

THE ECHO CLIFF STRUCTURE: IDENTIFICATION AND ANALYSIS OF A POSSIBLE KANSAN IMPACT STRUCTURE

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ABSTRACT

A possible impact structure was discovered while prospecting for hydrocarbons in the Forest City basin near Dover, Kansas. Circular surface expression, magnetic anomalies, and unconfirmed shocked quartz sand grains from the Ordovician Simpson Group are cited as indications of an extraterrestrial origin. Unfortunately, this evidence is not conclusive in verifying an impact structure. This study seeks to verify the impact origin of the Echo Cliff Structure with analysis of drill cuttings for shock metamorphism and geochemical signatures unique to impact structures. A gravity and seismic survey will be conducted over the study area to collect additional geophysical data on the structure and to facilitate modeling of the subsurface. Previous work in the study area, a magnetic survey, and remote sensing analysis will be referenced to increase the amount of data available for interpretation. If verified, this structure would be the only confirmed hypervelocity impact structure in Kansas and may enable significant hydrocarbon recovery in the typically low production Forest City Basin. The Ames Structure in northern Oklahoma, an Ordovician impact structure remarkable for significant hydrocarbon recovery is utilized as an analog for this study.

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