

Study on technique of mine safety management analysis based on Analytic Hierarchy Process

FAN Chao-nan¹, QI Qing-jie², XU Chang-fu³

College of Safety Science and Engineering, Liaoning Technical University, Fuxin 123000, China

Abstract

This article is based on the cognition of mine safety management, then hierarchical model of mine safety management system is built, and AHP is applied to solve the model. Then the mine safety influential factors were ordered, and the relative essentiality were made. Finally, the influence order of the assessment factors was determined. On that basis, the important influence of safety technical measures and face safety specification in mine safety management have been defined. This paper provides the foundation of mine safety management to research and helps improve mine safety management level.

© 2011 Published by Elsevier Ltd. Selection and/or peer-review under responsibility of [China Academy of Safety Science and Technology, China University of Mining and Technology(Beijing), McGill University and Wollongong University.

Key words: Mines safety management; analytic hierarchy process; model; consistency test

1. Introduction

With the development of the society, mining enterprises should not only lay emphasis on economic benefits, but also should regard the safety management as a necessary premise for improving economic benefits. So mine safety management become more important in this new situation. Including a series of activities that are planning, organizing, directing, coordinating and controlling by managers, mine safety management aims at protecting the safety and health of workers in mine production process, preserving our country and collective property from loss which could improve the productivity of mining enterprises and ensure the smooth development of mine construction.

Basing on the specific knowledge of mine safety management, this paper analyses the reliability of the mine safety management system comprehensively by using AHP, then evaluates various factors of mine

FAN Chao-nan, female, master, engaged in mine safety management.;
Email: fantans@163.com

safety management system by applying qualitative analysis and quantitative analysis after comprehensive consideration. The effective assessment of mining safety management is beneficial to managers who could make a clear understanding of safety management and put forward reasonable proposals to improve the security situation, in that way we could minimise the major accidents due to poor management in mines.

2. Analytic hierarchy process

AHP (Analytical Hierarchy Process, referred to AHP) is posed by U.S. Operations Research expert A.L.Saaty in the 70s of this century, it is a complex system that deciders make the process of complex systems to be modeling and quantitative, it is a qualitative and quantitative analysis method.

Analytical hierarchy process (AHP) make the problem hierarchical firstly, and divided the problem into different levels according to the nature and total objectives to form a multi-level analysis of structural model, it includes the bottom level for decision-making programs, measures, etc. In this paper, the author divided various factors of the model into groups according to the relations of domination, which formed the hierarchical structural model. By comparing the relative importance of two elements to determine the matrix array, and then calculate the weight factor and the largest matrix array characteristic value of every factor, so finally determine whether the matrix array has the satisfactory consistency. This method is widely used in the comparison for regional economic development programs, science and technology achievement appraisal, analysis, enterprise resource planning and the quality of personnel evaluation^[3].

2.1. Establish a mine safety management system hierarchy model

After analysis relevant data and information of the safety management system in mining enterprises, five project hierarchies and 19 rule hierarchies are determined.

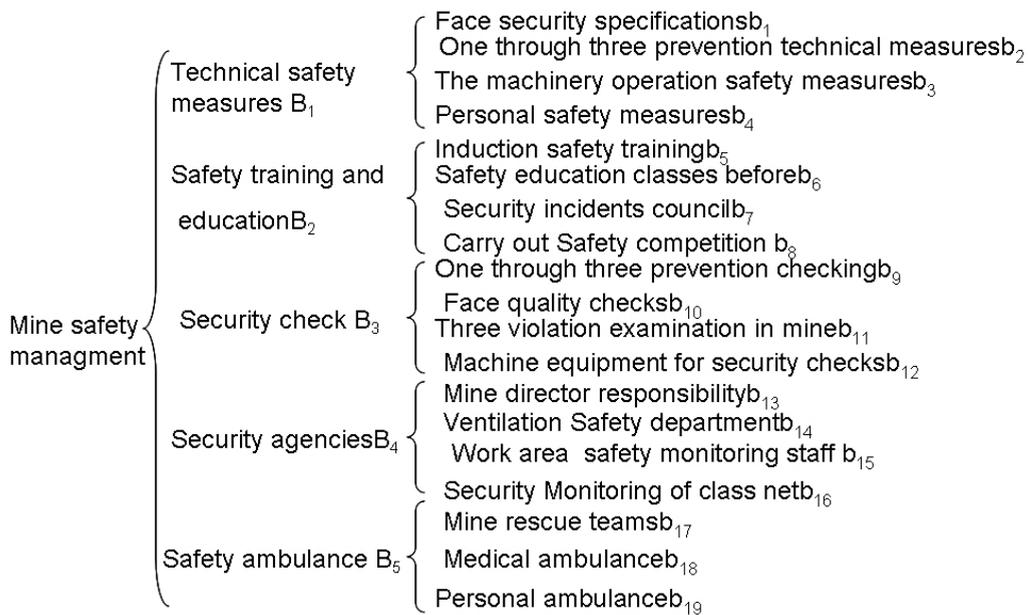


Figure 1. Mine safety management system evaluation model

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات