The Gulf of Mexico is a leading world-producer of hydrocarbons, even within its relatively short production period. This is due in part to the movement of the Louann Salt throughout the region, creating large-scale structural traps due to salt diapirs and domes. Although the Louann Salt is an important aspect of the hydrocarbon system in the Gulf of Mexico, without cores to observe relationships between the two timing of the movement and variations within this massive (upwards of 3,050 m [10,000 ft.]) are poorly understood due to the formation only existing in the subsurface. This study will look at the contact between the underlying Werner Formation and the Louann Salt to determine variations in depositional environment and composition across the boundary. Studying this transition will provide insight into environmental and oceanic changes that caused the different formations to be deposited across the Gulf of Mexico and will provide industry with critical information on the formation during drilling that could help mitigate over-pressurized zones. This study specifically will help start the database of geochemical analyses of the lower contact and describe the changes in the depositional environment between the Werner Anhydrite and the Louann Salt. X-ray fluorescence (XRF) and x-ray diffraction (XRD) were measured on cuttings from the Puma-5 well, Puma Field to determine mineralogy and elemental changes from the underlying Werner Formation into the Louann Salt. Results indicate that the Louann Salt is primarily pure halite, with zones of potassium and magnesium enrichment. There are areas of shales, clay inclusions and limestones throughout. The contact between the two formations is fairly abrupt, with inclusions of the other throughout. It is difficult to say if these are primary or secondary.