
A Method for Calculating Pseudo Sonics from E-Logs in a Clastic Geologic Setting

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ABSTRACT

Sonic (DT) logs used for synthetic seismogram (SS) calculation are often not available when needed. The interpreter must rely on a pseudo-sonic (DTP) derived from other log curves to generate the SS. It is the purpose of this study to identify methods and practices that are accessible to working geoscientists for solving this problem.

A cross-plot analysis of Gulf Coast onshore logs was performed in order to examine the relationship between the DT log and resistivity curves (RS) and to identify the proper choice of RS curve to use for creating a DTP. A method to quantify the DT/RS relationship for a geologically similar area was established which may be applied to wells that do not have DT curves or to fill gaps in partial DT logs.

It was shown that the DT/RS relationship varies with RS log type, location, depth, lithology and formation age. With this relationship determined, an accurate DTP from RS log can be computed using a depth and lithology dependent scale function.