

## STUDY OF MULTICOMPONENT NRM FOR ISOLATION OF SHOCK COMPONENT AT LONAR CRATER

G.V.S. Poornachandra Rao

*Palaeomagnetism Laboratory, NGRI, 305, Kakatiya Apartments,  
Street No. 2, Habsiguda, Hyderabad.*

*E-mail: gvsprao@rediffmail.com*

### Abstract

The Lonar Lake (19° 59' N, 76° 34' E) is a unique structure in the late Cretaceous – early Tertiary Deccan Traps in the Buldana district of Maharashtra state in India. It is now considered to be a meteorite impact crater on the basis of several studies carried out over the last 150 years. Some of these include magnetic (Bhalla et. al., 1974) and palaeomagnetic (Poornachandra Rao and Bhalla, 1984) evidences which also support a meteorite impact origin for this crater. The laboratory alternating magnetic field demagnetization data has been examined by analytical methods such as Zijderveld diagrams, vector difference analysis, converging circles of remagnetization etc., to isolate the shock component and assign probable age of meteorite impact. Upon examination of the vectors that were removed in very low fields of 5-10 mT, a weak secondary component of magnetization of  $D = 8.6^\circ$ ,  $I = +46.8^\circ$  ( $K = 47.66$ ,  $\alpha_{95} = 6.4^\circ$ ) has been isolated by the vector difference analysis which is very much similar to the normal polarity magnetization in the present field at the site while the stable primary vector is similar to that of Upper Cretaceous-Lower Tertiary period reverse magnetization consistent with the age of the Deccan Traps. This isolated component of secondary magnetization, if due to shock event, is in support of other age estimates of meteorite impact by fission track dating of shock melted glass (50,000 years) (Fredriksson et. al., 1973), geomorphological features (late youth), physiographic and sediment thickness studies at Lonar Lake (late Pliocene to mid Pleistocene period) (LaFond and Dietz, 1964).

*Keywords:* Deccan Traps, Palaeomagnetism, Lonar Crater, Shock Component, AF Demagnetization, Converging circles of remagnetization, Zijderveld diagrams.