

GEO-TECHNICAL STUDIES, KINNAUR EARTHQUAKE, 19TH JANUARY 1975.

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INTRODUCTION

On 19th January 1975 at 13.32 hrs (I.S.T.) an earthquake of Richter magnitude-7 rocked parts of Kinnaur and Lahaul-Spiti districts of H.P., India. At 12.50 hrs (I.S.T.) on 17th January 1975 magnetic field readings at Jeori showed normal behaviour. At 12.54 hrs (I.S.T.) a magnetic storm of severe intensity was first recorded. The variation in magnetic field was more than 2000 gamma. The magnetic storm continued till 14.50 hrs (I.S.T.) on the same day. A foreshock in the area immediately preceded the main shock but the series of aftershocks continued even after a year. The felt area of the main shock was around 0.25 million Sq.km.

GEOLOGICAL SETUP

The rock groups exposed in lower Spiti valley are Quaternary; Kanawars of carboniferous age, acid intrusives, Haimantas of Cambrian and Salkhalas of Pre-Cambrian age. The strikes of the formations vary from NW-SE to NNW-SSE. Kaurik fault extends from Kaurik to Leo and trends in NNE-SSW direction, bringing Kanawars in juxtaposition with Salkhalas and Haimantas. About 35 hot springs are located along river Pare-Chu near Sumdo and one hot spring at Sakina near Akpa.

EFFECTS AND CAUSE OF THE EARTHQUAKE

During the earthquake maximum damage had occurred in lower Spiti and Pare-Chu valleys affecting Leo, Chango, Shalkar, Sumdo and Kaurik villages. Wide open cracks in the ground were recorded parallel/sub-parallel to Kaurik fault in the region of epicentral tract falling in intensity X M.M. Scale (Fig. I). Large landslides occurred in intensity VII and above. The quantity of additional silt likely to be contributed by the landslides in the Sutlej river catchment and deposited in Dhakra reservoir in next few years is estimated to be 4.5 million cu. m. Upstream of Sumdo, the large reservoir with high hydro-static head formed over the hot spring area by the landslide dam across Pare-Chu river was reported to have turned fairly warm. Increase in temperature and discharge of hot spring was also reported at Sakina. These features are considered to be surface manifestation of magmatic activity in depth.

Sub-terranean magmatic activity and tectonic adjustment along Kaurik fault, are interpreted to have been responsible for the Kinnaur earthquake.



FIG. 1 ISOSEISMAL MAP OF KINNAUR EARTHQUAKE, 19TH JANUARY, 1975.

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LUCKNOW.