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Reservoirs operation and water resources utilization coordination in Hongshuihe basin

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In past decade, Hongshuihe basin is facing with more and more water resources utilization problems under the fast growth of water demands from social and economic development, and the conflicts between reservoir power generation and other water utilization such as flood control, navigation and water supply becomes increasingly acute. In this paper, water resources demands and comprehensive utilization of Hongshuihe basin are introduced firstly, and their influences to hydropower generation and power supply are analyzed. A mathematic model of reservoirs operation which aims to maximize the basin total benefits was built, taken water utilization demands as constraints, to give good guidance for reservoirs operation and water utilization management. Besides, an optimal operation software system was developed on the basis of the mathematic model, and this technical support system was applied in annual and monthly reservoirs operation planning. In respects of basin management, water utilization group consists of members from all water utilization organizations was set up, as well as the mechanism of contact and coordination, which played an important role in solving the water conflicts among different organizations timely. Also, water utilization survey, monitoring and evaluation were regularly carried on to ensure the water resources management effects and the most important, to enhance the total water benefits of Hongshuihe basin. This paper actually provided feasible and experiential references of reservoir operation and water utilization for other domestic or foreign basins.