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GeoEast处理系统在准噶尔盆地腹部岩性目标区的应用效果

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GeoEast data processing for stratigraphic targets, Junggar Basin

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摘要

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**摘要** 围绕岩性地质目标和DX13井区三维地震资料的特点, 做好地震资料处理的两个关键点分别是叠前地震资料保幅和提高地震资料分辨率。在保幅处理方面, GeoEast处理系统的叠前地表一致性振幅补偿、剩余振幅补偿技术可有效地补偿和恢复地震反射能量, 提高地震资料在空间和时间上能量关系的一致性, 并运用叠前四维去噪技术大幅度改善地震资料的信噪比; 通过对研究区关键井侏罗系煤层地震响应特征的地震正演模拟, 证实了侏罗系煤层上、下各层组地震反射特征和叠前AVO属性的相对保幅性。在提高地震资料分辨率方面, 分别利用GeoEast系统叠前地表一致性反褶积、叠后零相位反褶积和蓝色滤波组合以及VSP井控Q补偿技术拓宽频带, 使目的层视主频提高了5~10Hz, 最大限度地提高了地震资料分辨率, 使得成果资料的断裂特征更加清晰, 井震关系一致性变好。

**关键词:** 保幅 提高分辨率 四维去噪 井控Q补偿 地震正演

**Abstract:** To description stratigraphic targets on 3D seismic data in the area of Well Dixi-13, amplitude preservation and resolution improvement are two key points of seismic data processing. We use a few approaches provided by GeoEast to process this 3D seismic data set. For amplitude preservation, surface consistent amplitude compensation and residual amplitude compensation are used to compensate seismic reflection energy and improve the consistency of energy relations of seismic data in space and time domain. Then pre-stack amplitude-preserving random noise attenuation is adopted to improve seismic data SNR. Seismic forward modeling of seismic response characteristics in Jurassic coal seam of key wells in the area confirms relative amplitude preservation on AVO attributes in upper and under layers of Jurassic coal seam. In terms of seismic data resolution improvement, we perform a few methods such as pre-stack surface consistent deconvolution, post-stack zero-phase deconvolution and blue filtering, and well-control Q compensation, which increases apparent dominant frequency of targets by 5~10Hz. On final seismic section, fault characteristics are much more distinct and well and seismic data consistency is much better.

**Keywords:** amplitude preservation resolution improvement 4D noise removal well-control Q compensation seismic inversion

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