

## **Analysis of Cuttings from a Newly Drilled Well in the Green Canyon Protraction Area near the Sigsbee Escarpment, Focusing on Geochemical Changes through the Suture Zone**

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### **Abstract**

The Jurassic Louann Salt is an extensive evaporite deposit found throughout the Gulf of Mexico (GOM) Basin, comprised primarily of bedded salts with lesser amounts of sand and anhydrite. With the developing basin between the North American and South American plates during Jurassic rifting, large amounts of marine water evaporated, leaving upwards of 4 km of salt. Subsequent sediment loading caused widespread movement of the Louann Salt, creating a key element in the GOM petroleum system. Suture zones in the Louann Salt are areas where two salt bodies collided, incorporating overlying sediments. These suture zones are widespread throughout the GOM, creating potential drilling hazards. This study focuses on the geochemistry of a suture zone in the Louann Salt from a newly drilled well in the Deepwater GOM. 50 drill cutting samples that span throughout the suture zone of this well were hand-crushed and sieved through a 250 micron mesh. Approximately 5 grams of a sample was loaded into an XRF sample holder, and elemental composition was then measured with a Thermo Niton X13t GOLDD+ handheld XRF. XRD was run on a Bruker D8 advance to determine the mineralogy, which was then used to calibrate the elemental composition obtained from XRF. This analysis will gain a better understanding of the depositional and diagenetic history of the Louann salt, focusing on mineralogical and geochemical changes in the suture zone compared to the overlying and underlying salt body. Furthermore, we can determine bulk salt mineralogy variations throughout the section, such as halite, sylvite, and carnallite, which will aid in depositional and diagenetic interpretation.