

GEOELECTRIC CHARACTERIZATION OF SEDIMENTARY URANIUM DEPOSITS IN THE SHIRLEY BASIN, WYOMING

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Shirley Basin (SB) in Wyoming is one of the most significant uranium ore deposits in the United States and the second largest in Wyoming. The uranium deposits in the SB area are roll front type. These roll fronts deposits formed due to uraniferous groundwater that moved from oxidized sediments to the carbonaceous and/or pyrite-bearing older sandstones. Surface and Borehole Induced Polarization (IP), DC Resistivity imaging, and Self-Potential (SP) data are used to study the fundamental zones of uranium deposits in roll fronts. A combination of RES/IP and SP provides a clear image of the location of a REDOX front/boundary, a delineation of transition zones, and a more comprehensive characterization and localization of uranium roll fronts. IP could observe a time-domain decay curve to form the roll front uranium deposits. Full Waveform (FW) IP will give us a more accurate decay curve image that allows for flexibility in the definition of flexible time windows used to quantify the effect of IP.