

## Petroleum Geology Conference and Exhibition 2008

14th – 15th January 2008 • Kuala Lumpur Convention Center, Kuala Lumpur, Malaysia

---

### Geophysics Paper 7

#### GEOPHYSICAL ISSUES AND CHALLENGES IN MALAY AND ADJACENT BASINS

DEVA P. GHOSH

PETRONAS Research Sdn Bhd

Although seismic method has been successfully in the Malay, Sarawak and Sabah basins for quite sometime, there are many geophysical issues that are not well understood or fully resolved. Some of the problems are structurally related whereas the rest are related to interpretation of amplitudes. Of the most complex problem is the gas wipe out issues. Many of our reservoirs suffer from shallow gas leakage and are difficult to image. The easiest way to resolve this problem is the use of shear wave through Ocean Bottom Cable (OBC) technology. However it is quite expensive and most of operators are reluctant to use the technology. An alternative but less effective way is to better focus the P-wave energy by considering approaches like compensation for absorption and or internal scattering within the gas body. Another imaging issue is the fault shadowing problem in many tectonically disturbed areas (Sabah) which gives poor imaging in key zones below the fault. Seismic wave propagation in Malay basin is complicated. In the most cases pay-beds are thin in the seismic tuning range so the earth behaves as an “effective media”. Wave propagation in this “media” is different and needs to be understood better. In terms of relationship between amplitude to hydrocarbon prediction certain ambiguities arise from amplitude response caused by lithology or those by pore fill. Further spurious amplitude and AVO responses may come from soft shales and hard shales; coal layers and brine soft sands. Ambiguity of equivalent response in seismic inversion is a very common pitfall. For example: A poor quality sand with gas might give similar response as high quality sand with brine within errors of uncertainties and noise. Some of these issues will be addressed and certain solution suggested.