



Magmatic activity and impact on coal seams and coal quality in Zhangcun coal mine

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Abstract

Based on detailed investigation of magmatic intrusion in Zhangcun Coal Mine, the basic feature of igneous rocks was analyzed in this paper. It involves magmatic distribution and intruding horizon, structure, occurrence and ages of igneous rocks, lithologic characteristics of igneous rocks and macroscopic features. Magma intruding into coal seams destructed the continuity and integrality of coal seam, reduced the recoverable reserves of coal and changed the texture and thickness of coal seam. Furthermore, the physical property, chemical composition and technical property of coal seam changed obviously, lowered down the coal quality and value in use.

Key words: *Igneous rock, Magmatic intrusion, Coal seam, Coal quality*

1. Introduction

Zhangcun Coal Mine is located in Xingtai City. The mine is bounded on the south-west by Guoerzhuang Mine and on the north-west by Xiandewang Mine. Its district is about 5 km from east to west, 4km from north to south, with a total area of 18.38 km². The mine was set up in 1969 and put into operation in 1970. In 1975, it was being extended and the design capacity was 60×10⁴ t. When its exploitation of raw coal was 63.1×10⁴ t, it reached to extending capacity. By the end of 2004, its recoverable deposits had been come up to 5952.9 × 10⁴ t.

The coal measures of the mine belong to a regional composite syncline with axes extending northeast-southwest. The composite syncline includes Xiandewang syncline, central Zhongguan anticline and eastern Xiaguan-

Zhujinzi syncline. Because of cutting by the vertical faults, the composite syncline shows irregular "W" in cross section. The folds developed not well, but the faults are much developed in the mine. Most of the faults with strike NE direction and the faults belong to mainly normal faults, which served as a good channel for magmatic intrusion (Yong, 2007).

The main coal-bearing strata are the Shanxi Group of Lower Permian system and Taiyuan Group of Carboniferous system (Zhao *et al.*, 2009). There are four layers of minable seams with a total minable thickness of 8.46m. The main minable seams are 2[#] of Shanxi Group and 9[#] of Taiyuan Group. Two partly mineable coal seams are 2_L of Shanxi Group and 6[#] of Taiyuan Group.

2. The basic features of igneous rocks