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## ABSTRACT

The primary objective of this study is to investigate the porosity-depth trends of shales and sands and how they affect lithologies. Compaction curves from well logs of five wells were determined using interval transit time from sonic logs. The depth of investigation lies between 1087 m and 2500 m. Based on the shale and sand trend modeling, the study intends to determine the model to be used for lithology prediction at various depths given the interplay between shale and sand compaction. The improved understanding of the physical properties of shales and sands as a function of burial depth was demonstrated, in conjunction with a good understanding of how compaction affects lithology. The compaction curve for shale and sand lithologies varies with shale being parabolic in form, and sands with linear and exponential in nature. Plots of sonic porosity against depth show great dispersion in porosity values while plotting porosity values against depth for different lithologies produced well-defined porosity trends. This shows decrease in porosity with depth. The negative porosity trend is less marked in sandstones, and faster in shale which suggests that it is possible to make accurate porosity predictions using compaction trend. The porosity trend showed exponential relationship at small depth less than 2500m. The linear and exponential models are not dependable at large depth. The result shows that the compaction models applicable for sandstones do not necessary apply for shales.

## **KEYWORDS**

Compaction Trend, Lithology, Porosity, Reservoir Characteristic, Velocity Logging, Sand- Shale

## Cite this paper

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