

## **Reservoir Induced Seismicity (RIS) of Mangla Dam Project before and after Dam Raising Scenario**

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### **Abstract**

Reservoir Induced Seismicity (RIS) is a transitory phenomenon which will occur especially in active seismic zones, either immediately after filling of the reservoir, or after a delay of a few years. If there is a delay, this depends on the permeability of the rock beneath the reservoir. The depths of reservoir induced earthquakes, especially those occurring immediately after filling of the reservoir, are normally very shallow (one to three km. deep). However, Induced Earthquakes at reservoirs that have experienced delay triggering may be much deeper, perhaps as deep as ten to twenty km. These may occur ten to twenty years after filling of the reservoir.

Mangla Reservoir lies in the active seismic environment of Himalaya's tectonics. Keeping in view, initially, three seismic stations were installed near the vicinity of reservoir during 1965-67 and subsequently, a seismic network of eleven seismic stations with a Central Recording Station (CRS) at Mangla was installed during 1995, for the monitoring of seismic activities at micro level in the area. The analysis of seismic data collected through three seismic stations with the fluctuations of reservoir reveals that during initial (first) impounding the seismic events with low magnitudes have increased to some extent. Further, when these studies are extended to micro seismic level by installation of sensitive micro seismic network of eleven seismic stations scattered 50 km. around Mangla Reservoir, some correlation between the fluctuation of reservoir level upto 1202 ft. SPD (Survey of Pakistan Datum) and the seismicity has been observed, dominantly negative correlation with some time-delay effects. In this study, an effort is being made to analyze the RIS after Mangla Dam Raised Scenario due to filling of Mangla Reservoir upto its maximum i.e. 1242 ft. SPD and its comparison with the previous years before the raising of Mangla Dam.