Challenges and Solutions for Seismic Imaging Block-3/7 Sub-Volcanic Areas

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A comprehensive seismic acquisition and seismic processing parameters test programs were carried out aiming towards solving the poor data quality problem South of Block-3 and almost the entire operating area in Block-7 south where a complex sub-volcanic layering exist at relatively shallow depths.

During the acquisition course, several test programs have been carried out incorporating a combination of different charge depths, charge size, source intervals and spread lengths. Where as in the processing test course, the application of the PSTM and De-multiple modules techniques were the main tools used.

Generally, quite obvious improvement is seen in some areas' profiles, showing better continuity and fault definition but still the quality of the data has not been satisfactory improved in most of Block-7 south.

Even though, the sub-volcanic problem is easily detectable in seismic profiles and geophysicists around the world can tell theoretically the solutions, but that will not always be the optimum solution.

That because, the sub- volcanic in seismic sections is an area -dependent problem and the complexity of the existing Sub-volcanic layers is different from one area to the other. Where, as simple single, thin, unbroken layer characterize some areas, we can find some areas, such as Miyan, having a complex multi sub-volcanic layering. And some times these are surface broken and incorporated in the area faulting system.

Thus, it's recommendable, in order to overcome the data quality problem in that area is to go with all of the previously applied acquisition and processing parameters and add to that the advanced techniques of using Borehole Seismic and drilling data; then by means of multiples modeling and adaptive multiples subtraction surface seismic processing techniques, it may be possible to attenuate the current sub-vocalic generated multiples