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EXPERIMENTAL RESEARCH ON CHANGES IN THE MECHANICAL PROPERTY LAW OF RESERVOIR BANK SANDSTONE UNDER "IMMERSION-AIR DRY" CIRCULATION

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Abstract

During the normal operating of reservoir, the rock mass quality in hydro-fluctuation belt of reservoir bank will degrade gradually under the water-rock interaction because of the periodically impoundment and drainage. In this article, with the consideration of the change of water pressure, an experiment was performed to simulate the process of "immersion-air dry" cycles with sandstones selected from the hydro-fluctuation belt of Three Gorges reservoir area. Test results indicates that the change of water pressure and "immersion-air dry" circulation caused cumulative and irreversible damage to the sandstone samples. The compressive strength, cohesion force and internal friction angle all deteriorated gradually. Moreover, the more "immersion-air dry" cycles, the more serious damage to the rock mass. The research results have great reference value for studying the deterioration law of the rock mass in hydro-fluctuation belt of reservoir bank as well as provide favourable evidences for the long-term stability analysis of reservoir bank.

Key words: hydro-fluctuation belt, immersion-air dry circulation, strength deterioration

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