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Research on safety factor of gravity dam sliding stability in cascade reservoirs

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Abstract: The mode of cascade reservoirs has become the main development type along the run of the river. However, the influence of cascade hydraulic structures on a single dam has not been considered in design stage. It is necessary to establish a new design method and safety standard for cascade hydraulic structures. The ratio of safety margin has provided a platform to compare the relation among the traditional safety factor method, the partial coefficient method and the reliable indicator. Based on the results of ratio safety margin method, the values of allowed reliable indicator is proposed that special level 1 structure is 4.7 and special level 2 structure is 4.45, corresponding the values of safety factor 4.3 and 3.5 at the same level of risk control.

Key words: cascade reservoirs; gravity dam; ratio safety margin; safety factor