

岩盐地下油气储库群稳定分析及连锁破坏的地质力学模型试验

刘耀儒¹, 李 波¹, 杨 强¹, 官福海^{2*}

(1. 清华大学 水沙科学与水利水电工程国家重点实验室, 北京 100084; 2. 南京水利科学研究院, 江苏 南京 210024)

GEOMECHANICAL MODEL TEST OF CHAIN FAILURE AND STABILITY ANALYSIS OF UNDERGROUND GAS STORAGE CAVERN IN SALT ROCK

LIU Yaoru¹, LI Bo¹, YANG Qiang¹, GUAN Fuhai^{2*}

(1. State Key Laboratory of Hydrosience and Hydraulic Engineering, Tsinghua University, Beijing 100084, China;
2. Nanjing Hydraulic Research Institute, Nanjing, Jiangsu 210024, China)

摘要

参考文献

相关文章

Download: [PDF](#) (464KB) [HTML](#) 1KB Export: [BibTeX](#) or [EndNote](#) (RIS) [Supporting Info](#)

摘要 层状盐岩中油气储库群的整体稳定及其连锁破坏机制的研究对油气储库的安全运行有着及其重要的意义。采用小块体和低强度黏剂建立地下储库的地质力学模型, 以小块体来模拟岩体的变形特性, 块体之间的低强度黏剂模拟岩体的强度特性。泥岩夹层采用脱水石膏薄片模拟。模拟四洞室储库群在不同压强下的注采循环过程。通过埋在模型内部的位移计和应变片自动跟踪监测洞室群及基础的位移和应变随注采压强的变化规律, 研究采气方式、内压大小和泥岩夹层对储库群整体稳定性的影响。结果表明, 单溶腔采注气对洞室群稳定性和连锁破坏有显著影响, 泥岩夹层对洞群稳定影响很小。

关键词: 岩石力学 油气储库 岩盐 模型试验 稳定分析 连锁破坏

Abstract: It is very important to study whole stability and failure mechanism of gas storage cavern in layered salt rock for safe operation. The geomechanical model has been constructed with small blocks and low strength binder. Small blocks are used to simulate the deformation characteristics of salt rock, and the low-strength adhesive to simulate the strength property of salt rock. Mudstone interlayer is simulated with dewatered gypsum slices. The natural gas injection-production cycles are simulated for 4-cavern group under different internal pressures. The displacement and strain of the surrounding rock and the cavern group are automatically recorded by the displacement meters and the strain gauges buried in the model. Cavern stability under different gas production processes, the failure pressure of the caverns and the impact of mudstone interlayer on stability are analyzed. The result shows that the injection-production of single cavern have large influence and mudstone has little influence on the stability and chain failure of cavern group.

Keywords: rock mechanics oil and gas storage cavern salt rock model test stability analysis chain failure

Received 2012-04-27;

引用本文:

刘耀儒¹, 李 波¹, 杨 强¹, 官福海².岩盐地下油气储库群稳定分析及连锁破坏的地质力学模型试验[J] 岩石力学与工程学报, 2012,V31(s2): 3681-3687

Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

作者相关文章