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大岗山水电站地下厂房区辉绿岩脉群发育特征及稳定性状况评价

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CHARACTERISTICS AND STABILITY EVALUATIONS OF DIABASE DIKES GROUP SURROUNDING UNDERGROU CAVERNS OF DAGANGSHAN HYDROPOWER STATION

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- 摘要
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摘要 在大岗山水电站地下厂房区花岗岩基体($\gamma^{4\text{-}1}_2$)中贯穿交错有许多走向各异、形态多变、规模不等的辉绿岩脉(β),该岩脉群岩体破碎,强度较低,且伴有长大断层沿边界发育,成为整个厂房区显著的构造软弱带,给厂房区开挖支护造成较大的困难和风险。为清晰地了解辉绿岩脉群的发育特征与影响范围,以便更好地指导现场开挖支护,首先对不同高程揭露的岩脉走向、延伸尺寸、形态特征、内部构造及物质组分详细归纳介绍,接着,应用区域地质构造和地质演化规律分析岩脉群侵位及岩浆热液活动的影响过程,最后,基于以上充分的地质调查和演化规律分析,对厂房区揭露的长大岩脉稳定性状况进行了较为合理评估,并提出一些有参考意义的支护建议。此外,还对岩脉群物质组分的分区段特征、蚀变程度与形成先后关联性等问题进行了有益的讨论。

关键词: 辉绿岩脉 发育特征 地质成因 稳定性评估 岩浆热液活动

Abstract: The main granite mass surrounding the underground cavern groups of Dagangshan hydropower station have many diabase dikes (β).Their types, trends, shapes and scales are different. They run through and interpenetrate the granite body ($\gamma^{4\text{-}1}_2$).

These dikes have broken rocks, low strength, long adhesion fault along the boundaries. They become remarkable weak structure zones of the entire underground caverns, and bring greater difficulties and risks to the excavation and support. Investigations are carried to clearly understand the development characteristics and influence scope of diabase dikes for better guiding in-site construction. The investigations include the following works. Firstly, dike strikes, extension sizes, morphologic features, internal structure and material composition in different elevations are examined in detail. Then, the regional geological structure and evaluative rule are applied to analyze the diabase disks' invasion and the effect process of magmatic hydrothermal activity. Finally, based on systematic geological survey and evaluative rule analysis, the stability of dominant diabase dikes are evaluated reasonably and some significant supporting methods are recommended. In addition, a useful discussion is given about material sectional characteristics of diabase dikes and association between alteration-degree and forming sequence.

Key words: Diabase dikes Development characteristics Geological genesis Stability evaluation Magmatic hydrothermal activity

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