

论文

中国前陆盆地构造地质特征综述与油气勘探

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摘要:

中国特定环境下发育的前陆盆地和冲断带在地质构造上具有许多的特殊性。在综述前人认识的基础上,笔者通过对中国前陆盆地的构造演化历程、沉积充填特征、构造成因及其空间分布规律、构造变形特征等的研究,提出了中国前陆盆地构造地质发育的5个主要特征:(1)两种不同性质的原型盆地发生正反转的叠合性,即挤压构造下作为“本体”的前陆层序与拉张构造下作为“基础”的裂谷、断陷盆地之间的叠置;(2)显生宙以来中国大陆先后发生了4期前陆冲断构造演化的多期性,它们分别是加里东晚期、海西晚期、印支期和喜马拉雅晚期;(3)基于小克拉通基底拼贴后在造山带前缘复活再生的继承性,即统一拼合大陆内部的构造变形导致古造山带的复活,在古造山带边缘发育新生代前陆盆地或前陆冲断带;(4)在空间分布上受环青藏高原巨型盆山体系控制发生陆内变形的系统性,在环青藏高原巨型盆山体系内构造变形强度、盆地沉降幅度、盆山耦合程度等从内环向外环依次降低,从古造山带向克拉通方向构造变形强度依次降低,构造变形样式逐渐简单、构造变形时间依次变新;(5)前陆冲断带的构造样式由于受边界力学条件和沉积地层介质作用而具有多变性,存在沉积盖层内脆性变形的断层相关褶皱、造山带前缘韧性变形的基底卷入构造、与走滑构造相伴生的基底卷入的断层相关褶皱、盆地内部塑性变形的盐构造。正是因为上述地质构造的特殊性,决定了油气聚集与分布特征的规律性和复杂性,由此提出了相应的一些构造地质研究与油气勘探工作的建议。

关键词: 前陆盆地;构造叠合性;构造多期性;构造继承性;构造变形特征;油气地质特征

Some key tectonics characteristics of Chinese foreland basins and their petroleum exploration.

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Abstract:

Chinese foreland basins show many special tectonic characteristics resulting from their tectonic settings and evolution. We have concluded five key tectonics geologic characteristics of Chinese foreland basins based on the study of the sedimentary infill, tectonics evolution, tectonic dynamics, spatial location distribution and structural deformation geometry. (1) The foreland basin is the superimposition of the compression sedimentary stratigraphic sequence with the extension basin, and the foreland basin includes underlying rift basin and upper dustpan flexure deposited basin. (2) The foreland thrust fold structural deformation has occurred four times since the Protozoic, in the Late Caledonian, Late Hercynian, Indosinan and Late Himalayan, respectively. (3) The foreland basin developed based on the control of two factors that are the basin basement collaged by many small plates or terrains and the rejuvenation of ancient orogenic belt, so the foreland basins or foreland thrusts are located in front of ancient orogenic belt. (4) The foreland basins and the rejuvenation of ancient orogenic belt make up a giant basin mountains system resulting from the distant effect of India Eurasia collision, which is located on the outer circle of Tibet Plateau, so the thrust deformation intensity, basin deposition range and coupling between orogenic belt and basin changed from strong to weak as from interior to outer circle of Tibet Plateau. (5) There are many structural styles of the thrust and fold belt in different basins, such as brittle behavior fault related fold, ductile behavior basement involved structure, basement involved fault related fold, and salt structure. Above tectonics characteristics result in the regularity and complexity of oil pooling. We have put forward some suggestions on the study of tectonics of foreland basin for petroleum exploration.

Keywords:

Key words: foreland basin; tectonics superimposition; tectonics evolution; succession; structural style;

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