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## 火山岩地层地震反射特征和地震-地质联合解释: 以徐家围子断陷为例

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The seismic reflection features of volcanic stratum and the seismic-geological interpretation: The case study in Xujiaweizi faulted depression, Songliao basin

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摘要

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**摘要** 火山岩地层的地震反射特征可通过地震参数、反射结构与地震相、地震地层结构进行地质解释。徐家围子断陷营城组是一套以火山岩占优势的火山岩地层。钻遇营城组钻井与地震资料匹配给出了各种地震属性、反射结构和地震相的地质解释。在徐家围子断陷地震三维工区开展的火山岩地层的地震-地质联合解释包含三个层次: 地震参数、反射结构与地震相、地震地层结构, 反映火山作用和与相关的沉积作用的地层记录, 其中反射结构与地震相是解释的重要环节。平行和发散反射结构可出现在自火山斜坡至盆地的环境, 是火山物质较连续的展布和平稳堆积。前积反射结构可出现在火山斜坡至盆地的过渡环境, 是火山物质的不连续和快速堆积。丘状和披盖反射结构可出现在火山口至盆地的各种环境中, 与岩浆穹窿和基浪沉积有关。充填反射结构可出现在许多环境中, 是火山物质下切冲蚀作用形成的。火山岩地层地震-地质解释遵循由大到小和由粗而细的原则, 对应地震参数、反射结构与地震相和地震地层结构。

**关键词:** 火山岩地层 地震反射 地震-地质联合解释 营城组 松辽盆地

**Abstract:** It is possible to describe the seismic features of volcanic strata in geology using seismic parameter, seismic reflection configuration and phases, and seismic stratigraphy. Yingcheng formation is a set of volcanic strata in which the volcanic rock is dominant in Xujiaweizi faulted depression of Songliao basin. Matching both the drilling data and seismic data of Yingcheng formation can give some geological interpretations of seismic attribute, reflection configuration and phases. The seismic-geological interpretation of volcanic strata in the 3D seismic region of Xujiaweizi faulted depression contains three aspects: seismic parameter, seismic reflection configuration and phases, and architecture of seismic strata, responding to the stratigraphic records of volcanism and related sedimentation. The seismic reflection configuration and phases are the key to the seismic-geological interpretation. The parallel and divergent reflections occurred in rock beds formed in the transitional environments from volcanic slope to basin, showing continuous distribution and stable accumulation of volcanic materials. The progradational reflections often occurred in rock beds formed from volcanic slope to basin, showing the characteristics of non-continuous and rapid accumulation. The mound and cover reflections occurred in some environments from crater to basin, related to magma extrusion and hot surge accumulation. The filling reflections occurred in many environments, showing deep cutting and erosion of volcanic materials. The possible geological interpretation of seismic volcanic stratigraphy should obey a rule that is "from large to small scale and from outline to detail", corresponding to seismic parameter, seismic reflection configuration and phases, and architecture of seismic strata.

**Keywords:** Volcanic stratigraphy Seismic reflection Seismic-geological interpretation Yingcheng formation Songliao basin

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