

论文

TSP203预报胶州湾海底隧道f2-1含水断层的实践

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摘要:

青岛胶州湾海底隧道地质条件复杂,发育有多组高陡倾角断层,因此隧道在通过海域段涌水断层时的安全便成了工程建设过程中的关键问题.而隧道地震波法(tunnel seismic prediction, TSP)超前地质预报系统作为近年来应用于隧道超前地质预报中较成熟的手段,具有预报距离长、对断层破碎带反映敏感、易于操作、对施工影响小等优势.文中作者应用TSP超前地质预报系统对胶州湾海底隧道f2-1含水断层进行了探测,对TSP系统所采集到的数据进行分析,得出深度偏移、反射层提取图、预报结果 2D视图显示与岩体物性图和预报结果3D视图等成果,从而判定了f2-1断层发育的规模与位置,从成果图中提取并统计了断层带内裂隙发育的数量、长度等参数,为超前预注浆加固提供了参数,并对开挖后的地质情况进行了地质编录,验证了本方法的准确性与有效性.

关键词: 超前地质预报;含水断层;地质编录

The application of TSP203 advanced geological predication about f2-1 watery fault of the Jiaozhouwan subsea tunnel

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Abstract:

The geological condition of the Qingdao Jiaozhouwan subsea tunnel is very complex for having plenty of high inclination-angle faults. The key point of the engineering construction is the safety when passing a watery fault under the sea. As a mature means of advanced geology predication applied to tunnel in recent years, the TSP advance geological forecast system has advantages, such as long forecast distance, sensitivity to faults, easy of use and less affected construction. The TSP advanced geological forecast system was used to detect the f2-1 watery fault of the Jiaozhouwan subsea tunnel. The pictures of depth migration, reflector extraction, 2D figure of result and 3D figure of result were obtained, and finally the scale and location of the f2-1 fault were determined. The obtained data about quantity and length of the fault could provide parameters for pre-grouting. The geological record of this section proved the accuracy and effectiveness of this prediction.

Keywords: advanced geological prediction; watery fault; geological record

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