Basin model of pressure evolution in the Auger Basin, The Gulf of Mexico

Baiyuan Gao
University of Texas at Austin

The Auger basin is located 345km to the southwest of New Orleans. We model the pressure evolution in the Auger Basin from late Pliocene to the present. O, P and Q sand layers were deposited during late Pliocene. The RFT tests show the in-situ pressure in the O, P and Q sand is about 72.8~82.6MPa in the Auger field and about 98.5~100.7Mpa in the Macaroni field. We construct overburden model based on density logging data and assumed compression behavior in the shallow depth. We construct the compression model based on shallow porosity-effective stress observations and deep porosity-effective stress observations from direct pressure measurements. The permeability model is based on the CRS results of the mudstone in the Ursa Basin. The results from 2D basin model show that we successfully reproduce the observed overpressure in O, P and Q sand. The rate of effective stress increase in mud rock is related to both the sedimentation loading rate and the value of coefficient of consolidation.

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