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Joint Hydrodynamic Sectioning Method and Logs for Determining Mud Shale Organic Carbon Content

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Summary

As the organic carbon content directly influences the optimization of shale gas exploration zones, an in-depth evaluation on organic carbon content is particularly important. At present, the most common method for determining the organic carbon content in the mud shale is the ΔlogR method, which is lose sight of the hydrodynamic conditions and sedimentation environment, such as underwater disturbance and oxygen content difference, the difference in preservation conditions for organic matters. Those can lead to in great variation in the organic carbon content. This paper introduces the evaluation technique for the organic carbon content in the mud shale.

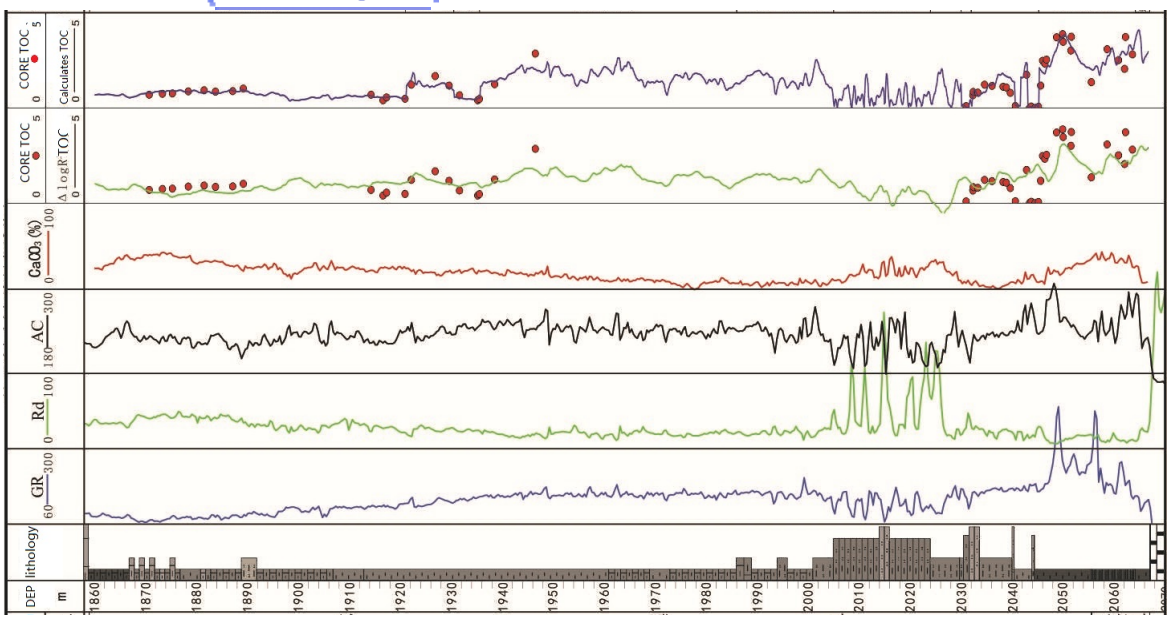

Figure 2 *The comparison of the results of this calculation method andK logR.*

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Through analyzing the hydrodynamic shale sedimentation cause of formation, and using the hydrodynamic sectioning method, this paper carries out a multivariate regression analysis with the logging curves of natural gamma, electrical resistivity, interval transit time as a result of response to the TOC sensitivity, summarizes the relations among logR, AC/GR, 1/GR and TOC and works out the data of organic carbon content along the whole well section. This technique takes the mud shale formation and the occurrence characteristics of its organic matters into consideration, and avoided the serious error resulting from the same formula off different lithologies. Actually, it has achieved desirable results in prediction of organic carbon content in the marine shale in south Sichuan Basin in south China.

References

Passey, Q.R., Creaney, S., Kulla, J.B., et al.1990. A practical model for organic richness from porosity and resistivity logs. AAPG Bulletin 74, 1777ï1794.