

Reliable Packer Testing and Analysis

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Abstract Mine materials are frequently tested in-situ for hydraulic parameters using packer testing technology. In the standard packer test, a length of borehole is isolated by inflating pneumatic packers at each end of the test section, and water is then either injected or withdrawn from the formation. The flow rate and the change in hydraulic head are measured. A range of methods are used to derive the effective hydraulic conductivity and storage characteristics of the material isolated by the packers. These in general utilize closed-form techniques to determine the hydraulic parameters from the test head and flow results. Different analysis methods frequently produce significantly different hydraulic parameters, which results in uncertainty as to the actual parameters that characterize the material in the tested interval. This paper evaluates the capability, reliability, and precision of packer testing for determining hydraulic conductivity and specific storage within the tested interval. The optimal methods for the performance of a packer test are determined and presented. The reliability of the principal methods that are used to analyze packer tests is determined, and the optimal method of deriving the principal geohydrologic parameters from the test results performed in a variety of test settings is determined and presented.

Keywords packer testing, reliability, optimal method