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徐家围子断陷火山机构叠置关系解析及其数字化模型参数建立

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The analysis of volcanic edifice superimposition and its digital model parameters establishment

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摘要

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摘要 随着庆深气田勘探开发工作的不断深入,揭示出火山岩气藏以孤立火山机构控藏的特征,火山岩地层的非均质性特征非常明显,为提高火山岩气藏的综合研究程度,实现认识上的飞跃.在松辽盆地北部徐家围子断陷密井网-三维地震工区,开展了地质先验模型约束下的地震火山机构解剖.识别出层状、穹窿和漏斗形三种火山机构;它们的叠置方式有串珠、上叠和镶嵌式三种.火山机构类型及其叠置方式均受控于断裂系统.在走滑型深大断裂带中,火山机构以层状为主.在深大断裂的两侧,靠近断陷的边部以熔岩穹隆火山机构为主;而在两套火山层序发育中心区域以漏斗形塌陷火山机构为主.火山机构沿走滑型断裂构造线方向呈串珠状排列,在断裂交叉点上以镶嵌式为主,在断裂转折点上以上叠式为主.区域沉积夹层和与之可对比的不同源火山岩界面是划分火山岩期次重要的标志,在本区两套火山岩层序中分别识别出两期重要的火山机构建造.火山作用的纵横向多期叠置的地质特征决定了火山岩地层的非均质性.为实现火山机构模型的数字化建模和数值模拟,设计了具有两期叠置的复合火山机构模型.利用钻井和取芯资料,建立了不同岩性的声学特征充填参数.

关键词: 徐家围子断陷 火山机构 叠置关系 喷发期次 模型参数

Abstract: With the deepening of exploration and development, volcanic gas shows the feature of separate reservoir of volcanic edifice. The non-homogeneous characteristics of volcanic rocks formation are obvious. For meeting the need of meticulous study of exploration and development, improving the level of volcanic gas reservoir comprehensive study and achieving a leap in understanding, in the Xujiaweizi depression dense well pattern-three dimensional seismic work area of Songliao basin, the authors research the seismic volcanic edifice anatomy under the geological prior model constraint. Three kinds of volcanic edifices can be identified as layered, dome, and funnel-shaped. The overlying mode is in three kinds of shoestring, superimposed and mosaic type. Volcanic edifice type and overlying mode are controlled by fault systems. In the strike-slip discordogenic fault zone, the type of volcanic edifice is mainly layered. In the both sides of strike-slip discordogenic fault and close to the edge of depression area, the main type of volcanic edifice is lave dome. In the regional centers of two volcanic sequences, the main type of volcanic edifice is funnel-shaped. Volcanic edifices mainly arranged in beads along strike-slip faults structural line, in the fracture intersection as mosaic, at the fracture transition location as superimposed. Regional depositional sandwich and corresponding interface of different source volcanic rocks are important indicators to divide volcanic effusive period. In this area, there are two volcanic construction periods identified in different volcanic sequence. The heterogeneity of volcanic rocks is determined by the geological characteristics of volcanism of multi-period stacking in vertical and horizontal directions. In order to achieve digital modeling and numerical simulation of volcanic edifice model, a two-phase superimposed composite volcanic edifice model is designed. Using drilling and core data, the acoustic characteristics of different lithological digital parameters are established.

Keywords: Xujiaweizi depression Volcanic edifice Superimposition Eruption times Model parameter

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