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南海北部盆地基底岩性地震-重磁响应特征与识别

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Seismic-potential field response characteristics and identification of basement lithology of the northern South China Sea basin

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摘要 针对性选取东南沿海露头剖面18条,采集245件南海盆地基底可能出现的岩性样品,测定其密度和磁化率,建立各种岩性的密度-磁化率交会图版,以此约束过井地震剖面和重磁异常的地质解释,总结出南海北部盆地基底火山岩、侵入岩、变质岩和沉积岩4大类11亚类岩性的地震-重磁响应特征.应用重磁震-岩性解释模型逐一对南海盆地北部主干剖面进行地质-地球物理综合解释,从而实现了盆地基底岩性的平面填图.这种从盆缘剖面到盆地内部、从岩石物性测量到地质-地球物理综合解释的方法,在资料获取难度大、地质条件复杂的南海盆地基底地质研究中,业已证明是行之有效的,相信在其他盆地研究中也会有借鉴意义.

关键词: 南海北部 基底岩性 岩石物性 地震 重磁异常

Abstract: We selected 18 outcrop sections along the southeastern coast and acquired 245 rock samples which may occur in South China Sea Basin basement. Their density and magnetic susceptibility are measured and the density-magnetic susceptibility crossplot is established that is used to constrain the geological interpretation of seismic profiles through wells and potential anomalies. Then, we have summarized the seismic-potential field response characteristics of basement rocks, which contain volcanic rock, intrusive rock, metamorphic rock and sedimentary rock, in 4 categories and 11 sub-categories in the northern South China Sea Basin. Application of the geological-geophysical interpretation model to each main profile in South China Sea Basin, the basin basement lithology mapping is well achieved. So, this method, from the section of basin margin to the inner basin and from the measure of rock density and magnetic susceptibility to the geological-geophysical interpretation, has proven to be effective in the South China Sea Basin where the data acquisition is difficult and geological condition is complex. And this study also has a certain reference value for other basins.

Keywords: Northern South China Sea Basement lithology Physical properties of rock Seismic Gravity and magnetic anomalies

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