

Uranium exploration in albitised rocks of North Delhi Fold Belt in Rajasthan and Haryana, India

P. Pandey, M. Khandelwal, C. Bhairam, P. Parihar

Department of Atomic Energy, Bangalore, India

E-mail address of main author: pradeeppandey.amd@gov.in

Uranium deposits in Na-metasomatised granites and metasediments are reported from several places in the world. In India, uranium mineralization associated with soda metasomatic activity has been recognized at a number of places in North Delhi Fold Belt (NDFB) in Rajasthan and adjoining Haryana. Exploration activities for uranium in Khetri Sub Basin (KSB) of North Delhi Fold Belt (NDFB) in last six decades have resulted in locating number of uranium occurrences in the albitites and albitised metasediments at Sior, Siswali, Maonda, Hurra ki Dhani, Diara, Saladipura, Khandela, Rohil, Ghateshwar, Bichun, Sakhun, Ladera and Chota Udaipur in parts of Rajasthan and Dhancholi, Raghunathpura, Rambas and Gorir, in parts of Haryana. Incidentally, the occurrences fall along a NNE-SSW trending “Albitite line”, which comprises a 170 km long, structurally weak zone/lineament and axial trace of major folds in the KSB extending from Raghunathpura in Mahendragarh district of southern Haryana to Ladera-Sakun-Bichun in Rajasthan.

Lithounits of KSB comprise lower Alwar Group consisting quartzite, amphibole quartzite, subordinate phyllite and schist and upper Ajabgarh Group consisting schist, phyllite, marble, quartzite and carbon phyllite. The post-Delhi magmatic activity in NDFB is represented by alkali granites, pegmatites, aplites and albitites. The rocks of Delhi supergroup have undergone low to medium grade metamorphism (amphibolite facies) and polyphase deformation. First two deformations with N-S to NNE-SSW axial plane are coaxial while the third phase have E-W axial plane. Prominent shear zones are developed along the N-S to NNE-SSW axial planes, characterized by intense silicification, brecciation and ferruginisation. The NE-SW trending disposition of albitised granites indicate that the metasomatic fluids originated during reactivation of the NE-SW trending Khetri lineament, caused pervasive albitisation of the preexisting rocks, the deformed lithounits providing conduits for the migration of large volumes of albitising fluids.

Sustained exploration efforts along the albitised zone have led to establishing a polymetallic (U± Cu, Mo, Ni, Co) type uranium deposit at Rohil within the albitised metasediments of Ajabgarh Group.