

## SEISMOTECTONICS OF SAYDOON DAM SITES IN THE IZEH FAULT ZONE, SW OF IRAN

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The effects of Quaternary, Holocene, and historic seismotectonics are of greatest relevance to dam construction (Oborn, 1979). These effects pose the greatest hazards where the magnitudes of earthquakes are large and their hypocenters are shallow. The seismic hazard is the most severe hazard to be considered in the design of large dam projects located in high seismic areas. The earthquake hazard is a multiple hazard as besides ground shaking, earthquakes can cause (a) displacements along potentially active faults in the dam foundation, (b) fault movements in the reservoir, and (iii) they can trigger landslides and rock falls into the reservoir (Wieland, 2008). Therefore, a thorough investigation is needed for the estimation of the ground motion of the different design earthquakes. This paper gives an overview on the seismotectonic setting of Saydoon dam sites in the context of Izeh fault zone, and the relevant design aspects of the selected dam sites.

The Izeh Fault Zone in which the studied dam sites are located, is a north south-trending structure along which an apparent right-lateral displacement of the Mountain Front Fault and a zone of high seismicity occur (Figure 1). This fault zone is specified by very intense folding and thrusting (Motiei, 1995; Sherkati and Letouzey, 2004) as well as medium to high seismicity and has been active during the Mid-Cretaceous and remained active into the Tertiary.

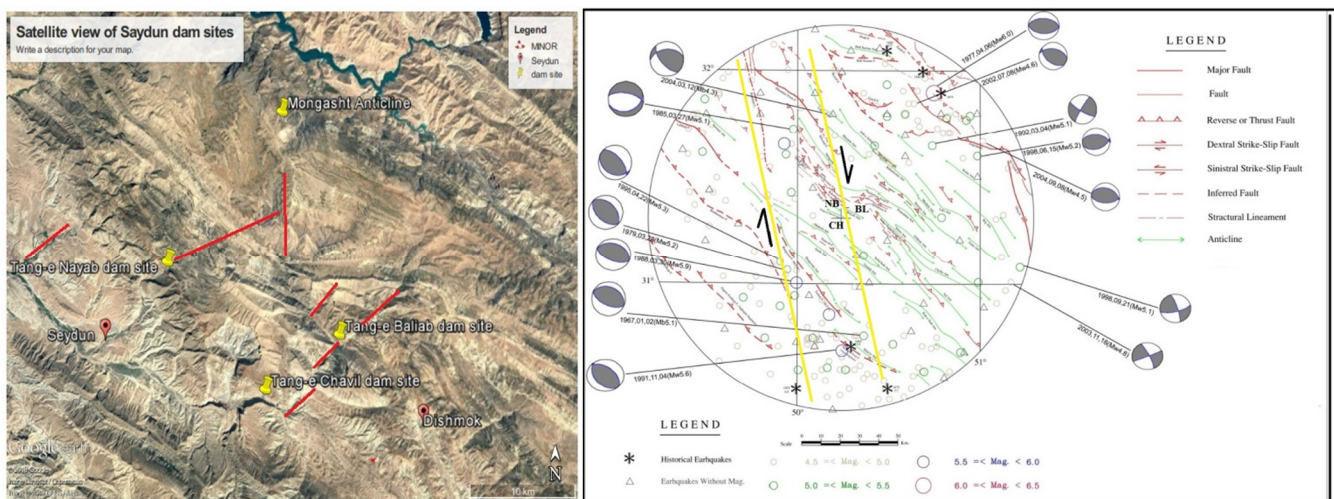


Figure 1. Google Earth view of the selected dam sites in the Izeh Fault Zone (left) and its regional seismotectonic map (right).

The present-day configuration of the drainage system in the Izeh Fault Zone, which is characterized by rivers that flow parallel to fold trends, as well as by transverse rivers cutting through folds (Oberlander, 1985; Barjasteh, 2003). Large rivers from regions with high topography in the Izeh Zone flow to the Dezful Embayment domain that is characterized by low topography. Three dam alternatives were selected on the existing rivers in this zone which are addressed here as Nayab, Chavil, and Baliab alternatives. The main basement faults in the region are, Mountain Front Fault and Mongasht Fault. However, several fault trends are seen in the region due to compound movement mechanism of the Izeh fault.

According to ICOLD Bulletins for sites with PGA greater than 0.25 g and active fault closer than 10 km from site, separate consideration of MDE (Maximum Design Earthquake) OBE (Operating Basis Earthquake) and RIE (Reservoir Induced Earthquake) are required. The average estimated values for DBE and MCE values are 0.19 g and 0.55 g, respectively. The calculated b-values for the mentioned sites are 2.43, 2.53 and 2.46, respectively indicating high seismicity of the zone. Most of the events had focal depths between 30 and 35 km. Analysis of structural elements in the region indicated a mean direction of N44°E for maximum compressional stress.

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