MS Thesis Announcement

Study of Dielectric Constant Logging Tools

Chang-Ming Lin

One of the important issues of well logging is to determine the water saturation from the oil bearing formation. The induction resistivity tool may finish the job if the water is fairly saline. In fresh water, the induction tool is difficult to figure out the exact water saturation and oil/gas contents. Therefore, it is crucial that there be a method to determine water saturation that is less dependent upon the knowledge of water salinity thus making it of great use in fresh water zones. Dielectric constant logging tools offer an attractive new method of formation evaluation, which is relatively independent of water salinity.

In this thesis, a dipole model is developed in that it consists of three infinitesimal dipoles: one for the transmitter and the other two for the receivers. The model, then, is used to simulate the dielectric constant tool responses by measuring the amplitude ratios and phase shifts in both homogeneous and inhomogeneous layered formation. The results show a good agreement with the experimental data and theoretical results published in previous studies. Moreover, the numerical results portray that the dipole model accurately provides a decent estimation of the formation dielectric properties compared to other models.

Committee Chair: Dr. Richard Liu
Committee Members: Dr. Donald R. Wilton
                  Dr. Heidar Malki

Place: Well Logging Lab
Date: July 10, 2012
Time: 11:00 - 12:00 pm