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Regional Tectonic Stability Evaluation of the Middle Reaches of the Yarlung Zangbo River Hydropower Planning

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The middle reaches of the yarlung zangbo river is located along Nyingchi - Saga Prefecture of the Tibet Autonomous Region, a length of about 1100km. The river and its tributaries is rich in hydropower resources in China, and it is an important back-up energy base from West to East. For the development of the western region, it has very important significance. Complex tectonic background in the region, the main tectonic deformation are faulting and ductile shearing, fold structures not developed, extremely strong in deformation, EW trending tectonic line. In this area, it has the characteristics of strong new tectonic movement, frequent earthquake activity and relative high in modern seismic intensity. The yarlung zangbo river roughly along the yarlung zangbo river plate suture zone area is located in the continent's youngest orogenic belt - Tethys - Himalayan orogenic belt, most of the main stream is at or near the yarlung zangbo river deep fault belt. Therefore, combined with hydropower and water conservancy regional tectonic stability survey and technical regulations (2006), we evaluate the regional tectonic stability. The middle reaches of yarlung zangbo river has many north-south trending faults (tectonic) belts like Sangri - Cuona, Yadong- Gulu - Sangxiong, Dingjie - Xietongmen - Shenza, Dingri - Xurucuo - Dangreyongcuo, Dajiacuo and Gema - Maiqiongcuo, with the characteristics of the fault zone of Holocene activity. The fault zone activity is strong in the east of Milin since the Holocene, and it is mainly the south and north boundary faults in yarlung zangbo river that induced strong earthquake. The fault zone activity in the west of Milin is relatively weak, and it is mainly north and south or nearly north and south trending faults dominate strong earthquake, which the time of the latest activities is

the middle and late Pleistocene, relatively small compared with the eastern section of the impact on construction of hydropower stations. In this area, seismic intensity is high, and most of the cascade even reach seismic intensity of VII degree. According to the classification of regional tectonic stability, when the ground motion peak acceleration is less than 0.05g, good stability; the ground motion peak acceleration between 0.1g~0.3g, instability; when greater than 0.4g, poor stability. The ground motion peak acceleration is 0.3 ~ 0.4 g in the east of Milin, yarlung zangbo river; the ground motion peak acceleration is 0.1 ~ 0.15g in the west of Milin-Zhongba area, while it is 0.2 g in the Renbu-Nimu area. From the main evaluation index analysis above, east of Milin County, the yarlung zangbo river area is poor in regional tectonic stability (or poor regional tectonic stability region), west of Milin-Zhongba, the middle reaches of the yarlung zangbo river area is poorer in regional tectonic stability, (or areas of regional tectonic stability is poorer).

Key words: middle reaches of the yarlung zangbo river, regional tectonic, stability evaluation, ground motion peak acceleration

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