The Gulf of Mexico is a highly prolific hydrocarbon basin that has proven in its short existence to be a major world producer of petroleum. This is in part due to the movement of the Louann Salt throughout the region, creating large-scale structural traps due to salt diapirs and domes. This salt body also contains suture zones of additional bodies of evaporites that have yet to be traced across the region. Although extensive, little information is known about geochemistry of the Louann Salt, the overlying Norphlet Formation, or of the sutured evaporites. When drilling into these unknown bodies, there is a chance of an over-pressurized formation. To help mitigate risk, detailed studies of the formations are needed to first create a geochemical database of the evaporite bodies, and second correlate these bodies across the region. Also, timing of movement and diagenesis of the formation due to reactions with subsurface waters may be determined by measuring the trace elements within the evaporites, which can help recreate subsurface history of the basin and chemical composition of past fluids. This study specifically will help start the database of geochemical analyses of the upper contact and describe the changes in the depositional environment between the Louann Salt and the Norphlet Formation. A combination of x-ray fluorescence (XRF) and X-ray diffraction (XRD) were used to determine mineralogy and element geochemistry of the top of the Louann Salt through the base of the Norphlet Formation using well cuttings from the Puma-5 well. Results indicate that the formations are primarily shale (Norphlet base) and halite (Louann), with trace amounts of other elements throughout. K-salts are common, along with inclusions of clay minerals and carbonates throughout. There is a gradational area, where salt inclusions are found within the Norphlet Formation.