

## THE WATER-SEDIMENT CHARACTERISTICS AND DREDGING MEASURES IN THE RIVER SECTION OF ZHUZHOU NAVIGATION AND HYDROPOWER JUNCTION IN CONSTRUCTION AND SERVICE PERIOD

HUANG LUNCHAO<sup>1</sup>, ZHOU MEILIN<sup>2</sup> and LIU CHENG<sup>3</sup>

<sup>1</sup> Associate Professor, School of River and Coastal Engineering, Changsha University of Science and Technology, Changsha 410076, China  
(Tel: +86-731-5211054, e-mail: huanglunchao@tom.com)

<sup>2</sup> Senior Engineer, Hunan Nuzi University, Changsha 410004, China  
(Tel: +86-731-5213777)

<sup>3</sup> Lecturer, School of River and Coastal Engineering, Changsha University of Science and Technology, Changsha 410076, China  
(Tel: +86-731-5040114)

Zhuzhou Hydropower and Electricity Junction, which is in construction now, is the second navigational construction project in Xiangjiang River. It aims at navigation and has multipurpose functions, including generating electricity, water supplying, flood controlling, irrigating etc. The junction lies in Kong bar of Xiangjiang River, and the section of river is a typical tiny curved river segment, whose left branch channel is 450m in width in flood period and 150~250m in low flow period, and whose right branch channel is 400m in width in flood period and 150~350m in low flow period. As showed in Fig. 1.

After deep study on the water-sediment characteristics in construction and service period in the river section of Zhuzhou Navigation and Hydropower Junction, the laws of water-sediment characteristics in the section is mastered. Some comprehensive engineering measures are brought forward to avoid disadvantage of water-sediment characteristics.

Model experiments state that deposition in reservoir region happens basically far away from dam axis in the second stage of construction period, and only there is little deposition in a small area in the inlet section of right channel. Backward erosion happens in the left channel and whole left channel is eroded in different grade, but there is little deposition in the entrance area of the lower approach channel and joint section. The thickness of erosion and deposition in the riverbed is from -0.3m to 0.3m, as showed in fig. 5. In this area dredging measures can guarantee the normal function of ship lock in construction period.

According to the traits of evolvement in the riverbed and water-sediment characteristics in the service period of junction following engineering measures are adopted (as showed in fig. 2)

1) The measures to resolve the problem that the insufficient water depth in the entrance area of the lower approach channel and joint section is to excavate this area down to a bottom level of 27.7m, which is 90m in width and 2080m in length. After doing that, dredging is in need when there is deposition. Physical model experiments show that this measure is effective.

2) The way to enhance the benefit of power generating and the ability of discharge flow is to excavate left channel to a level of 29.0m and to blow down the projecting rock of left bank, which is in the way of flow releasing. This way is also effective in accord with model experiments.

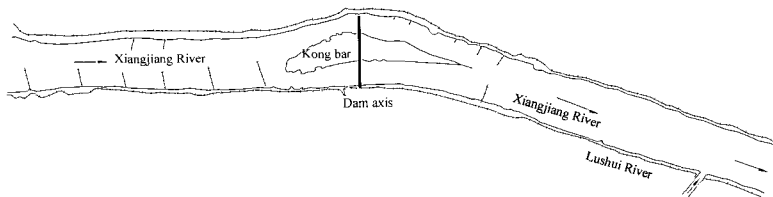


Fig.1 The river conditions of the river section where Zhuzhou Navigation and Hydropower Junction stand

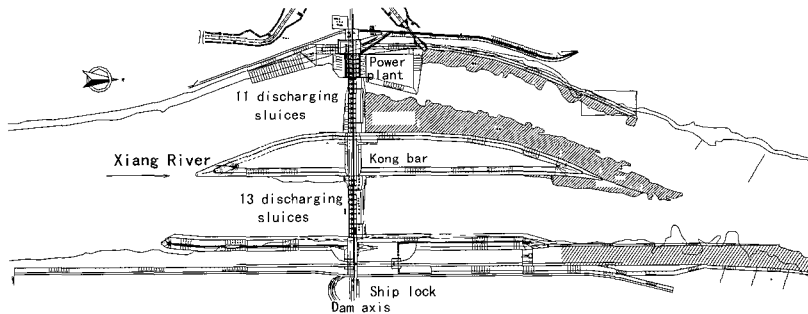


Fig. 2 The total layout of the junction and its dredging measures

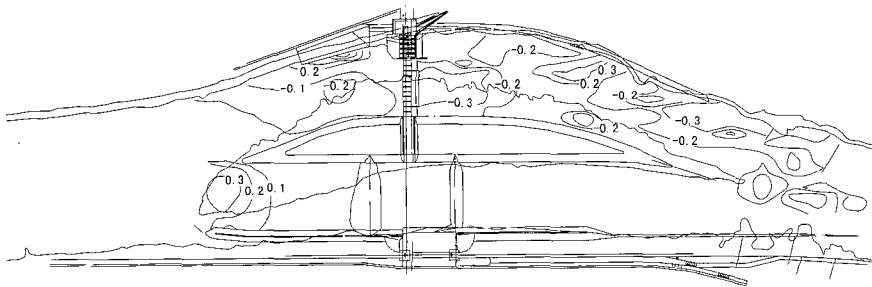


Fig.5 The locality and intensity of scouring and silting in the second stage of construction period

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