Diagenetic iron and manganese mineralization is associated with the Moab and Lisbon faults and is an important indicator of fluid flow in Jurassic Navajo Sandstone of southeastern Utah. Reducing brines originating from the Pennsylvanian Paradox Formation (with or without hydrocarbons) mobilized disseminated iron and manganese in the Jurassic sandstones and mixed with shallow, oxygenated groundwater to precipitate both iron and manganese mineralization. Mineralization consists of colliform and concretionary hematite, pyrolusite, and cryptomelane-hollandite that contains 1.33–2.12 wt% K. The $^{40}\text{Ar}/^{39}\text{Ar}$ dating of vacuum-encapsulated cryptomelane yields age estimates of 25–20 Ma, indicating mineralization coincident with either a Colorado Plateau uplift episode or La Sal Mountains volcanism.

Keywords: argon-argon, cryptomelane, Navajo Sandstone, manganese oxides, age determination.