The Exploration & Development Conference 2018 was held at Mahabalipuram (Mamallapuram), Tamil Nadu on 22nd & 23rd November 2018. The two-day Conference was attended by delegates from the E&D functional domains, Assets & Production Services of FHQ, Rajasthan Project, KGB Project, CoEES and E&D Directorate. Chairman & Managing Director, all the Functional Directors, CVO and Independent Director Shri. S. Manoharan graced the Conference on the concluding day.

Oil India Limited has started its journey from the Assam & Assam Arakan Basin referred as the cradle of hydrocarbon exploration in India. Despite having production history of more than a century, this basin is still having the potential to produce even more hydrocarbon than what is already produced!

The recent Re-assessment of Hydrocarbon Resources of the sedimentary basins of the country have indicated that the prognosticated hydrocarbon resources in the country is 41,872 MMToE, of which only 12,076 MMToe is discovered resources. Of the remaining 29,796 MMToE of undiscovered resources, around 19% exist in the Assam-Arakan Basin (4,133 MMToE in the Assam Shelf and 1,455 MMToE in the Fold Thrust Belt) which reinforces the tremendous scope of exploration for hydrocarbons in this Basin.
Accordingly, the conference is themed “A & AA Basin – An Indian Super Basin in Reckoning” with an objective to strategise future exploration & development activities in our existing acreages and newly acquired OALP Acreages after brainstorming session and utilizing the collective wisdom & experience of OIL’s fraternity under the leadership of Shri P Chandrasekaran, D (E&D).

Prior to the Conference, 12 syndicates were formed comprising a team of professionals working together on a specific topic. Each syndicate was closely monitored and guided by mentors to shape and provide a focused approach towards the specific challenges. A total of fifteen numbers of themes were identified to attain solutions for Exploration & Development challenges from the following four perspectives:

I. Endowment perspective- Though Assam & Assam Arakan Basin is under extensive exploration activities during the last six decades by OIL & ONGC, Significant amount of hydrocarbon are yet to be discovered. This session was aimed to project areas for future exploration in Northeast.

II. Play perspective - The objective of this session was to discuss the further opportunities in established plays such as L+Th, Langpar, Barail, Tipam and new emerging play from recent discoveries in Narpuh, Kopili, Girujan& Basement play.

III. Growth Perspective - This session was aimed to discuss and strategise the way forward for existing discovered & producing acreages to sustain the present oil & gas production.

IV. Operational Perspective - Under this perspective, various operational issues in exploration activities and technology induction required for overcoming those operational hurdles were discussed.

22nd November 2018 – First Day of Conference

The 12 syndicates presented their study/review/analysis, the way forward and strategy for accelerated exploration, increased recovery and increase in production to D(E&D) and Senior Management of OIL.

In addition, two invited presentations were made, one each by CoEES & E&D Directorate.

I. **Endowment perspective:**

1.1 **Presentation on "Petroleum System Modeling & Yet to Find Resource Assessment"** by Dr. T. Satish Kumar and Mentored by Dr. Neeraj Mathur and Shri Saloma Yamodo.

The presentation broadly covered the results of Petroleum System Modeling Study carried out for Upper Assam Basin along-with the preliminary results of the YTF resource assessment especially the
Prospective Eocene & Oligocene Plays. The presentation also highlighted the new areas for each play wherein OIL can focus for future exploration i.e. Active migration paths favor new structural and stratigraphic traps in Eastern part of the area. The presentation also brought forth the potential prospectivity of Fractured Basement as a new play in Upper Assam Shelf.

1.2 Presentation by Syndicate 1: “Prospectivity Perception: North of Brahmaputra Arch” by Shri B Sharma (Presenter), Shri Rabindar Srivastava and Shri R. Jonathan and Mentored by Shri B.R. Bharali & Shri Indrajit Baruah

The presentation covered the Geologic & Tectonic settings of North Bank of Brahmaputra which has been divided into four Sectors based on the structural & tectonic styles. The presentation mentioned the two exploration Campaigns carried out in the North Bank. The first Exploration Campaigns by ONGC & OIL with drilling of five exploration wells was highlighted. The 2nd Campaign done with additional seismic acquisition by OIL and drilling of two wells. The North Bank area may possibly be influenced by two petroleum systems, Naga Petroleum system & Paleogene Petroleum System due to Sadiya & Pasighat Lows. Hydrocarbon charged Mechaki structure and Talap forms the southwest flank of the Sadiya Low. It is expected that North-North West and West Flanks of the Sadiya Low as well as the proximal Pasighat Low will be prospective.

II. Play perspective:

The session mainly focused on the possibilities of finding the prospective Eocene & Oligocene plays in areas other than the present operational areas and assessment of new plays of Narpuh, Kopilli, Girujan & Basement in OIL’s MPA areas. The role of geophysics and other related newer techniques in the identification of these plays was also deliberated upon in this session.
2.1 **Presentation by Syndicate 2: “YTF Potentials of established plays (Lk+Th, Langpar, Barail&Tipam” by Shri Jayant Singh (Presenter), Shri Prasunjoy M Das and Shri Pranjal Sarma and Mentored by Shri B.P Sarma and Shri Jayanta Phukan**

The presentation highlighted the identified focus areas based on Gross Depositional Environment and well correlation. Accordingly, Priority areas, Priority-I & Priority-II are identified for Langpar&Lk+Th potential in the southern side of the basin. It is expected that decreasing porosity trend for Barail play towards South & South West with poor facies development in these areas, though there is increasing trend of thickness of Barail formation towards South. Area with high thickness of Barail Argillaceous needs to be identified for stratigraphic analysis using detail seismic attribute analysis. Local scale depositional model need to be generated for delineation and extent of reservoir in BCS. Three focus areas for Tipam play in the Thrust Belt areas have been identified. Revisiting and re-mapping of designated focussed areas for structural traps in the South west, Basal Sands in the South and deeper Tipam plays to be focused in Kumchai&Kharsang areas.

2.2 **Presentation by Syndicate-3: “Potential play (Narpuh, Kopilli, Girujan, Basement)”by Ms. Saqueeba Samin (Presenter), Shri Amitav Bordoloi and Shri Khanin Buragohain and Mentored by Shri Rajib Sarma and Shri P.K.Kakoty**

The presentation covered the Plays prospectivity in Upper Assam Basin for Girujan, Kopili, Narpuh and Basement based on the Resource Assessment studies carried out by DGH which were earlier considered to be of poor prospectivity in most parts of the basin. The hydrocarbon potential of Narpuh Play needs to be re-evaluated in the entire basin, with emphasis in the western fields in order to broaden the extent of this Play. A regional geological model need to generated with well and seismic information using specialized processing techniques in order to map Kopili at a regional scale. Re-visiting existing logs, seismic etc., as well as acquisition and interpretation of additional sub-surface data need to be done to fully exploit the hydrocarbon potential of Girujan play. Some areas near to Naga kitchen area appear to be highly promising for future Basement exploration activities.
2.3 **Presentation by Syndicate-4: “Beyond Amplitudes: Relevance of seismic Attributes”**
by Shri Pawan Kr Singh (Presenter), Shri Jayant Singh and Shri D.S.Manral and Mentored by Shri Jayanta Phukan and Shri GVJ Rao.

The presentation highlighted the high leverage areas along with limitations of AVO/inversion attributes for delineation of reservoirs across the stratigraphic sequences. Various advanced studies may be proposed based on the availability of seismic & well data and their amenability.

**III. Growth Perspective:**

Three presentations during this session brought out plans for company’s domestic development activities in near future.

3.1 **Presentation by Syndicate 5A: Development of Developed Fields, Improving recovery and Production: Field-wise approach**
by Sh. Adam Suting (Presenter), Sh. Ranjit Dutta & Sh. G.K. Durrah of Western Field Group and Mentored by Shri P.K. Kakoty & Shri Saloma Yomdo.

3.2 **Presentation by Syndicate 5B: Development of Developed Fields - Central Fields**
by Binoy Kr Basumatary (Presenter), Pranjal Saharia & Pramod Ashok Mundhe of Central Field Group and Mentored by Shri P.K. Kakoty & Shri Saloma Yomdo.
3.3 **Presentation by Syndicate 5C: Development of Developed Fields - Eastern Fields** by Mr. Nilamani Deka (Presenter), Mr. Rajib Chakraborty, Mr. Pritam Sharma of Eastern Field Group and Mentored by Shri P.K. Kakoty & Shri Saloma Yomdo.

The presentation outlined the overview of respective Oilfields i.e. the number of Fields, wells drilled, their production potential, status and way forward for increasing the production by the year 2022. The studies that will be undertaken and the number of wells to be drilled for achieving the target were brought out in the presentation.

The session also included presentations on A Pan-India Future Thrust areas, EOR Initiatives, exploration & Development strategy in the rest of India Blocks i.e. KG Basin, Rajasthan, Frontier Basin.

3.4 **Presentation on “Pan-India Future Thrust Areas – Brief on Focus Areas”** by Shri Kailash Bhimrao Gaikwad of E&D Directorate.

The presentation mainly focused on the OIL’s future exploration strategy in the new HELP regime and future focus areas/basins for exploration to fulfill OIL’s Perspective Plan 2030. It was thus enumerated that OIL should in the upcoming HELP rounds focus on all Category-I and selected Category-II
basins, enter the unconventional hydrocarbon sector via CBM, shale gas and should look for early monetisation of discoveries in KG Block.

3.5 **Presentation by Syndicate 6: “EOR the way forward” by Shri Manish Kumar (Presenter), Dr. Satish Kumar, Shri Pranjal Saharia and Mentored by Dr. Neeraj Mathur and Shri Saloma Yomdo**

The presentation gave an overview of Low Salinity Water Injection, EOR Workflow, EOR Screening & Ranking of Reservoirs, EOR Plan, EOR Projects, Laboratory Setup at CoEES and Way Forward. The way forward for achieving the ultimate recovery in the immediate context is enumerated below:

- Polymer flooding in NHK011D+18 Block, and depending on success, implementation in analog fields
- Carbonated water injection pilot implementation in NHK438 Block
- CO₂ EOR pilot implementation in NHK079D Block
- Chemical EOR in HJN002D Block – Laboratory, Simulation and Pilot design
- EOR Laboratory setup

3.6 **Presentation by Syndicate-7:“Way Forward in KG-Basin” by Shri B. Saikia (Presenter), Shri Pankaj Gogoi & Shri Sarfaraz Nawaz and Mentored by Shri S.K. Jena and Shri S.B. Paul Roy.**

The presentation outlined the activities of OIL in East Coast of India including the joint collaborative study with ONGC on Mahanadi Basin, activities of KG-Block with reference to Dangeru & HPHT Discovery and way forward in the Blocks. The presentation envisaged that the gas sale at well
head would make the Project economics lucrative and exploration of shallower prospects in the drilled would give additional leverage. Shale gas opportunity in KG Basin also seems highly prospective and studies should be carried out. OIL should bid strategically for addition of new acreages of KG Basin in the upcoming HELP Rounds.

3.7 **Presentation by Syndicate-8: “Exploration & Development Strategy in Rajasthan” by Shri Sachin Gupta (Presenter), Shri Pranjal J. Saikia & Ms Metilda Pereira and Mentored by Shri N.R. Hazarika, Shri S.C. Mishra & Shri S.K. Jena.**

The Presentation highlighted the ongoing activities in Rajasthan Project, especially the full scale implementation of CSS process in the Baghewala field, current planned activities and way forward in Jaisalmer PML and OALP Blocks. Based on results of CSS, development and appraisal drilling, holistic approach would be adopted to develop the field.

3.8 **Presentation by Syndicate-9: “North East Frontier Basin Exploration Strategy” by Shri Subhadeep Maji (Presenter), Shri D.S. Manral & Shri Khanin Buragohain and Mentored by Shri Indrajit Baruah & Shri B.R. Bharali.**

The presentation gave an overview of the blocks in the newly created Frontier Basin group, regional geology, logistic & subsurface difficulty, timeline of the committed work programs, current activities and way forward for each block. Survey Operation to start with effect from November, 2019 in Six Nos. of Blocks (North Bank-1, Pasighat, Chongkham, Namasa, West Mechaki&NamrupBorhat), Re-assessment of existing data in NamrupBorhat&Kobochapori for drillable location such that drilling can be fast tracked. Challenges include timely grant of PEL, Forest clearances, Eco sensitive Zones, Logistics, access constraints, deeper targets etc.
IV. **Operational Perspective:**

Following presentations were made during this session:

4.1 **Presentation by Syndicate-10:** “Managing Drilling/Well bore stability / Mud System and related challenges by ShriSanjib K. Gogoi (Presenter 1), Shri Jayanta Kalita & Dr. Jugal Hazarika (Presenter 2) and Mentored by Dr. K. Saikia and ShriA.N. Singh.

The presentation brought out the major challenges faced during drilling (i.e. rig limitation for higher depth, high displacement and ERD wells, high torque and drag, high drilling time, controlling drill string vibrations and well bore stability), the probable mitigation process and the way forward for each issue.

4.2 **Presentation by Syndicate-11:** “Acquisition & Processing: Advancements, Challenges & Learning from NSP” by ShriKoustav Dasgupta (Presenter), ShriAnup Kumar, ShriA. M. Tiwari and Mentored by ShriRajib Sarma and ShriG.V.J. Rao

The presentation gave an overview of the challenges faced in seismic data acquisition & Processing in Fold Thrust Belt, technological advancements in seismic data acquisition & Processing, integration of non-seismic methods, technology adopted by OIL and learning from NSP.

4.3 **Presentation by Syndicate-12:** “Introducing New Logging Technology Solution to Petrophysical and Operational
The presentation covered the challenges faced in the wireline logging and the new technological advancements to overcome the Petrophysical and operational challenges faced by OIL. Many new tools and its efficiency were elaborated upon targeting OIL’s operational issues. Induction of innovative technology & tools by well-logging department of OIL was envisioned in the presentation.

**BRAINSTORMING SESSION**

After the presentations by all the Syndicates were completed, Director (E&D), Senior Officers and the Mentors carried out a two-hour brainstorming session by interacting with all the syndicates individually for necessary modifications and corrections such that a focused solution and strategy could brought forth to be put forward to CMD and other Board of Directors on the final day of the conference.

**23rd November 2018 – FINAL Day of Conference**

On Day-2, the main day of the Conference, D(E&D) in his keynote address put forward the recent E&D initiatives taken, the perspective & syndicate-mentor approach of the present Conference for attaining solutions towards the Reckoning of A&AA Super Basin.

The 12 syndicates then made their final presentationsto CMD and the Board of Directors, wherein the topics were thoroughly deliberated upon, respective way forward and action plans were formulated.

A pre-recorded audio visual presentation sent by Gabon Project on the activities carried out in Gabon was also displayed.

**VALEDICTORY SESSION**

In the valedictory session, Shri. B. R. Bharali, CGM-GSc. – E&D Directorate, summarized all the main points of the conference and outlined the various short term and long term E&P activities, strategies and the key technologies required to unlock the remaining potential of A&AA Basin.

Members from invited young geoscientists were invited to share their experiences of the conference. Mr. Karthik Sharma, Geophysicist had
thanked the management for giving this opportunity for being part of such an august gathering of OIL’s E&D professionals. The presentations were a good learning and highly informative of all the E&P activities of OIL.

CONCLUDING REMARKS BY CMD & DIRECTORS:

The conference ended with Independent Director Shri S. Manoharan, D(O), D(HR&BD), D(F), and CMD’s remarks on the very fruitful and elaborate sessions.

Independent Director, Shri S. Manoharan has expressed his gratitude to be part of the E&D Conference, 2018. He appreciated the entire proceedings of the Conference and advised all members to strive towards achieving Maharatna Status for OIL. He suggested that the next conference should even include a session on VISION perspective for OIL.

Director - Operations, Shri. P.K. Sharma appreciated all presenters and syndicate members on the good quality of work and presentations. Giving the analogy of the discovery of Eocene play in 1990’s and Bhagjan-Barekuri Discovery in 2003, he emphasized on the adoption of fit for purpose new technology, innovative approach and dedicated team spirit to develop Kumchai field in the recently re-granted Ningru PML area and explore new plays in the newly awarded OALP blocks.

Director-HR&BD, Shri. B. Roy expressed his gratitude to the entire E&D fraternity for such an eventful & informative conference. He emphasized on inter-personal relations, trust, sharing and learning through feedback from all irrespective of status, level etc which is a requisite for every learning organization.

Director-Finance, Ms. R.S. Borah expressed that geoscientists are the backbone of any E&P Company and such conferences are a boon for entire E&D fraternity and the Company as a whole. She applauded all for the accomplishments in OALP Round-1 and wished success in the forthcoming HELP bidding rounds under the dynamic leadership of Director (E&D).

CMD, Shri Utpal Bora thanked all members for such an elaborate conference and interesting sessions. He expressed that all ideas evolved, short-term & long-term goals, new technologies proposed in this conference may be considered and readily put into action. Understanding that production from old fields is very difficult, CMD had advised the E&D fraternity to strive towards achieving 3.45MMT production this financial year. He also commented that OALP is like fresh air to OIL by which the Oil production can be maintained through adoption of new technology, team spirit and innovative approach. He expressed that the young Oil-Indians should take up more responsibility for building towards OIL’s growth.

VOTE OF THANKS:
ED-E&D, Shri. S.K. Jena thanked CMD and all Functional Directors including Independent Director and CVO for gracing the conference and for taking active part in all the proceedings. He appreciated the unrelenting effort of Director (E&D) for shaping the conference - mentor-syndicate approach and for selection of topics and appropriate theme for the conference. He thanked all presenters, syndicate members for the good quality of work & presentations under the guidance of mentors. He thanked the organizers especially E&D Directorate and the admin group of Corporate Office for making this conference a grand success.