

# 综合钻孔测量技术在导水构造水文地质特征评价中的应用

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**摘要** 导水构造水文地质特征评价是高放废物地质处置系统场址选取和评价研究的重要任务。钻孔雷达测量可以提供断裂构造在岩体中横向的延展特征。钻孔声波电视测量可以获得钻孔孔壁360°连续图像。从这些图像上可以解译出岩性特征、结构面的走向和相互关系等信息。多参数水化学测井直接获得深部环境地下水水化学数据和垂向变化特征。双柱塞压水试验技术可以分段测量钻孔揭露岩体的渗透参数。任何单一的钻孔测量技术都不能准确、完整地描述导水构造的特征。综合钻孔测量技术将单一的钻孔测量技术有机结合起来, 综合分析所获得的数据, 既发挥综合效应, 各类数据又可以相互验证, 提高数据的可靠性。将综合钻孔测量技术应用于高放废物地质处置系统场址预选和评价研究中, 以甘肃北山预选区3#(BS03)钻孔为例, 建立导水构造的水文地质特征模型。

**关键词** [水文地质](#); [综合钻孔测量技术](#); [导水构造](#); [水文地质特征](#); [高放废物地质处置](#); [钻孔雷达](#); [声波钻](#)

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## APPLICATION OF INTEGRATED BOREHOLE MEASUREMENT TECHNIQUES TO HYDROGEOLOGICAL CHARACTERISTICS EVALUATION OF WATER-CONDUCTIVE FAULT

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### Abstract

The hydrogeological characteristic of water-conductive fault is a critical part of site selection and evaluation of high-level radioactive waste geological disposal system. Borehole radar measurement provides the useful information of geological features of extension in the rock mass. Acoustic borehole televiewer measurement provides the

borehole-wall images in the degree of 360. The lithologic character, orientation and structural planes, and the relation between structural planes can be defined for studies of fault on the basis of borehole-wall images. Multi-parameter hydrochemical logging is a useful technique for identifying the vertical distribution of hydrochemical parameters in the deep environment. Injection test with double-packer can measure permeability coefficient of hydraulically conductive intervals intersecting boreholes. Data obtained from a single technique cannot provide a definitive and full estimation of hydrogeological properties of water-conductive fault. Integrated borehole measurement technique is the combined application of several techniques with integrated interpretation which not only exerts synergistic effect of borehole measurements but also improves the credibility of data in comparison of the results obtained by single measurement. An example is presented to perform the combined application of these techniques to characterize the hydraulic properties of water-conductive fault intersected by BS03 in the potential site, Beishan preselected area, Gansu Province for high-level radioactive waste geological disposal. Hydrogeological model of water-conductive fault is established.

**Key words** [hydrological geology](#); [integrated borehole measurement techniques](#); [water-conductive fault](#); [hydrogeological characteristics](#); [high-level radioactive waste geological disposal](#); [borehole radar](#); [acoustic borehole televiewer](#); [multi-parameter hydrochemical logging](#)

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