Relationships of MVT Mineralizations, Color-Altered Conodonts, Fluid Inclusions, "J"-Type Lead, and Migrating Oil-Field-Type Basinal Brines with Unconformity-Bounded Stratigraphic Sequences

Edwin D. Goebel
University of Missouri, Kansas City, Missouri

Ore and trace occurrences of MVT deposits, fluid inclusions in sphalerite, color alteration of condononts (CAI), and the genesis of "X"-type lead, reflect different effects of the heat present during migrations of hydrothermal fluids. In the Midwest, spatial-distribution patterns of these heating effects are localized in the porosity and permeability in strata along the boundaries of unconformity-bounded stratigraphic sequences (UBSS). These strata, where preserved, contain the relict pathways of ore fluids and possible hydrocarbon migrations.

When plotted stratigraphically within the UBSS framework, the highest CAI temperatures in the Tri-State district's Kaskaskia host strata, are the closest to the pre-Pennsylvanian unconformity, a reversal of the temperature sequence expected from burial heating alone. Fluid inclusion temperatures from Absaroka (Pennsylvanian) carbonate cements, also in the Cherokee Basin, exhibit an anomalous increase downward toward the pre-Pennsylvanian unconformity. Collectively, advective flow of hydrothermal fluids is indicated.

In the subsurface of southwestern Nebraska and northwestern Kansas, also plotted in the UBSS framework, trace amounts of "J"-type lead are more radiogenic toward Precambrian anorogenic granitic source rocks. This spatial pattern is evidence of a paleohydrothermal fluid pathway.

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