New Approach to Quantitative Evaluation of Well Cutting Samples Helps Define Better Stratigraphy- Case Study from a Well Drilled far North- East of India

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ABSTRACT

Volumetric interpretation of cutting samples in a well under drilling is routine. Differing percentages of various rock facies in each sample vindicate stratigraphy of a drilled space evolved over time.

The approach; however; lacks objectivity in interpreting volumetric facies logs or strip logs and defining the stratigraphic intervals. Present paper quantifies this analysis to derive a stratigraphic model that incorporates Walthers' law of correlation of facies.

Data set used in the exercise has been generated by sampling litho cuttings in an exploratory well; located in the north- eastern side of Indian sub- continent. Drilled as a directed well for about 4100 meters, it penetrated entire tertiary clastics and ended in granitic basement. Cuttings; sampled at an interval of 5 meters; were visually interpreted for volumetric percentages of different facies. These percent values were then fed into an empirical formula that reduced them to one characteristic numerical value. From distribution pattern of these values; four statistical lithofacies and their ranges; were derived. Whole drilled interval was represented in terms of these four statistical lithofacies and a statistical litho-column was generated.

By visual examination of this litho- column, various patterns of facies associations have been identified. Application of Walthers' law of correlation of lithofacies on the patterns so recognized; has helped to break this litho- column into several segments. Each segment contains facies associations believed to be genetically related.

The exercise demonstrates new quantitative approach and helps derive better stratigraphic model than is possible through interpretation of volumetric percentages.