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论文

小湾水电站低高程坝基开挖卸荷松弛机理试验研究

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摘要：

小湾电站低高程坝基开挖过程中，表层岩体卸荷松弛强烈，主要形式有沿已有裂隙地错动、张开和扩展，及因新生破裂而松弛。后者主要包括：“葱皮”现象、“板裂”现象和岩爆现象。试验测试表明，开挖面附近微新岩石为坚硬—极坚硬岩石，但其初始损伤明显，其损伤发展启动应力在5.2~12.4MPa之间，抗拉强度在3~6MPa之间，这是坝基表层岩体卸荷松弛强烈的物质基础；坝基面爆破开挖的应力集中和爆炸作用影响是坝基岩体卸荷松弛强烈的岩石力学环境条件。

关键词： 小湾水电站 卸荷松弛 单轴压缩试验 声发射 扫描电镜

EXPERIMENTAL STUDY FOR UNLOADING AND RELAXATION |OF DAM BASE DURING EXCAVATION AT XIAOWAN HYDROPOWER STATION

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Abstract:

During the dam base excavation of Xiaowan Hydropower Station, intensive unloading and relaxation happened to the superficial rock mass. Main types of the phenomena included crack slip, opening and development, in addition relaxation from new fracture. The latter mainly showed "onion skin" phenomenon, plate fracture phenomenon and rock burst phenomenon. Experiment results showed that slightly weathered rock nearby excavation surface was hard-extremely hard rock. But it had clear initial damage, and its critical stress ranged from 5.2 to 12.4MPa. Its tension strength changed from 3 to 6MPA. This was the material base on intensive unloading and relaxation of superficial dam base rock; Stress concentration from explosion excavation of dam base surface and effect from explosion were the lithology conditions of intensive unloading and relaxation of dam base rock.

Keywords: Xiaowan Hydropower Station, Unloading and relaxation, Uniaxial compression test, Acoustic emission, Scanning electron microscope, Rock dam foundation

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