

AN OVERVIEW OF NEW URANIUM EXPLORATION TARGETS IN THE NORTHERN MARGIN OF CUDDAPAH BASIN

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Abstract

The northern part of Cuddapah Basin is comprised of Middle to Upper Proterozoic Papaghni, Srisailam, Palnad and Kurnool sub-basins lying over the Archean basement crystallines. The basement crystallines are marked by a number of discontinuous patches of Archean/early Proterozoic schist belts, Peninsular gneiss, Closepet granite and its equivalents and younger intrusives. This geological domain of Cuddapah Basin has undergone deformation and multiple phases of igneous activity making it favourable for uranium mineralization. Substantial unconformity related uranium deposits have been established in Srisailam and Palnad sub-basins viz; Lambapur, Peddagattu and Chitrial in parts of Nalgonda district and Koppunuru in Guntur district. The well-known Vempalle dolostone hosted uranium mineralisation occurs in the northern part of Papaghani sub-basin.

The favorable geological setting of Gulcheru Quartzite sedimentary cover overlying the deformed and hydrothermally altered, fertile uranium bearing granite basement in the NW part of Cuddapah Basin is a potential target for unconformity related mineralization as evident from uranium mineralisation in the Gulcheru Quartzite outlier overlying fertile granites in Kapatralla area, Kurnool district, Andhra Pradesh. The samples assayed 0.010-0.14% U_3O_8 (n=10) with negligible ThO_2 . Uraninite is reported in this mineralisation. The basement granite has undergone structural deformation with prominent NW-SE trending structures and is affected by profuse hydrothermal alteration. These structures have also affected the younger sedimentary cover.

Similarly, in the northern part of Cuddapah Basin, indications of disseminated uranium mineralization were recorded in a number of NW-SE trending linear bodies of leucogranites occurring parallel to Gadwal Schist belt around Mastipuram and Bekkarpalli area, Wanaparthy dist. Telangana. The samples assayed 0.014 to 0.84% U_3O_8 (n=10) with negligible thorium. Gummite (altered uraninite) and metamict REE minerals are observed.

In the light of recent investigations, the vast Gulcheru quartzite occurring along the western border of Paphaghni sub-basin can be targeted to explore unconformity related high grade uranium deposit/mineralisation. Similarly, younger leucogranites in the crystallines lying along Gadwal Schist belt may also be targeted for large tonnage, disseminated uranium mineralization. Thus, these new exploration targets in the northern part of Cuddapah Basin may augment uranium resources of the country.

Keywords: Uranium, new targets, unconformity related type in Kapatralla, disseminated type in Mastipuram.