

**Annual Technical Seminar** was conducted by SPG India, Jorhat Chapter, at the B.R.Ambedkar Club, ONGC, Jorhat on 21.09.2014. The theme of the Seminar is **“Thrust Fold Belt- Assemblage- Challenges in Imaging”**.

SPG members across the industry were invited. Seminar was attended by G&G professionals from ONGC A&AA Basin, Jorhat, representatives of SPG Duliajan Chapter, Professor and student from Dibrugarh University represented from SPG India-Student chapter, DU.



Inaguration of the Seminar by lightening the lamp by Shri C Mahapatra, Patron, SPG India, Jorhat Chapter

Registration for the program started from 08:30 in the morning. More than hundred members participated in the seminar. The program started with the lightening of the lamp by the Shri C. Mahapatra, GGM, Basin Manger, ONGC, Jorhat, Patron, SPG India, Jorhat Chapter, Shri C.M. Jain, GM-HGS, ONGC, Jorhat, President SPG India, Jorhat Chapter and Shri S. Baasha, President SPG India, Duliajan Chapter, followed by welcome speech by Shri C.M. Jain where he highlighted role of the society in supporting industry by creating enabling environment for knowledge sharing. Shri Jain welcomed the distinguished guests with traditional Assamese Gamachha.



Shri C. Mahapatra, Patron, and Shri. C.M. Jain, President, SPG India, Jorhat Chapter during their speech

Shri Mahapatra, Patron, SPG India, Jorhat Chapter, in his keynote address told that the need of the hour is Fold Belt Exploration; so the topic has been aptly justified.

Shri S. Baasha, President SPG India, Duliajan Chapter in his speech told that SPG is a great platform and he appreciated the endeavor taken by SPG, Jorhat Chapter. Shri Firoz Dhotiwala, President, AAPG, Jorhat Chapter also delivered keynote address where he has shown to the audience about hydrocarbon potential of Tripura-Cachar TFB.



Shri S Baasha President SPG India, Duliajan Chapter and Shri F. Dhotiwala, President AAPG, Jorhat Chapter during their keynote addresses

During this daylong seminar Speakers delivered their lectures on following topics

### **1. Understanding Fold-Thrust Belts** by Shri K. Sridharan

Shri K. Sridharan, Vice- President SPG India, Jorhat Chapter gave overall idea of geophysical activities which are being carried out in oil exploration industry; the importance of SPG lies here as it is the harbinger of new technologies in this field; thus the topic exploration in TFB\ Thrust fold belt- Assemblage- Challenges in Imaging was introduced.

### **2. Geological Understanding of Assam Arakan Fold Belt (AAFB) with analogue case studies: Implication for Hydrocarbon Exploration** by Shri J. K. Samal & Shri C. R. Basa

The speaker briefly discussed about the evolution of AAFB, its typical structures, petroleum systems, complex trap geometries, reservoir characteristics, play types, Exploration status and Geological challenges in AAFB. By giving examples from other similar basins speaker explained the usefulness of analog models and structural modeling in Fold Belt exploration in understanding fold belt geologic structures kinematically and geometrically. How it helps in investigation of factors controlling genesis of various structures and its role in assessment for hydrocarbon prospectivity is also explained. Speaker also shared his experience with Ecopetrol team, Colombia in Fold Belt structural interpretation for structural analysis up to prospect level understanding in complex Fold Belt set up which was very informative.



Shri J.K.Samal and Shri K.Ghosh during their presentation

### **3. Seismic Data Acquisition in Thrust-Fold Belt Area with Particular Reference to A&AA Fold.** by K. Ghosh

The speaker told the house that conventional 2D/3D Seismic data acquisition in a thrust-fold belt area with rugged topography produces a very poor subsurface image. So, he explained the methodology to overcome the challenges and appropriate approach to acquire quality seismic data with improved subsurface image by considering the various factors such as shot hole drilling, source-receiver interval, pattern shooting and size of energy sources with conventional 2D and crooked line approach. Speaker also presented the case study showing a Seis-loop based 3D seismic survey that can be used as a state-of-art technology for better subsurface imaging over conventional 3D seismic survey.



Audience interaction during technical sessions

### **4. A New Acquisition Approach to Map Anticlines in Fold Belt Area** by Anupam Hazra

The speaker stated that the anticlines with structural complexity, rough terrain and tough logistics have a direct effect on quality of acquired seismic data. Considering these structural complexities, a new shooting pattern of Up dip Asymmetrical Split Spread have been designed and High Resolution 2D seismic data have been

acquired on three dip lines across Baramura and Atharamura anticlinal range. Special efforts have been made to take care of the near surface low velocity layer by conducting elevation based Uphole Experiments. Finally, remarkable improvement has been achieved in the processed PSTM section compared to the earlier investigations falling in the same profile.



Shri Anupam Hazra and Shri N.M. Dutta delivering their respective speeches

## **5. Challenges in Seismic Data Processing in Fold Belt Area by Shri N.M.Dutta**

The speaker presented the case studies to address the key issues viz. statics application, noise attenuation & velocities analysis in order to improve the sub-surface image during processing. Conventional Field statics based on sparse uphole data are not adequate in areas with large and rapid variation in elevations and near surface velocities, typical in Fold Belt areas. Refraction statics based on nonlinear tomography can provide a far better solution. Signal to noise ratio in Fold Belt data, especially over exposed anticlines, is generally low. It is a challenge to do noise attenuation on gathers where no visible signal is present. Low signal content also poses problem in estimating good velocity field which is essential for any kind of imaging. Significant improvement in seismic image is seen while reprocessing by addressing above issues meticulously.

## **6. Advanced seismic data processing for TFB data by Shri P.K.Bera**

The speaker told the house that seismic data processing of Thrust Fold Belt needs out of the box thinking. New technologies need to be implemented in this effort, like CRAM. CRAM is ideal for imaging beneath salt structures as well as in over-thrust areas with wide angle or rich azimuth data, particularly where there is a dependence of velocity with azimuth. Preservation of subsurface angle-dependent reflectivity amplitudes that can account for all possible arrivals and complex wave-phenomena accounts for non-illuminated areas is the main feature of CRAM.



Shri P.K. Bera and Dr. A.K.Srivastava during their respective presentations

## 7. Attribute study in Interpretation by Dr.A.K. Srivastava

The speaker is a domain expert in seismic attribute analysis. The description of different seismic attributes, namely Coherency, Curvature, Amplitude, spectral Decomposition were really enchanting and very much relevant in seismic data interpretation. Further the speaker described faults delineation via Coherency, Curvature and automated fault modeling by Ant Tracking, Channel & levy delineation via spectral decomposition. The speaker also added that exploratory success in AAFB having complex geological setting and relatively poor imagibility, requires proper geological understanding with efficient application of all available knowledges and technologies. Thus Dr. A.K.Srivastava's speech drew the full circle of the theme '**Thrust fold belt- Assemblage- Challenges in Imaging**'.



Shri K Shridharan during his presentation



Shri K.Muthaiah delivering vote of thanks

At the end of the seminar SPG India, Jorhat Chapter released its event calendar for the year 2014-15. There was interesting feedback session for take aways at the end, wherein all the sections participated and shared their views on the success of the seminar in meeting the objectives. It was perceived by the audiences that the knowledge so imparted through deliberations and presentations was of greater importance and immediate use in pursuing exploration in Fold Belt areas.

Finally, the meeting was concluded with the vote of thanks by Shri K.Muthaiah, Secretary, SPG India, Jorhat Chapter. The evening was marked by some cultural extravaganza performed by local Gazal singer, followed by gala dinner.