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The uranium-bearing stratum structure and sedimentary characteristics of Jurassic in Junggar basin, Xinjiang, China^①

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The Junggar Basin is located to the north of Xinjiang, which is the second largest sedimentary basin in Xinjiang. It is a large superimposed basin of late Paleozoic to Meso-Cenozoic age^[1]. The multiple uranium-hosting horizons are of Jurassic, Cretaceous and Paleogene age^[2-3], while the mainly hosting horizons is middle-lower Jurassic^[4], in which recently having made an important breakthrough in interlayer oxidation zone sandstone-type uranium deposit^[5]. In order to further elaborate metallogenic condition of sandstone-type uranium deposit is middle-lower Jurassic^[6], through the research on exposed outcrops, drill logging data-rich, a large number of oxidation zone and uranium mineralization information in Jurassic, Junggar Basin. This paper summarizes uranium hosting "mudstone-sandstone-mudstone" stratum structure, uranium hosting sedimentary characteristics and sedimentary facies zone.

(1) The paleoclimate of Jurassic change from warm and humid to hot and dry, forming a set of sedimentary strata whose lower is grey and upper is red, The middle-lower Jurassic is primary reductive construction, and sedimentary sand body has a certain reduction capacity, including Badaowan formation, Sangonghe formation, Xishanyao formation and Toutunhe formation. It can be a potential ore-bearing bed of the sandstone type uranium deposits.

(2) The Badaowan Stratigraphic is characterized by "the two sets sandstone are located the upper and lower, the mudstone is located the middle"; The Sangonghe Stratigraphic is characterized by "sand layer in the lower is thinner than mud layer in the upper"; The Xishanyao Stratigraphic is characterized by "sand and coal interstratification"; The Toutunhe Stratigraphic is characterized by "the grey sand layer in the lower and the red mud layer in the upper".

(3) Deposited product of lake retrograded progradation- lake inlet retrogradation developed favorable lithofacies combination in vertical. It became the potential uranium metallogenic strata of sandstone type uranium deposits. Two times larger lake transgression control the two favorable "mud-sand-mud" structure in Jurassic, one is (mud) the middle of Badaowan Group -(sand) the upper of Badaowan Group and the lower of Sangonghe group -(mud) the upper of Sangonghe group; Another is (mud) the upper of Sangonghe group- (sand) the lower of Xishanyao group and Shishugou group - (mud) the upper of Shishugou group.

(4) Braided river and braided river delta are the main favorable facies belts for sandstone type uranium deposits in Jurassic, Junggar Basin. Oxidation belts and uranium mineralization are often developed in the large frame channel sand bodies of the braided river and braided river delta. The distribution of the sand body accumulation area and the interlayer oxidation zone has the space coupling property, It is considered that the inheritance of the ancient fluid determines this characteristic.

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