

Study on Inverse Solution from Remote Displacements to Reservoir Process during Flow Injection

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Abstract : Either during water or gas injection into reservoir, in order to understand the areal flow pressure distribution underground, associated bounding deformation is prevalently monitored by ground or downhole tiltmeters. In this paper, an inverse solution to elastic response of far field displacements induced by reservoir pressure change due to flow injection was studied. Furthermore, the fundamental theory on inverse solution to elastic problem as well as its spatial smoothing approach is presented. Taking advantage of source code development based on Boundary Element Method, numerical analysis on the monitoring data of ground surface displacements to further understand the behavior of reservoir process was developed. Numerical examples were also conducted to verify the effectiveness.

Keywords : remote displacement, inverse problem, boundary element method, BEM, reservoir process

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