

عنوان مقاله:

Interpretation Methods for Seismic Downhole Test in Inclined Boreholes

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خلاصه مقاله:

Geotechnical investigations often involve inclined boreholes, which can be used for downhole (DH) seismic surveys. However, as there is no interpretation method for downhole tests in inclined boreholes (IDH), this study proposes alternative interpretation methods based on the direct method (DM), interval method (IM), modified interval method (MIM), and refracted ray path method (RRM). We have named the proposed methods, adding an I to the original name to indicate that they are performed in an inclined well, i.e., DMI, IMI, MIMI, and RRMI. To analyze the applicability of the proposed methods, eight simple models with horizontal layers and four 2D models were used to obtain the P- and S-wave velocity profiles. Among all the proposed methods, the RRMI method showed the best fit between the calculated S-wave velocity (V_s) profile and the real models, providing good reliability. To test the equations and hypotheses, new interpretation steps were developed based on Snell's law and a modification of the numerical bisection method, which showed that the error increased slightly as the dip angle of the well decreased. The next step was to test the accuracy of the RRMI method in the field and develop downhole test processing software for vertical and inclined boreholes. Doi: 10.28991/CEJ-2023-09-10-016 Full Text: PDF

کلمات کلیدی:

Inclined Borehole; Seismic Downhole Test; P-S Well Logging; P And S Wave Velocity Profiles; RRMI Method

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