

A REVIEW OF THE SEISMICITY OF PENINSULAR INDIA

by

N.B.G. Tllak^I

SYNOPSIS

A review of the historical earthquake data indicates moderate seismicity for Peninsular India. From a study of the epicentres of some of the minor tremors, three major lineaments have been inferred. Recent seismicity is suggestive of activity along some of the faults. The possible occurrence of high magnitude earthquakes along some of them cannot be ruled out. The paper also briefly reviews the possible reservoir connected tremors.

INTRODUCTION

While only very few major earthquakes occurred in Peninsular India (south of lat. 20° N), the frequent incidence of low intensity tremors points to the moderate seismicity of this region. Historical data suggests that the west coast has probably a higher degree of seismicity than the east coast.

TECTONIC SET-UP AND SEISMICITY

The tremors of low intensity with accompanying rumbling noise are generally characterised by occurrence at frequent intervals spread over a period of a month or more. Most of the epicentres of these tremors lie close to the known faults pointing to their possible tectonic origin. Of the remaining few, four epicentres each, viz., Ujni-Halbarga-Zaheerabad--Ongole, and, Wapti-Nanded-Gandhari-Guntur fall along two NW-SE trending axes (parallel to the Godavari rift), while Sindgi and Homnabad fall along a NE-SW axis, thus bringing out the possible existence of these major structural lineaments in the basement rocks. A preliminary study of the satellite imagery appears to justify the postulation of these trends; it also brings out the existence of several other lineaments, which however need further study.

The not-so-infrequent occurrence of these tremors indicate recent activity of the faults. As some of the faults are at least a few hundred kilometres long, the occurrence of high magnitude earthquakes in future cannot be ruled out, if the fault length-magnitude relationship is made applicable to the region. This is of significance in the aseismic design of major structures planned in the region.

The incidence of tremors close to man-made reservoirs as at Koyna (Deccan Traps), Kinnerasani (Pakhals), Sholayar and Mangalam (Archaeans) tend to suggest cause-and-effect relationship and the general association with hard rock areas. It is suggested that suitable instrumentation should be carried out at all the dams and their vicinity so that data obtained can be used in planning and evaluation of the seismicity of the area covered by future reservoirs.

I. Geologist Senior, Geological Survey of India, Hyderabad.