


ABSTRACT

INDEX NO. - 86/16/Geol. Sc./24

TITLE: - "Sedimentology of Narji Limestone in the Neoproterozoic Kurnool Group of rocks, Cuddapah Basin, India"

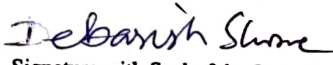
Submitted by: - Smt. Adrika Roy

The sedimentological and geochemical study on carbonate-dominated Narji Formation of the Kurnool Group belonging to the crescent-shaped, westwardly convex epicratonic Proterozoic Cuddapah Basin, India is based on three chosen sections (Section-A : 15°18' 45.00" N, 78°07' 35.76" E, Section- B: 15°25' 18.49" N, 78°05' 6.20" E, Section-C: 15°27' 36.68" N, 78°08' 34.30" E) from northern part of the exposed outcrops of the aforesaid formation. Since there is little available geochronological data on this formation, it may be inferred from other evidence that the age of Narji Formation is early Neoproterozoic. The studied area is mapped, logged and sampled systematically. Measured sections provide crucial information on the spatial and vertical variation of lithofacies. Carbonate samples collected from section (A) (15°18' 45.00" N, 78°07' 35.76" E) of Patapadu-Yaganti hills are used for geochemical analysis (Major, Trace and REE analysis). Within the major oxides, a wide range of CaO (31.45 to 72.03 wt.%) and SiO₂ (14.27 to 45.92 wt.%) is recorded. Relatively higher concentration of SiO₂ within limestones suggests clastic input. PAAS normalized REE + Y pattern shows seawater like REE + Y pattern (depleted LREE and enriched to flat HREE) with negative Eu anomaly. The Er/Nd ratio varies from 0.06 to 0.22 with an average 0.17 and this points terrigenous input within the limestones. The Y/Ho ratios vary in between 30.05 and 45.45, and this also suggests that the limestones were deposited in a marine environment but due to the terrigenous input or contamination, the Y/Ho ratio is slightly decreased. Positive Ce anomaly, high U/Th (> 1.25), and V/(V + Ni) (>0.5) ratios of Narji limestones clearly indicate that their deposition was in a suboxic to anoxic condition. A total number of six facies arranged into 2 facies associations like intertidal and subtidal are deposited in a carbonate dominated platform over the Banganapalle Quartzite. Intertidal facies association consisting of laminated limestone and heterolithic facies is considered as the shallowest facies association. The facies which developed within the subtidal facies association are Quartzite-bearing massive purple limestone facies, Calcareous shale facies, Massive whitish grey limestone facies, Intra-formational conglomerate facies and all these point to the deposition of Narji Formation lithology in a subtidal-intertidal carbonate dominated platform with suboxic to anoxic condition. Most of the coeval successions of Narji Formation rocks throughout the globe also indicate a similar type of depositional pattern during this time interval (early Neoproterozoic) especially during the breaking and amalgamation of Rodinia.


(FULL SIGNATURE OF THE CANDIDATE)

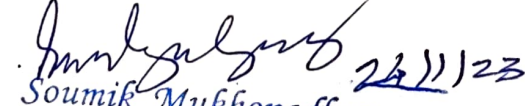
Date... 24.1.23

DR. DEBASISH SHOME
Professor (Retd.)
Dept. of Geological Sciences
Jadavpur University, Kolkata - 700 032


1. Signature with Seal of the Supervisor
Date: 24.1.23


DR. GOPAL CHAKRABARTI, WBES
Joint Director of Public Instruction
Scholarship and Stipend
Government of West Bengal

2. Signature with Seal of the Supervisor
Date: 24.1.23


Soumik Mukhopadhyay
Associate Professor
Department of Geological Sciences
Jadavpur University
Kolkata - 700032
3. Signature with Seal of the Supervisor
Date: