

CASE STUDY: GEOLOGICAL CONCERNS OF 32 KM LONG HEADRACE TUNNEL OF KARI MUSKHUR HYDRO POWER PROJECT ON CHITRAL RIVER

Arshad Fayaz

Karot Hydropower Project, Gulberg III, Lahore Pakistan

Abstract

Kari Muskhur Hydropower Project (KMHPP) has been proposed on Mastuj River. The Weir site is located about 8 km upstream of Chitral Town. The location of powerhouse has been recommended 20 km from Chitral in front of Muskhur Village on the left bank of Chitral River. Kari Muskhur Hydro power Project is sandwiched between Upstream Turen More-Kari and downstream Gahrait-Swir Lasht hydropower projects. Feasibility reports of these projects have been completed in 2015 and 2014 respectively. Now the scheme under consideration could be developed within a specified stretch within predefined elevations.

Main Karakorum thrust (MKT) and Reshun Fault (RF) are running parallel to the head race tunnel. Main Karakoram Thrust is 21.6 KM from the proposed weir and 11.0 KM away from Powerhouse sites. Reshun fault is 9.27 KM, 7.9 KM away from the proposed weir and powerhouse sites respectively. This aspect of the existence of faults will be considered during preparation of Feasibility of the project.

Due to multiple valley glaciation in the project area, which is being controlled the development of landscape and thus producing thick valley fills during deglaciation time. These deposits are exposed from the base of the river to the top of the ridge near Chitral town. The head race tunnel may have problems with these fluvioglacial deposits exposed along the route. Geology plays a vital role for the placement of various structures related to Weir, sand trap, diversion tunnels, and outlet structures such as surge tank, Penstock, power house.

This paper deals with the contribution of geology to the hydro power projects on its various structures specifically its impact on the head race tunnel and solution to the problems are discussed. Numerous pictures and drawings will show the application of geology in specific instances. Examples of the application of geology to engineering work are also given (figure)

