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Distribution law of in situ stress field and regional stress field assessments in the Jiaodong Peninsula, China

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Abstract: The Jiaodong Peninsula has a complex evolution process in terms of its geological structure. The Tanlu fault zone, Penglai–Qixia fault system, Muping–Jimo fault zone, and Penglai–Weihai fault zone have a noticeable control effect on the seismic activity of the region. A number of medium-strong earthquakes occurred in the past, where Yantai coastal earthquakes are relatively concentrated, with a clustering phenomenon. The distribution law of the in situ stress field is analyzed based on 86 sets of measured data at depths from 109 m to 970 m after optimization in the Sanshandao gold mine of Laizhou, Xincheng gold mine of Laizhou, Linglong gold mine of Zhaoyuan, Pingdu, Qingdao, and Wendeng sub-areas of the region. The fault activity in accordance with the Coulomb friction failure criterion and relationship between the stress field and geological

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