

Course: Tectonics and Sedimentation in Petroliferous Basins

INSTRUCTOR: Pedro Victor Zalán. Advisor in Hydrocarbons Exploration

Duration:

1 day

Audience:

G&G professionals with Entry and Intermediate levels

Summary:

Plate Tectonics and intraplate deformation, caused by the release of stresses originated at the margins of the plates, generate a discrete number of types of crustal depressions that are constantly filled by sedimentation of the most diverse nature. Sedimentary basins constantly evolve through a combination of deformation and sedimentation. Tectonics is responsible for the primeval causes of the formation of the basin, and for the deepening and widening of the subsiding basement. It is also responsible for the deformation of the infilling material and for their thickening and thinning throughout the crustal cavities formed. Sedimentation that takes place concomitantly with the movements of faults and the flexing of folds is called syn-tectonic and their geometry is a direct response to the spaces provided by the active tectonism and its action upon them. As a result of syn-tectonic sedimentation growth strata are generated and their recognition and the understanding of their genesis is of utmost importance in the study of petroliferous basins.; Growth strata are very useful to precisely date the tectonic events in different times and places in the interior of the basin. Source rocks and reservoirs are commonly associated to growth strata. This one-day short-course will emphasize the description of the tectonic styles that are responsible for creating and shaping sedimentary basins, as well as the recognition of growth strata in seismic sections and the understanding of their importance in the better risk evaluation of important items of petroleum systems (source rocks, reservoirs, traps and timing)..

Course Outline:

This one-day short-course is intended to update the basic concepts of structural styles outlined by the pioneer work of Harding and Lowell (1979), based on modern findings achieved in the fields of structural geology and seismic interpretation, during the last 30 years. The huge amount of seismic data available for petroleum exploration revealed previously unknown styles of deformation, in both onshore and offshore sedimentary basins, but

especially in the deep and ultra-deep water realms of the continental margins. The concepts will be heavily illustrated by seismic and field examples from several parts of the globe, trying to focus on their helpfulness for successful petroleum exploration. All deformational structures that can be found in the extensional, compressional and strike-slip environments will be discussed, as well as deformation in mixed environments (where all three stress fields can act together) and in the intracratonic environment where intrusive tectonics and impact tectonics will be covered. The course is intended to geologists and geophysicists that are involved in seismic interpretation aimed to petroleum exploration as well as for any geoscientist that intends to improve his(her) abilities in the interpretation of the structural geology of sedimentary basins and associated marginal foldbelts of any type and age.