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Recent exploration progresses on sandstone-hosted uranium deposits in north-western China

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The metallogenic target selection using multiple exploration techniques and drilling program for sandstone-hosted uranium deposits have been intensively carried out for recent years, and big progresses on new discoveries of uranium reserve/resource have been made in the Mesozoic sedimentary basins such as in Yili, Ordos etc. in North-western China

The Yili basin is a depression one within the Tianshan Mountain belt in the western part of China. Its basement is composed of Proterozoic-Paleozoic metamorphic and sedimentary rocks, and covers of Mesozoic sediments. The early-middle Jurassic Shuixigou Group is major uranium-productive beds which are composed of three Formations such as Badaowan, Sangonghe, Xisanyao and eight sedimentary cycles. Uranium deposits are found in the south margin of the Basin and controlled by the redox zone. The combined exploration techniques of detailed sedimentary facies study, Rn-survey, high-precision magnetic and soil geochemical and seismic surveys have been successfully used to have locate the potential targets and mineralization zones. The enlargement of uranium reserve/resources in the known deposits and new resources in the selected new targets and cycles have been achieved through further drilling programs.

The Ordos basin is a large Meso-Cenozoic basin developed in North China Platform, with its size of approximately 250,000 km2 and is well known as an important "energy resources basin"because of abundance of coal, oil and gas deposits. The Dongsheng sandstone type uranium deposit is a large one discovered in recent years in northeastern Ordos basin. It is a special kind of sandstone type uranium deposit, different from other ordinary sandstone type deposits because of its unique signatures. It is generally controlled by a transitional zone between greenish and grayish sandstones, both of those two kinds of sandstones now indicate reduced geochemical environments. The greenish color of the paleo-oxidized sandstones mainly results from chloritization and epidotization related to oil and gas secondary reduction processes. The metallogenic superposition model for this kind of uranium deposit has been put forward, and exploration indications summarized. Based on the exploration model, indications and using techniques such as detailed sedimentary facies study, Rn-survey, high-precision magnetic and soil geochemical and seismic surveys, new metallogenic targets have been selected and a big progresses on enlargement of reserve/resources have been made to have discovered new uranium deposits such as Nalinggou and Daying deposits and new ore beds as well in the north-western part of the north Ordos Basin.

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