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论文

TSP信号采集质量影响因素的现场试验研究

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摘要:

为了提高TSP现场信号采集的信噪比和预报准确度,通过现场试验、结论对比分析和理论分析的方法,对影响TSP信号采集质量的主要因素进行了研究,探讨了断层破碎带、瑞雷波和接收探杆的锚固耦合等影响因素对信号采集的影响方式.首次采用了单道信号分析的方法,对比分析了接收探杆的不同耦合方式和锚固强度对信号接收的干扰特点,并研究了减弱或消除干扰的接收探杆耦合方法.通过对瑞雷波的理论研究,分析了瑞雷波对信号采集的干扰原理,得出了增加接收探杆的锚固深度可显著减弱瑞雷波干扰的结论.

关键词: 超前地质预报;地震波;高频干扰;瑞雷波;锚固耦合

Research in field tests of the influence factors of the TSP system signal collection quality

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Abstract:

Effectiveness of seismic wave signal collection is the precondition for ensuring the accuracy in TSP forecast. In order to improve the signal to noise ratio, the main factors affecting TSP signal collection quality were studied by field test, comparative analysis of field test results, and theoretical analysis method. The influence mode of the fault belt, Rayleigh wave and theanchor coupling of the detecting rod on signal collection were studied. Different coupling methods and anchor strength of the detecting rod have different interferences on signal reception. The single-trace signal method was first applied to analyze the interference characteristics, and the weakening or eliminating interference method of detecting rod coupling methods were also studied. The interference principle of the Rayleigh wave to signal collection was analyzed with the Rayleigh wave theory, and a conclusion was obtained that the Rayleigh wave influence can be significantly weakened with increasing anchorage depth.

Keywords: advanced geological forecast; seismic wave; high frequency disturbance; Rayleigh wave; anchor couple

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