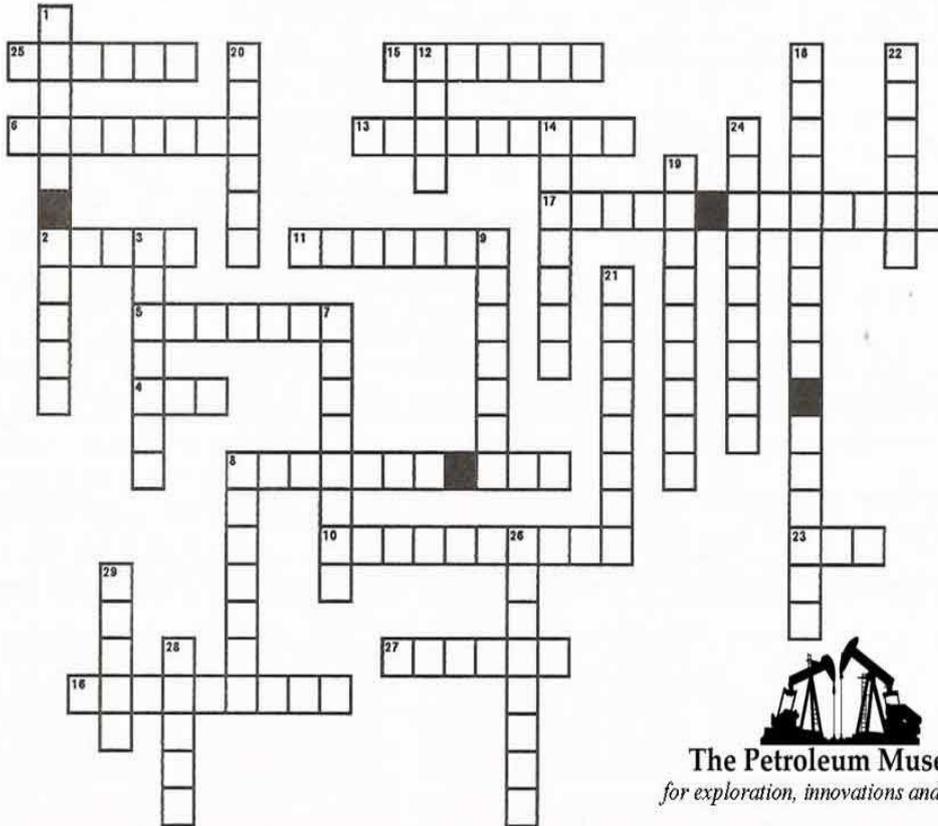
Q2. Complete the following blanks:

(a) \_\_\_\_\_ is one of the most important conversion processes used in petroleum refineries. It is widely used to convert the high-boiling, high-molecularweight hydrocarbon fractions of petroleum crude oils to more valuable gasoline, olefinic gases, and other products. Cracking of petroleum hydrocarbons was originally done by (b) \_\_\_\_\_, which has been almost completely replaced by (a) \_\_\_\_\_ because it produces more gasoline with a higher octane rating. The feedstock to an (a) \_\_\_\_\_ is usually that portion of the crude oil that has an initial boiling point of 340 °C or higher atmospheric pressure and an average molecular weight ranging from about 200 to 600 or higher. This portion of crude oil is often referred to as (c) \_\_\_\_\_. There are two different configurations for an (a) \_\_\_\_\_ unit: the "stacked" type where the reactor and the catalyst regenerator are contained in a single vessel with the reactor above the catalyst regenerator and the (d) \_\_\_\_\_ type where the reactor and catalyst regenerator are in two separate vessels.



## PETROLEUM CROSSWORD PUZZLE

The items in this crossword puzzle are made from petroleum or are products that use petroleum products as a major part of the manufacturing process.



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### DOWN

1. Used in wrapping baked goods and candy.
3. Solvent used in fingernail polish remover.
7. Music or video is recorded on this.
8. Women put this on their eyelashes.
9. You wash your hair with this.
12. Item with a "sole" of petroleum.
14. This can help a headache.
18. Makes your table shine.
19. Keeps your coffee hot.
20. Keeps your wheels rolling.
21. Powers your car.
22. "Big Rig" fuel.
24. A type of "soap."
26. Big word for glue.
28. Foot coverings.
29. Woman's stocking material.

### ACROSS

2. Product used to color walls.
4. Used to seal cracks on a roof or on roads.
5. Type of bottle used for milk or soda.
6. Fuel for pioneer lantern.
8. Highly refined oil used in pharmaceutical products.
10. Tooth cleaner.
11. Cleaners or traps for dirt.
13. Keeps people smelling nice.
15. Roads are made of this.
16. Keeps bugs out of your clothes.
17. Dissolves paint.
23. What printers print with.
25. Romantic lighting device.
27. Living room rug.

School of Petroleum Technology,  
Pandit Deendayal Petroleum University,  
Gandhinagar-382 007

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**SPT**  
**MIRROR**