From the Editor's Desk

This is the first issue of GEOHORIZONS after 10th Biennial International conference and Exposition of SPG held at Kochi in November,13. The theme session , three plenary sessions and technical papers presented both in oral & poster form have technically enriched the participants. The event has also provided the exposure to the delegates to current trends of Innovation in technology, products & services in international hydrocarbon E&P industry.

Out of six technical papers addressing wide range of topics received for this issue, the paper on "Current workflows in shale gas reservoir characterization" by Satinder Chopra et. al. explains the workflows to be applied on 3D surface seismic data in the form of attributes like geometric attributes, velocity versus azimuth (VVAz) and amplitude variation versus azimuth (AVAz). Moreover, it emphasizes the role of multicomponent seismic data, which adds the mode-converted P-S waves to the data mix bringing out the detailed anisotropy and assists in shale gas reservoir characterization.

Next paper by Wojciech Kobusinski titled "Improving knowledge about Earth subsurface, based on anisotropic depth imaging. A case of full azimuth land seismic survey for unconventional hydrocarbons exploration in Poland", has demonstrated the method which enables full exploitation of wide azimuth data and building of high resolution anisotropic velocity models. Presently, most of the workflows for analysis of azimuthal anisotropy in 3D PSTM are ineffective due to averaging of azimuths or losing some of the azimuths resulting in compromised resolution, quality & reliability of results. The author in this paper emphasizes 3D PSDM methodology, where pre-stack data is analysed in full range of angles & azimuths and can deliver reliable analysis of stress and fracture directions.

Another paper by Folke Engelmark et. al. titled "Joint inversion of 3D seismic and Towed Streamer EM facilitating estimates of total hydrocarbon volume in place", one again highlighted the fact that integration of different type of data can improve the results in any area in all circumstances. Thus the integration of EM data with 3D seismic detects a medium sized oil and gas field below 2100 m with half of the recoverable oil already produced and gas-cap still intact. 3D seismic is used to build a sparse structural layer-model to constrain the inversion which allows to estimate the vertical and horizontal resistivity directly from the data for all the rock volumes from sea-level down to below the reservoir. In addition, the inversion provides an estimate of the anisotropy of the charged reservoir interval. The final result is an improved quantitative estimate of the hydrocarbon volumes in place.

Nabakumar et. al. in their paper "Delineation of underground aquifer with natural EM in Jaisalmer district of Rajasthan", demonstrated the utility of EM method in the areas like Rajasthan where ground water is scarce & saline. The authors used high frequency MT data ranging from 40 Khz - 64 Hz in Thar desert of Rajasthan to investigate presence of fresh water at shallow depth. Data collected at few stations show the possibility of identifying both fresh water & saline water bearing areas.

Another paper by Kondal Reddy et. al. titled "Reducing the uncertainty in 4D seismic interpretation through an integrated multi-disciplinary workflow: A case study from Ravva field, KG basin, India", proves the utility of 4D seismic data in the management of producing reservoir for optimum exploitation. The paper highlights the dramatic results with integration of multidisciplinary workflow, like rock physics modeling to predict the 4D response and explain the 4D anomalies, the use of qualitative 4D interpretation deliverables in identifying the changes in reservoir due to production. This paper also addresses the issue of using the 4D inversion derived attributes to eliminate the thin bed related tuning issues. Decoupling the 4D signal in terms of

pressure and saturation changes using PEM and inversion attributes has been suggested to isolate the effects of variations in pressure and saturation on attibutes .

G.K.Batta et.al. in their paper titled "Near Surface Shear Velocity Distribution: Challenges and Solutions (A case study from Upper Assam Basin, India)" have dealt with the problem of shear wave sensitivity in the presence of fluid and fractures in rock matrix in the shallower zones. Since the shear waves interact with the near surface geology in a different manner, therefore shear statics cannot be approximated by simple scaling of the P-wave statics. Like P waves, direct shear waves in full wave uphole seismic records which are nearer to ground rolls (Rayleigh waves; VR = 0.9194 VS, if Poisson's ratio is 0.25), can be used for computation of the near surface shear wave velocity structure. The common receiver gather domain of full wave uphole seismic data have been utilized for extracting a relationship between time versus depth of the direct P-wave and direct S-wave phase in the subsurface (slant ray path converted to vertical ray path). The resultant velocity field derived from this methodology is corroborated well with the near surface investigation.

I take this opportunity to request all SPG members to contribute good number of quality technical papers for the next issue of GEOHORIZONS.

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