Electromagnetic Imaging though metallic well casing: fundamental concepts and field examples

Michael Wilt

Abstract

Metallic well casing has always presented problems and opportunities for EM technology. Although the casing typically distorts the external fields and greatly attenuates the internal fields, it also offers access to deeper formation—thus improving sensitivity over measurements made at the surface. In this talk we will explore the concept of using well casing as an EM antenna, briefly discuss the physics of EM signal transmission in metallic casing, and finally look at some recent numerical and field examples.

Bio for Michael Wilt

Dr Michael Wilt is a staff scientist at Lawrence Berkeley Laboratory where he leads R&D efforts in deep reading electromagnetic technologies. From 1977-1984 he was employed as a geothermal division staff scientist at Lawrence Berkeley Laboratory and from 1989-1997 he was the project leader for crosswell electromagnetics at Lawrence Livermore National Laboratories. In 1997 he joined Electromagnetic Instruments Inc. (EMI) where he led projects in crosshole EM, surface to borehole EM and extended induction logging. From 2001 to early 2015 he was employed by Schlumberger, with the most recent position of Schlumberger Advisor in Deep Reading Electromagnetic (EM) Technologies and center manager to the EMI Technology center in Berkeley, California. Michael Wilt received his B.S (1973) and M.S. (1975) in Geophysics from the University of California, Riverside and received his PhD from U.C. Berkeley in 1991 in applied geophysics.