

**INTEGRATION OF GEOLOGICAL AND GEOPHYSICAL DATA: A
GUIDE TO EXPLORATION FOR URANIUM IN
RAGHUNATHGARH AREA, NORTH DELHI
FOLD BELT, RAJASTHAN**

Navin Goyal, P.K.Sharma, P. Allipeera*, G.S. Yadav, O.P.Yadav, L.K.Nanda and P.S.Parihar*
*Atomic Minerals Directorate for Exploration & Research
Jaipur, *Hyderabad.*

Abstract

Uranium mineralization associated with sulphide bearing sheared/ brecciated quartzite in North Delhi Fold Belt is known from Raghunathgarh area of Sikar district, Rajasthan. Here, the surface mineralisation occurs intermittently over 1.5 km with samples (n=21) analysing 0.014 – 0.710% U_3O_8 (Av. 0.162%) with negligible thorium. Uraninite, along with other secondary minerals, occurs as fine sized grains along fracture planes, around grain boundaries and also as fine sized grains forming small clusters. The sulfides include pyrite, pyrrhotite, and chalcopyrite. Magnetite is also present.

Considering the promising surface indications, structural control and association of uranium mineralisation with sulfides, magnetic, IP/resistivity and EM surveys were carried out to delineate subsurface structural features and conductors in the area. A sizeable part of the area is covered with sand dunes and soil. The magnetic survey revealed two sub-surface faults, one of which is parallel to a shear and the mineralized zone. EM conductor axis, as marked by the EM survey, extends over a strike length of about 800m and again for 400m with a lateral shift. A prominent NE-SW trending high chargeability and corresponding low resistivity zone and a magnetic low depicting a fracture zone was identified in the NW part of the explored area.

Based on the geological and geophysical data and the surface indications, sub-surface exploration was taken up at Raghunathgarh and a total of 42 boreholes have been completed so far. It is observed that the EM conductor axis and one of the faults delineated from the magnetic survey broadly coincide with the mineralization bands intercepted in some of the boreholes. A few boreholes were also drilled to test the NE-SW trending high chargeability/ low resistivity zone corresponding to carbonaceous phyllite, clay, disseminated sulphides and the fracture zone marked by a magnetic low in the NW part. Core examination indicated the presence of varied lithounits, mainly quartzite, quartz-biotite/chlorite schist, biotite schist, amphibolite, carbonaceous phyllite and quartz veins.

The sub-surface exploration has, so far outlined four correlatable mineralized lodes with strike lengths of 400m, 300 m, 200 and 160 m respectively within a explored length of about 2.5 km.

Keywords: Uranium, EM conductor, quartzite, Raghunathgarh, Rajasthan