

PICTORIAL REPORT



powering nations growth India 2014
3rd National Convention

Theme: "Future of Oil & Gas in India's Energy Security"

Wednesday 20th, Thursday 21st & Friday 22nd August 2014 at Hotel Sahara Star, Near Domestic Airport, Mumbai.



Conference Partners



Associate Conference Partners



Organisers



Official Journal





powering nations growth India 2014

3rd National Convention

Theme: "Future of Oil & Gas in India's Energy Security"

**Wednesday 20th, Thursday 21st & Friday 22nd August 2014
at Hotel Sahara Star, Near Domestic Airport, Mumbai.**

THE PROGRAMME

Day - I: Wednesday, 20th August, 2014

12:30 PM: – 01:30 PM: Registration & Lunch for participants of "CEO's Round Table Meet"

01:30 PM: – 03:30 PM: Two Parallel 'Round Table Meets'
"CEO's Round Table Meet" on
"Challenges in Oil & Gas Sector" (By Invitation only)

(A) For Upstream Sector

Session Chair: **Shri Sudhir Mathur**, CEO & CFO, CAIRN India Ltd.

Session Moderator: **Shri Kaustav Mukharjee**, Boston Consulting Group(BCG)

Expert Panelists invited: -

Shri S. Rath, Director - Operations, Oil India Ltd.

Shri Hari Kumar, Director – Safety, CAIRN India

Col. Deepak Bakshi (Retd), Vice President, HSSE,
BG Exploration & Production (I) Ltd.

Shri S. Hajara, Former CMD, The Shipping Corpn.
Of India Ltd.

Shri D. K. Gupta, Executive VP, L&T Hydrocarbon -Upstream

Shri Sanjay Chawla, General Manager,

DG-Hydrocarbons, Govt. of India

Dr. Timothy S. Collett, US Geological Survey, Denver
Federal Center, USA

Dr. P. K. Borthakur, Former Director – Offshore, ONGC.

Shri Samarendra Roychaudhury, Consultant,
CAIRN India Ltd.

Shri Indra Mohan, President, India-Tech Foundation

Shri Abraham John, DGM-BD & Ops.,
Jindal Drilling & Industries Ltd.

(B) For Downstream Sector.

Session Chair: **Shri S. Roy Choudhury**, (Former CMD, HPCL)

Session Moderator: **Prof. Utpal Ghosh**, COO & Pro Vice Chancellor, UPES

Expert Panelists invited: -

Shri A. K. Purwaha, CMD, Engineers India Limited

Dr. R. K. Malhotra, Ex. CMD, Indian Oil Corpn. Ltd.

Shri A. K. Gupta, CMD, Shipping Corpn. of India Ltd

Shri Ajit Chandra Mishra, Head – Marketing, Essar Oil Ltd.

Shri HIRAK DUTTA, Executive Director, OISD,
Ministry of P&NG, Govt. of India

Shri Ajit Gupte, Director - Ops, Rulexx Oil & Lubricants

Shri Ashish Gupta, Secretary General,
India-Tech Foundation

02:30 PM: – 03:30 PM: Registration for Participants of 3rd National Convention
Oil & Gas India 2014

03:30 PM: – 05:30 PM: **Special Session on: 'Safety'
"Enhanced Safety Management":
Process the 'Warning Signals'
- Shri Hari Kumar**, Director – Safety, CAIRN India
**"Process Safety Management in Industry & Reliability"
- Shri HIRAK DUTTA**, Executive Director,
OISD, Ministry of P&NG, Govt. of India

*Followed by some short presentations from some 'Service
Providers' And 'Q & A Session'*

05:30 PM: – 06:00 PM: High Tea

6.00 PM: – 7.30 PM: INAUGURAL SESSION

6:00PM: – 6:15PM: Secretary Petroleum & Natural Gas arrives and
received by the Chairmen of 'NAC' and India-Tech Foundation
and other Office Bearers.
Presentation of Flowers & Lighting of Ceremonial Lamp

6:15PM: – 6:30PM: Welcome Address: **Shri P. Uma Shankar**,
(Former Secretary – Power) Chairman, India-Tech
Governing Council

6:30PM: – 6:45PM: *Special Address –I: **Shri Kaustav Mukherjee**,
Managing Director Boston Consulting Group,
Moderator (Upstream Sector)*

6:45PM: – 7:00PM: *Keynote Address I: "CAIRN India's Vision 2020 and beyond"
Shri Sudhir Mathur, CEO & CFO, CAIRN India Ltd.*

7:00PM: – 7:15PM: *Keynote Address II: 'Future of Oil & Gas in India's
Energy Security'
Dr. Kirit Parikh, Former Member, Planning Commission*

7:15PM: – 7:30PM: *Inaugural Address: **Shri Saurabh Chandra**,
Secretary - Petroleum & Natural Gas, Govt. of India*

7:30PM: – 7:35PM: Vote of Thanks: **Shri Indra Mohan**, President,
India- Tech Foundation

7.35 PM: – 9.00PM: Networking Reception & Dinner

THE PROGRAMME

Day - II: Thursday, 21st August, 2014

- 9.00 AM – 10.00 AM: Registration & Tea/Coffee
- 10.00 AM – 11.30 AM *Keynote Session II: "Exploration and Production"*
- Session Chairman:* - **Shri S. V. Rao**, Former Director – Exploration, ONGC.
- Keynote Address:* **Exploration in Frontier (Challenging) Areas**
- **Shri S. Rath**, Director – Projects, Oil India Ltd.
- Present Status and Future Potential Availability of Oil & Gas in India**
- **Shri Sanjay Chawla**, GM & Head
Alternate Energy & FDP, DGH, Govt. of India
- Drilling Technologies for Deep Water Development**
- **Shri Ravindra K. Singh**, GM-E&P, Reliance Ind.. Ltd.
- **Shri Ken Fraser**, Chairman, Norwell Engineering, UK
- Upstream Production facilities - Design & Development – Future Trends**
- **Shri Bhaskar Pal**, AGM (Offshore Engg. Dept), EIL
- 11.30 AM – 12.00 PM: Networking Tea / Coffee
- 12.00 NOON - 1.30 PM: *Session - III: Exploration & Production (Continued)*
- Session Chairman:* - **Shri P. K. Borthakur**,
Former Director – Offshore, ONGC.
- Enhanced Oil Recovery (EOR)**
- **Shri Samarendra Roychaudhury**, Consultant – Head,
Central Operations Team, CAIRN India Ltd.
- Sharing of Infrastructure and Services**
- **Shri S. V. Nair**, Chairman-Tech. Advisory Board,
CAIRN India Ltd.
- **Shri A. K. Jain**, (EX-ED), ONGC
- 1.30 PM: – 2.30 PM: Networking Lunch
- 2.30 PM: – 4.00 PM: *Session - III: Non-conventional & Renewable Energy*
- Session Chairman:* - **Shri A. K. Dwivedi**, ED- Basin Manager, Western Offshore
Basin, ONGC Ltd.
- Way forward for Unconventional Energy Development in India**
- **Dr. Shailendra Kumar Singh**, VP & Head – G&G,
Essar Oil Ltd (E&P Div)
- Gas Hydrates – Potential & Challenges in Exploitation**
- **Dr. Timothy S. Collett**, US Geological Survey,
Denver Federal Center, USA

Day – III: Friday, 22nd August, 2014

- 9.30 AM – 11.00 AM: *Session - IV: Refining - Some Challenges*
- Session Chairman* - **Shri B. P. Das**, ED – R&D, Indian Oil Corpn. Ltd.
- Keynote Address:* **Greener Fuels - Challenges & Role of R&D Technology Complexity & Environment Issues**
- **Smt. Vartika Shukla**, General Manager (Process),
Engineers India Ltd.
Challenges in operations and project implementation of Hydrocarbon Pipelines, including safety related issues.
- **Shri U. K. Dhoot**, GM-Project Monitoring, Indian Oil Corpn. Ltd.
- 11:00 AM – 11.30 AM: Networking Tea/Coffee
- 11:30 AM – 1.00 PM: *Session - V: Challenges in Marketing*
- Session Chairman* - **Shri Indrajit Bose**, ED (Retail Sales), IOCL
- Keynote Address:* **Challenges in Rural Marketing Product Availability and Swapping**
- **Shri M. R. Karandikar**, Executive Director - Supplies,
Indian Oil Corpn. Ltd.
- Terminal Modernization and Safety Issues**
- **Shri H. C. Mehta**, ED (Ops. & Distrn.), HPCL
- **Shri L. R. Jain**, Dy. Gen Mgr-Ops. (RETAIL), BPCL
- 1.00 PM: – 2.00 PM: Networking Lunch
- 2:00 PM: – 4.00 PM: *Session on – VI: Gas Availability, Accessibility, Affordability & Logistics*
- Session Chairman:* **Dr. A. K. Balyan**, MD&CEO,
Petronet LNG
- Keynote Address:* **Gas Prices, Gas Demand Scenario in India & Supply options**
- **Shri Rajeev Mathur**, ED - Gas Mktg., GAIL
- New Technologies - Floating Storage & Regasification Unit**
- **Capt Sanjay Gupta**, Vice President (Shipping),
Petronet LNG Ltd.
- Pipeline Access & Tariff Issues**
- **Shri I. Srinivas Rao**, Executive Director-Gas, BPCL
Shipping Logistics Management
- **Shri S. Hajara**, Former CMD,
The Shipping Corpn. Of India Ltd.



L to R: Shri Ashish Gupta, Secretary General, India-Tech foundation, Shri Sudhir Mathur, CEO&CFO, Cairn India LTD., Shri Uma Shankar, Former Secretary-Power Govt. India, Shri Saurabh Chndra, Secretary- Ministry of Petroleum & Natural Gas, Shri Kaustav Mukherjee, Boston Consulting Group, Dr Kirit Parikh, Former Member, Planning Commission & Shri Indra Mohan, President, India-Tech Foundation.



powering nations growth India 2014
3rd National Convention

The Report

The Indian Oil and Gas sector has undergone serious transformation in the last couple of decades as the demand for energy more than trebled and is expected to grow more than four times by 2030. The country will have to overcome various challenges in its desire to achieve the desired goal across segments be it upstream or downstream.

This as the backdrop, India Tech Foundation (ITF) organised the 3rd National Oil & Gas convention from August 20-22, 2014 in Mumbai with the Theme: "Future of Oil & Gas in India's Energy Security."

The three day event attended by the who's who of the industry was full of open sessions on issues ranging from status of existing resources (conventional and non-conventional), their availability, domestic potential, policy concerns, safety issues, solutions in sight and outlook ahead.

The Inaugural Session was preceded by a Round Table Meet on the Upstream and the Downstream sector attended by the past and

present head of India's oil and gas companies. The aim of the round table was to arrive at recommendations for the Indian oil and gas industry and what the government needs to do fix the challenges facing the industry.

The participants in the Upstream Sector Round Table Meet

included: Shri Sudhir Mathur, CEO & CFO, Cairn India Ltd., Shri Kaustav Mukherjee, Boston Consulting Group (BCG), Shri S. Rath, Director-Operations, Oil India Ltd., Shri Hari Kumar, Director – Safety, Cairn India, Col. Deepak Bakshi (Retd), Vice President, HSSE, BG Exploration & Production India Ltd., Shri S. Hajara, Former CMD, The Shipping Corpn. Of India Ltd, Shri D.K. Gupta, Executive VP, L&T Hydrocarbon-Upstream, Shri Sanjay Chawla, General Manager, DG-Hydrocarbons, Govt. of India, Dr. Timothy S. Collett, US Geological Survey, Denver Fedral Center,USA, Dr. P. K. Borthakur, Former Director-Offshore, ONGC, Shri Samarendra Roychoudhury, Consultant, Cairn India Ltd., Shri Indra Mohan, President, India-Tech Foundation, Shri Abraham John, DGM-BD & Ops. Jindal Drilling & Industries Ltd.

The Downstream Sector Round Table Meet

was led by and the panellists were Shri S. Roy Choudhury, (Former CMD, HPCL), Prof. Utpal Ghosh, COO & Pro Vice Chancellor, UPES, Shri A. K. Purwaha, CMD, Engineers India Ltd., Dr. R. K. Malhotra, Ex. CMD, Indian Oil Corporation Ltd, Shri A. K. Gupta, CMD, Shipping corporation. of India Ltd., Shri Ajit C. Mishra, Head – Marketing, Essar Oil Ltd., Shri Hirak Dutta, Executive Director, OISD, Ministry of P&NG, GoI., Shri Ajit Gupte, Director-Ops. Rulexx Oil & Lubricants, Shri Ashish Gupta, Secretary General, India-Tech Foundation.



Upstream Round Table



Shri Saurabh Chandra, giving his speech



Downstream Round Table



L to R: Shri Sudhir Mathur, CEO & CFO, Cairn India Ltd.; giving a speech while Shri Ashish Gupta, Secretary General, India-Tech Foundation, Shri. P. Uma Shankar, Former Secretary - Power, Govt. of India; Shri Saurabh Chandra, Secretary, Ministry of Petroleum & Natural Gas, Dr. Kirit Parikh, Former Member, Planning Commission, Shri Kaustav Mukherjee, Boston Consulting Group & Shri Indra Mohan, President, India Tech Foundation.

**Day 1:
Special Session on Safety:**

The organisers also felt the issue of safety is vital to the existence of the industry in the light of the recent incidents of fire in the GAIL's gas pipeline and the history of serious episodes in past. Hence a separate session prior to the Inaugural Session was organised that discussed the role of management in handling the event of safety and what measures to be adopted on the basis of past mistakes.



Hari Kumar, Director - Safety of Cairn India spoke about our failure to learn from past mistakes and how we continue to ignore signals reported to senior management by the field workers. "The top leadership treats the matter in very casual manner leading to knee jerk reactions. The leaders should institutionalise the lessons from such incidents into set standards and guidelines, which would then be followed by industry as reference material," said Hari Kumar.

He added, there are manual as well as automated guagers that help keep track of such safety related issues. However, the problems mostly stem from dysfunctional management or deferral of actions. The role of leadership in driving the culture of safety is prominent. The leaders should ensure there are proper audits, training programmes and demonstration of indicators for setting up the life time security management system within the industry.

Hirak Dutta, Executive Director, OISD, Ministry of Petroleum & Natural Gas, GoI said there should be zero tolerance towards such incidents.



He cites a statistics that the number of incidents and fatalities have grown in the last five years. Out of the total 208 incidents that have happened in the oil and gas sector since 2010-11, it is noticeable that around 127 were fatal. What is even more surprising is that 95 per cent of these fatal incidents were of contract labours. The cause for such incidents was non adherence to supervision standards and no set systems and procedures for safety.

Dutta noted, we have failed to pick up and process the signals and noises from the system. Despite frequent process upsets and repeat findings during audits we are not able to address these issues conclusively. At times minor incidents are not even reported. All

these issues combine to create situations like the Bhopal Gas tragedy; the Mumbai offshore platform fire incident and the latest Gail pipeline explosion. In all these incidents the warning signals were ignored that led to massive loss of life and property.

All the strategies that companies devise would only work when there is positive culture. The lessons learnt should be shared with all concerned besides we should continue to challenge our learning process. Wise people learn from others mistakes but we are not learning from our own mistakes, he said.

He cited a growing lack of concern in refineries where companies are sacrificing on safety issues in the name of optimisation of refineries and increasing the throughput. We are processing high sulphur crude and converting the pipelines for low sulphur crude into high sulphur crude. We are putting tremendous pressure and overstretching the infrastructure. There is overt dependence on contractors for getting the work done without supervising the job properly. We need to educate the contractors and do regular audits of their work, equipment and job undertaken.

We need to have a holistic approach to safety in the oil and gas industry. The safety parameters should be benchmarked and must be shared with the industry. Asset integrity including the human assets is important for development of a culture. Dutta states, it is mandatory for the development of the safety standards in the organisations to engage the employee at every level including employees being part of the decision making process.

Inaugural Session:

The session on the first day started with lighting of lamp by the chief guest, Saurabh Chandra, secretary petroleum and natural gas, GOI, and other panellists -- Kirit Parikh, Former Member of Planning Commission, Sudhir Mathur, CEO and CFO of Cairn India, Kaustav Mukherjee, Head of Boston Consulting Group, P Uma Shankar, Former Secretary-Power and Chairman of the India Tech Governing Council and Indra Mohan, President, India Tech Foundation.

Mr Dharmendra Pradhan, the Union Minister of P&NG could not attend the inaugural session as the chief guest since he had to accompany the Prime Minister on a trip to Jharkhand.

P Uma Shankar, The Chairman of the Governing Council of India-Tech Foundation in his Inaugural speech highlighted the importance of oil and gas in the energy sector with India being the



Shri Hari Kumar, receiving a memento.



Shri Saurabh Chandra, receiving a memento.



Shri Hirak Dutta, receiving a memento.



L to R: (Day-1) Shri Kaustav Mukerjee, giving a speech; while Shri Ashish Gupta, Secretary General, India-Tech Foundation, Shri Sudhir Mathur, CEO& CFO, Cairn India Ltd., Shri P. Uma Shankar, Former Secretary- Power, Govt. of India, Shri Saurabh Chandra, Secretary-Petroleum & Natural Gas, Govt. of India, and Dr. Kirit Parikh, Former Member, Planning Commission.



third largest consumer and importer of gas how the demand for the products are bound to increase in coming decades putting strong pressure on the available resources and challenges in meeting them. He said, India needs to channelize all efforts to explore new blocks. Around 68 per cent of known oil and gas reserves are yet to be explored, besides, there is a need to review the oil and gas policy. There could be a need to move from profit sharing to revenue sharing model. There is also need to reduce dependence on foreign equipment and increase the domestic content in all our development work. To discuss these issues and provide a broad based assessment of the status and what is required India Tech Foundation is organising the 3rd National Convention on Oil and Gas with the theme Future of Oil & Gas in India 's Energy Security.

Kaustav Mukherjee, Head of BCG stated India's oil and gas sector needs special focus as the foundations of the fields are declining and newer discoveries in oil and gas are getting difficult to find. It is either the conventional form of gas or tight-gas which is technologically very challenging to find. Especially when we know that by 2030 India will need to import the combined production equivalent to Australia , Colombia and Venezuela.



The magnitude of investment from now till 2030 is estimated to be around \$3.6 trillion. If we take the right steps by just increasing the coal production by 1.2 per cent we can save around \$1.2 trillion worth of investments. Besides, additional \$1.2 trillion could be saved if the local oil and gas production is stimulated. In total India can save \$2.4 trillion worth of investments out of total expected \$3.6 trillion by 2030 by just applying the right approach to local production of energy such as Coal and Oil and Gas in India.



Sudhir Mathur, CEO and CFO of Cairn India, said the days of easy oil are over. All the gas or oil found is either riskier, conventional, tight Oil or Gas or they are longer term. And therefore lot of patience is required to convert an idea and capital into something sustainable. Secondly, China and India will change the days to come in terms of oil and gas sector with their

manufacturing and consumption led economies.

Also, EOR and IOR are becoming important in recovery of the last drop of oil through development of technology by majors such as Halliburton and Slumburger.

The need for energy in India is explosive and any healthy growth country would need energy. And if we do not it means we are not growing in a healthy manner. At Cairn we are developing our opportunities and that too fast. In Rajasthan, we are on target to increase our production to 300,000 barrels of oil per day in the next three years. We are doing more and more exploration in not just oil but also for gas. As Mangla field declines after the intense production since it was discovered, we are in process of maximising this recovery through Enhance Oil Recovery with polymer injection. The first injection would happened in the fourth quarter of this fiscal. It would require around 200 tonne of polymer per hour from 100 wells. This would increase the production by another 15-20 per cent and increase the time period by another 10 years. Besides, there is second phase of production is planned soon. There is also work on tight formation of oil and gas planned. We are working with halleburton and Slumburger and by early next year we expect to get into factory mode of drilling 100 wells and extract oil and gas.

Last all this development is fruitful only if we educate our next generation and give them a better living with innovative mind that can find an alternative form of energy since the current production and resource is bound to decline over the coming years.



Kirit Parikh, Former Member of Planning Commission: highlighted the importance of energy needs in the light of growing per capita income and growth of GDP at 8 per cent.

By 2030 the per capita income would be Rs 200,000 on an average at today's price if GDP grows at 8 per cent which would be around Million Rupee by 2050. That is roughly the order of magnitude of income, but at that level we will also need huge amount of energy coal and oil. In 2011-12 we consumed 540 million tonne of oil, at 2.5 tonne of Indian coal makes 1 tonne of crude. At 8 per cent by 2030, the 540 will grow to 1500 and by 2050 it will grow to 4500 million tonne of energy.

Electricity was 1150 billion units in 2011 and is likely to grow to 3000 billion units by 2030 and by 9000 billion units in 2050.



Shri Sudhir Mathur, receiving a memento.

Shri Kaustav Mukherjee, receiving a memento.

Dr. Kirit Parikh, receiving a memento.



L to R: **Shri S. V. Rao**, Former Director-Exploration, ONGC, giving his speech **Shri Ravindra K. Singh**, GM-E&P, Reliance Ind. Ltd., **Shri Sanjay Chawla**, GM&Head-Alternate Energy&FDP, DGH, Govt. of India, **Shri S. Rath**, Director-Projects, Oil India Ltd., **Shri Ken Fraser**, Chairman, Norwell Engg. UK., and **Shri Bhaskar Pal**, AGM, (Offshore Engg. Dept.), EIL (Session II: "Exploration and Production").

We are currently producing 35 million tonne of crude oil in the country while our consumption is around 150 million tonne. Hence our dependence is close to 75 per cent of our requirement. If the consumption continues at the same level and the production doesn't grow more the production will last for 25 years.

In gas 2011-12, we were producing 30 mmscmd while our consumption was 46 mmscmd. Same goes on with coal as well our total reserves with expected resources of around 200 billion tonne will run out in another 50 years. As much of the coal we may not be able to use them due to concerns around the world.

We must have stock of 30 to 90 days as buffer period so we bargain for the next level of stocks. We would also need to diversify the sources of supply reducing the disruption all at same time.

Developing the pipeline and distribution network would also help.

Also, we need to reduce demand in the country. If we can do that by substituting oil by gas for transport with right of diesels through bio diesel, and also through electricity. Also, if technology improves substantially it can bring down the cost per MW over the period.

We would need around 320 million tonne of energy by 2030 and with these measures alone we can help it reduce to 270 million tonne on a rough estimate.

Besides, we also need to make Industry price competitive and reduce subsidies which would lead to lower inflation and reduce the fiscal deficit as well.

Besides, the gas price revision in comparison with the imported gas should be considered for all the additional projects



Saurabh Chandra, Secretary, P&NG, GOI PM wants India to be the manufacturing hub. There is great logic to it. Which other sectors can provide skilled jobs to the large numbers joining the work force. If India has to grow at 8 per cent manufacturing has to grow at 10 per cent.

How to cut trade deficit? If you remove the oil and gas exporting companies, it is the countries with highest manufacturing base who have the trade surplus.

One way to provide this surplus is gas infrastructure. We need gas for making urea, gas for power, for transportation and to light the burners in kitchen. For that we need gas grids, for the supply of green energy, gas grids criss crossing the country to replace liquid

fuel with gas, and increasing its share in the energy basket.

What is the share of oil and gas in the energy basket and how much it should be and how much should be met from conventional and domestic sources? Norway meets all its requirements domestically while Germany only produces 2 per cent locally.

In India less than half of sedimentary basins have been explored, out of 3,5 million sq km of sedimentary basin only 1.75 million square km has been explored as of now. There is huge potential in the country and good resource potentials have been identified in the North East, in Laddakh and in the Andaman seas.

The government is trying to resolve lots of issues in the sector such as reviewing the gas pricing, new model contract agreement, a unified licensing policy and the next round of bidding under the NELP.

In gas pricing too government will come out with the revised pricing by September 30th and there are also deliberations over the reduction of subsidy burden by better targeting the kerosene oil and the LPG.

DAY 2



Oil and Gas Exploration and Production

SV Rao, Former Explorations Director, ONGC welcomed the participants for the speech which would largely be based on the oil and gas exploration and production status and the technologies used in the sector.

S Rath, Director Operations Oil India Ltd, spoke about the exploration activities of the oil India Ltd., We have seen 6-7 per cent growth in the last four to five years. We are a 3 million tonne company crude producing company and produce 6 mmscmd of gas from our blocks.



The KG D6 issue is giving a very negative image to the company. We are all affected by the issue with DGH paying attention only to the negative aspects. In the last two to three months things have changed positively with the monitoring at the PM level. Even at the OIL level things would improve. The minister is sitting with the CEO and the board members and the DGH to find the status of production



Shri Saurabh Chandra, receiving a Bouquet.

Shri Bhaskar Pal, receiving a memento.

Shri S. Rath, giving his speech.



L to R: Shri Ravindra K. Singh, GM-E&P, Reliance Ind. Ltd. giving his speech, while Shri S. V. Rao, Former Director-Exploration, ONGC, Shri Sanjay Chawla, GM&Head-Alternate Energy&FDP, DGH, Govt. of India, Shri S. Rath, Director-Projects, Oil India Ltd., Shri Ken Fraser, Chairman, Norwell Engg. UK., and Shri Bhaskar Pal, AGM, (Offshore Engg. Dept.), EIL (Session II: "Exploration and Production").

and exploration, which is a good sign.

Attractiveness is important to maximise production and get investors who can invest into these blocks to move the country into the real 21st century. We should ensure that major investments come into the domestic as well as foreign blocks.

The development of marginal fields is also important. Along with ONGC the government is coming up with a new policy to develop the marginal fields. Some 68 fields have been identified for this purpose.

What we at OIL are doing. We cannot be dependent on Assam oil already all the blocks have been discovered. We have to look at other areas. The KG block also we have started to explore six wells have been drilled and there are good signs of oil and gas reserves. We also strategically plan to develop our Mozambique and blocks in yemen , Libiya and Venezeula. We are also entering into Bangladesh and Mayanmar in oil and gas exploration and development.

Hence we sharing the responsibility to meet India 's energy security needs have now diversified from a North East Company to a pan India and 10 International blocks in the last few years. Hope to become a Maharatna Company from the Mini Ratna company in next two years time.



Sanjay Chawla, General Manager of Directorate General of Hydrocarbons (DGH) spoke about the status of E&P activity and the potential in the country. 46 sedimentary basin with an area of 3.1 million sq kilometer, divided into an onland, shallow and deep water. Around 68 per cent have been

nascent, around 1 million is yet to be awarded. We have 10 producing basins out of 46 basins that we have with around 84 operating companies.

There is a need to develop more such blocks as our demand is likely to grow from the current 148 million tonne for crude of which we produce only 24 per cent while for gas the demand is 46 mmscmd and we are producing roughly 60 per cent of it.

The alternative form of energy is also being developed in the country such as shale gas, gas hydrates, coal bed methane although they are at a nascent stage and policies are being worked to give a boost to them. Another factor that would boost the sector is the development of technology for shale, enhanced oil recovery, tight gas and gas hydrates, that India still has to develop. There are few issues or

challenges in these fields like overlapping issues, issues of land acquisition, environmental clearances, lack of infrastructure such as pipelines etc which are being sorted to develop the sector on a fast track.

RK Singh, General Manager-E&P, RIL speaking on technology in deep water drilling and development of fields, said RIL has moved from 1,900 feet to 9,000 feet wells in the deep water development. The challenge of drilling these wells is to keep the risks as minimum as possible since drilling each well takes around \$100 million. To sum up he said the key success elements of a deep water drilling includes elaborate planning cycle, a contingency plan, a multi disciplinary approach to drilling and appropriate technology, a simplistic design that is easy to implement, since a great design that is not executable will create problems in the long run.



Ken Fraser, Chairman, Norwell Engineering, UK spoke on the economics of deep water drilling and what are the weakness of the Indian companies, who he said are good in working out the fiscal and the environmental risks but not the deep water development economics. He noted that Indian companies will have to concentrate on the reservoir management with long term approach and not just look at three month visibility. There is huge development in the technological concepts which comes handy during exploration and management of reservoirs if the advice of engineering companies who have experience in these fields is considered.

He said India has a long way to go in the deep water development with a symbiosis between oil companies along with government which will have to be more open minded in understanding the commercial viability of those fields at the market price points.



Bhaskar Pal, General Manager, Engineers India Ltd spoke about the challenges in the installation of the offshore drilling and production infrastructure such as platform vessels and sub sea infrastructure like cables and evacuation infrastructure. The



Shri Sanjay Chawla, receiving a memento.

Shri Ravindra K Singh, receiving a memento

Shri Ken Fraser, receiving a memento.



L to R: **Shri. S.V. Nair**, Chairman-Tech., Advisory Board, Cairn India Ltd., **Shri P. K. Borthakur**, Former Director-Offshore, ONGC., **Shri A.K. Jain** (Ex-Ed), ONGC, **Shri Samarendra Roychaudhury**, Consultant-Head, Central Operations Team, speakers of session III: (Exploration & Production)

difficulties and challenges in setting up the two legged and four legged platforms and the latest technology in the development of these fields.

The projects such as floating production systems (FPSOs) subsea technologies etc have become highly competitive and their requirements would grow as India enhances its deep water, shallow water and even onshore fields.

The Second Session on E&P with emphasis on Enhanced Oil Recovery started with the session Chairman **PK Borthakur**, *Former Director Offshore, ONGC* inviting **S Roychaudhury**, *Consultant, central Operations Team, Cairn India* to speak on the topic.



The importance of EOR is going to be relevant for all the oil and gas companies in the coming years where the production is declining and even if the companies are looking at enhanced production from the secondary and the tertiary segments of the reservoirs.



He spoke about the relevance of EoR as it would increase the production by 15-20 per cent and increase the production time period by 10 years or more depending on the project size. The EOR is now more relevant as a green field project and not as part of extraction of secondary and tertiary sector oil from the reservoirs. The production cost has now come down from \$60 per barrel 10 years back to \$30-\$40 per barrel with the development of new technologies. Also, it would not upset the existing development programme.



SV Nair, Chairman, Tech. Advisory Board, Cairn India, spoke on the need for investment in the Oil and gas sector: According to IEA report 1.6 trillion dollars annually would be required on the demand side. On the supply side the emphasis would be more, hence the F&A cost would be even more as the dependence on tight and non easy oil is more.

Indian companies would be investing close to \$10 billion annually on E&P while in comparison China is already investing close to \$50 billion every year. 17 companies have joined hands to share the seismic data recently in Europe . Offshore gas pipelines are being directly held by operators and infrastructure companies now.

We have 200 marginal fields in India that individually may not be

viable, but if companies join hands to work on them then even if half of it could be developed it would be an additional benefit.

AK Jain, *Former Director offshore, ONGC* spoke about the sharing of infrastructure and its relevance. In a fast paced development of Oil and gas fields technological tie up is an important aspect. However, with huge risks involved despite the technological developments, the risks are similar to aerospace. Hence there is need to share the infrastructure but who should bear the risks and how?



There should be a framework and mechanism on infrastructure sharing between the public and private sector companies. There should be meeting of minds between both public and private companies. Reliance Industries established the biggest infrastructure in gas when they set up the gas pipeline for the KG D6 gas, how the utilisation is not optimum since the production declined. It should be ensured that public infrastructure set up in the country with huge investments should not lie idle.

Third Session on Renewable and Unconventional Energy

Session Chairman AK Dwivedi, ED- Basin Manager, Western Offshore Basin, ONGC Ltd. introduced the members on the dais and brought to light the importance of renewables in meeting the energy security requirements of the country. He said, the Digisets which run on subsidised diesel are producing double the power annually compared to wind, solar and nuclear put together, especially when the cost of production through diesel sets is around Rs 13 to Rs 14 per unit. There is a need for the government to realise the importance of renewables and promote the development of this sector.



Dr. Shailendra Kumar Singh, VP & Head – CBM Division of Essar Oil highlighted the significance of coal bed methane in the country and how Essar is developing five coal bed methane blocks under its portfolio most important being the Raniganj field where more than 100 wells have been drilled, production sharing contracts have been signed and gas been already supplied to local industries in West Bengal. There is huge reserve in natural gas and shale gas in excess of 3 to 4 tcf of gas which is very high.



Shri S.V. Nair, receiving a memento.



Shri S. Roychoudhury, receiving a memento.



Shri A.K. Jain, receiving a memento.



L to R: Smt Vartika Shukla, General Manager (Process), Engineers India Ltd., Shri B. P. Das, ED-R&D, Indian Oil Corpn. Ltd., Shri U. K. Dhoot, GM-Project Monitoring, Indian Oil Corpn. Ltd. (Session-IV: Refining-Some Challenges on Day-III)

CBM 162 tcf only 9 tcf has been proven Shale – 2100 tcf only 96 tcf recoverable Gas hydrates is also equally high.

Only 2 operators have commercially produced CBM to this date. It is CBM that has given rise to Shale gas I US. In India as well with the new government emphasising on the oil and gas development, it is going to be a game changer once the policy on CBM is officially announced under the uniform licensing policy.

Timothy Collett, Senior Scientist at the **US Geological Survey**, spoke about the potential in tight gas and the gas hydrates and the development in various countries that are going on and the status of the Indian projects in gas hydrates.



He especially focussed on the importance of gas hydrates its various international projects to understand from where it comes from, applied the production technologies and concepts, tests conducted and linking them to simulators to identify the real potential.

He said in the last forty years only two projects managed to produce gas hydrates and that too in a minimum quantity in the US. The estimates of potential in gas hydrates is still not clear as two projects that were put under simulation identified 500 mmscmd of gas but the project was on for just six days.

In India lots of areas in east coast and west coast, and Andaman seas have been found to have good potential but as of now nothing substantial has been identified in terms of sand reservoirs under two projects taken since 2006 by National Gas Hydrates Projects.

Day 3

Marketing and Refining

BP Das, ED, R&D IOC, spoke about the challenges in the greenfield development and the role of R&D

The biggest challenge that came suddenly was the emergence of shale gas. You may be aware that one big company had committed \$6 billion in green fuels but withdrew after six years thinking it is some time before it comes up in large scale commercially.



They perhaps simply thought green fuels may not be requirement as of now. In India it will add to energy security if we have some staple pipeline for producing green fuels. It is tough and a challenge for

R&D especially all R&D institutes of energy companies.

Feedstock for green fuels have to non edible oils, since in India we cannot use the edible oils for the purpose. Vegetable oil is not available in scale required both for production and processing. Ethanol we make is from molasses and is not adequate.

So what constitutes the feedstock?

Agriculture forests waste is available in plenty but logistics issues are there. Micro algae is another source, and the most exciting form is the fuel gases if we can make it, it has lots of potential. We have collaborated with lots of companies both locally and internationally. That is only way we can go forward in bio green fuels.

Some of the fuels available are bio ethanol, bio diesel, green diesels from vegetable oil and animal fats. Synthetic gas is also an important resource which can be used as 5 per cent ethanol blending is allowed by the Indian government but is not available in scale required. It leads to reduction in emission levels and also increases the efficiency of the vehicles. He noted the contribution of non edible oil would not be sufficient to meet India's requirement but it will continue to be used. We will have to look at sustainable bio masses, such as algae, cellulotics and use of carbon di-oxide as a fuel. There is sufficient effort on this front but we need to enhance it.

Vartika Shukla, General Manager, process at **Engineers India Ltd** said we need to go to the traditional form of refining where our strength lies and see how we can take it forward from there. We have a refining capacity of 250 million tonnes per annum. 22 refineries, individual assets, 17 public sector, 3 private sector and 2 joint venture refineries.



Total crude processed is above the installed capacity. The industry has grown over 45 per cent and we continue to utilise the capacity above 100 per cent. India turned net exporter of petroleum products despite all problems and last year exported 64 million tonne of petroleum products.

The projections look the same. The enhancement of the refineries would be same and the modernisation would only expand and inturn increase the usage of petroleum products. All in all the net refining



Shri B.P. Das, receiving a memento.



Smt. Vartika Shukla, receiving a memento.



Shri U.K. Dhoot, receiving a memento.



L to R: Shri Indrajit Bose, Executive Director, (Retail Sales), Indian Oil Corpn. Ltd.; giving a speech, while Shri H. C. Mehta, Executive Director, (Operations & Distribution), HPCL; Shri M.R. Karandikar, Executive Director-Supplies, Indian Oil Corpn. Ltd.; & Shri L. R. Jain, Dy. General Manager-Ops. (Retail), BPCL, (Session-V: Challenges in Marketing).

capacity is projected to grow to 317 million tonne by 2017.

There is another very key players other than crude – Natural Gas. Indian refineries produce their own fuel, in view of that natural gas becomes key player to reduce the emissions and substitute the energy need from internal petroleum products through natural gas. The proportioning of natural gas in the country it is unlikely it would be available as the main source for the industry. That is the challenge, how to increase the profitability and availability by enhancing the margins.

Increasing complexity, sourcing cheaper crudes at the site and through recapitalisation and rationalising investments. Stringent fuel specifications would help. We will have to move much faster to meet the oil specification standards to catch with the developed world in terms of Euro IV and Euro V fuel oils.

At the end of the session on refinery, **UK Dhoot, GM, Project Management, Indian Oil Corporation** touched on the crucial aspect of transportation of crude through pipelines and various other modes by Indian Oil Corporation and the various challenges faced by the company. Of the total production of crude in the country Indian oil supplies around 53 per cent through pipelines, 33 per per cent by the road and coastal services, and 13.5 per cent by railways. The country has 22,000 km of pipeline supplying crude that excludes the gas pipelines in the country.



Dhoot spoke about the challenges in sector that runs across roads, highways, railways and various other problems in terms of setting up the infrastructure and how we can really solve them to enhance the advantage of cost, efficiency and environmental benefits of transporting crude through pipelines.

Session on Marketing of Petroleum Products



Indrajit Bose, ED, Retail Sales, IOCL spoke on the challenges in the rural marketing of petroleum products.

There are six lakh villages, population below 2000, is 80 percent and this is the area which is very challenging for marketing and services, since the distribution of population is not much. Almost 58 per cent are available in areas that have some critical mass.

Approximately 65 per cent of the rural market are the targets. Developments have been drastic in last 15-20 years. The demographics have also changed they are touching 10,000 per month. However in villages also only 25 per cent are involved into core agriculture. There is huge change in the pattern of living in rural areas and the contribution to GDP has come down to 3 per cent from 60 per cent at the time of independence. These changes have thrown up huge challenges and opportunity for us.

The demand is there but its scattered. It does not make entrepreneurs viable, lack of infrastructure and manpower and logistics is the biggest challenge to reach in all pockets. Social barriers are also there, and the policy framework is also not very conducive. Sustainability and scalability has also been an issue. We will have to look at all these issues to be viable.

At IOC we started with the Kisan Seva Kendra to fulfill the appetite for the modern demands. Due to mobile technology, the aspirations have grown the demand is there, but the challenge is how to meet this latent demand. Media has also played an important role.

MR Karandikar, ED, supplies, IOC, spoke about product availability and swapping. Development of products such as MS, HSD and SKO. Liquid products available in the country and what we need to do about them.



He highlighted how we need to upgrade the existing refineries which though are capable to meet the requirements in terms of capacities, but they will have to meet the technical requirements for Euro IV and Euro V standards, especially the refineries situated in the North East.

He highlighted the importance of swapping and sharing of infrastructure and the surplus product by companies. If there is a deficit of any product and the other refinery that has a surplus can meet the requirement. Besides, he also stated the role of setting up single facilities to avoid duplication. He suggest development of terminals that can be used by one company or by the consortium or joint venture partners that would reduce the cost and even duplication of infrastructure.

HC Mehta, General Manager, Retail at HPCL spoke about the massive demand that India has seen in the petroleum products since independence how



Shri Indrajit Bose, receiving a memento.



Shri L. R. Jain, receiving a memento.



Shri U.K. Dhoot, receiving a memento.



L to R: **Shri Rajeev Mathur**, Executive Director- Gas Marketing, GAIL, gives his speech while **Shri S. Hajara**, Former CMD, The Shipping Corpn. Of India Ltd., **Dr. A. K. Balyan**, MD&CEO, Petronet LNG, **Shri Srinivas Rao**, Executive Director, Gas, BPCL., **Capt. Sanjay Gupta**, Vice President (Shipping), Petronet LNG Ltd. (Session VI Gas Availability, Accessibility, Affordability & Logistics)

products. Our demand has grown more than 50 times to 145 million tonnes and the storage capacity stands at 8.9 billion tonnes as of now. This has happened with companies paying attention towards the issues of customers focus, sustainability and safety.

The last session



Gas Availability, Accessibility, Affordability & Logistics and Pricing

Session was chaired by **Dr. AK Balyan, MD and CEO, Hajara of Petronet LNG** According to Dr Balyan, the gas sector shares 25 per cent in the total energy space globally. However, our demand is also growing very fast it will remain the net importer in coming future. Most of our demand is consumption led, but the mix is likely to grow equally in the coming future. By 2030 the share may go up to 20 per cent from the present 5 per cent. Are we ready for that kind of growth for accessibility, availability and logistics.

The growth of 20 per cent is a very challenging task, even if it grows to 14 percent or 15 per cent it would be a huge growth. He emphasised that natural gas is a vital source of energy and as more and more gas finds are happening worldwide. Huge reserves have been found in India as well. There are lots of new LNG exporters who are coming up with huge projects in the countries like Australia, East Africa, South East Asia and US and Canada as well. All this will increase the capacity and improve the availability that would have wide impact on pricing of gas globally making them more competitive by 2017.

Rajeev Mathur, ED, Gas Marketing at GAIL, spoke on the availability of gas and status of distribution within the country. China and India are expected to drive the growth of energy going forward according to IEA. Our share of gas is 9 per cent of the world energy basket. We have a lot of catching up to do by creating more infrastructure and let more areas to be fed by gas to reach the target of 20 per cent by 2030. India currently imports around 48 to 50 million cubic standard meters of gas per day (mmscmd) and this is topped up by the domestic production. At present we also have around 4 LNG terminals that have a capacity of 25 million tonnes or (100 mmscmd) and this is likely to grow by another five terminals with a capacity of additional 100 mmscmd that would help India achieve its target of



20 per cent growth of gas by 2030 and that is likely since the government want atleast 231 cities to have piped natural gas in the next three years, and there is penetration of pipeline to reach gas to the nook and corner of the country.

Sanjay Gupta, Vice President, Shipping of Petronet LNG and **I. Srinivas Rao, Executive Director, Gas of BPCL** and **S Hajara, Former Chairman of Shipping Corporation Of India**, spoke about the relevance of shipping logistics as more than 60 per cent of the existing tonnage of shipping companies consist of tankers, which is the bread and butter of the shipping companies. Besides, the increase in production and stake in oil fields globally is not of importance unless the country has control over the means of transportation as it is very important to sustain the economy during the emergencies such as war. In addition, the partnership between the oil and gas companies and the Indian maritime industry has to be fostered to achieve the targets for oil and gas in the country.



Valedictory Remarks:

Indra Mohan, President, India Tech Foundation in his closing remark said in addition to say thank you very much I would also like to mention the objective of the convention was to focus on challenges and to assist in accelerated development of oil and gas sector. And second to ensure safety in installation and operations. I would like to mention, to achieve these two objectives we convened a committee of National Advisory Council chaired by Sudhir Vasudeva, Former Chairman of ONGC and two Co-chairperson, Subir Roy Choudhury, Former Chairman of HPCL and RK Singh Former Chairman of BPCL and members of experts from the Oil and Gas sector.

As compared to the last year programme the event was double the size. This year's three days event was initially expected to be too long leading to delegate fatigue, but even the last session was very well attended, which shows there is tremendous interest in the oil and gas sector and its development. I am sure the present government will soon initiate steps for speedy redressal of the grievances of this sector. There were also two 'Round Tables' for the Upstream and the Downstream which brought forth recommendations through brainstorming sessions that would give the government the perspective to act on the important demands of the industry. ■



Shri A.K. Balyan, receiving a memento.



Shri. Rajeev Mathur, receiving a memento.



Shri Sanjay Gupta, receiving a memento.