

# Research on Safety Acceptance Assessment of One Underground Bauxite

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## Abstract

**This paper takes the underground Bauxite mine for example, it is able to judge the compliance and effectiveness of all system with respect to the laws and legal regulations through the investigation and analysis to safety production facilities of mine, the actual situation of all systems and management status, and comparing with the design of safety facilities so as to develop the safety measures and obtain the evaluation conclusion; It effectively enhances the safety management level for this Bauxite, and promotes the governmental emergency department's effective macro-control role to the production and operation entity.**

## Keywords

**Underground Mine; Safety Evaluation; Safety Production.**

## 1. CONCEPT

Safety acceptance evaluation is the safety evaluation to the actual operation status and management status of facilities, equipment, devices of construction project after the construction completion of project and normal commissioning. Compared with the safety facilities and implementation of "Three Simultaneities" of main project, this paper seeks the existing risks and hazardous factors after the project is put into place, determines its degree, as well as raises the reasonable and feasible safety measures and advice. It helps to check the hazard and implement the modification measure for the construction project, indicate the major risk and hazardous factor for the construction project, and provide the scientific and reasonable advice so as to minimize the hazardous factor; As well as provide the basis of safety acceptance of construction project for the governmental management department.

## 2. SAFETY ACCEPTANCE EVALUATION

### 2.1. Evaluation Purpose and Basis

According to the national relevant laws, legal regulations and technical specification, adhere to the principle of legality, science, fairness and targeting, this paper applies the Safety Check List to perform the comparison of compliance and effectiveness to the selected evaluation units and safety facilities of construction project. Through the documentary review, on-site survey, qualitative and quantitative evaluation, this paper raises the safety measures and advice from two aspects of safety management and technology based on this, and makes the safety acceptance evaluation conclusion after reviewing the modification.

### 2.2. Introduction of Construction Project

The introduction of project includes the content of five aspects including traffic location of construction entity, surrounding environment, hydrogeology, description of construction, construction and supervision, commissioning etc. [1]

The content for the construction description mainly includes the current status of construction project, general layout, mining scope, mining method, development and transportation system, mine ventilation system, mine electric, underground water control and drainage system, underground water supplying and fire fighting, power supply and distribution, safety rescue "six systems", safety management, public auxiliary facility and design change etc. In this acceptance, one mining working face and two driving working faces will be arranged for mining. The mine adopts the room-and-pillar method to mine. The ore is transported from the mining work face through the slope ramp to the industrial ore stockyard for discharging; The mine ventilation method is the centralized parallel extraction ventilation, and the driving working face is equipped with the local ventilator for forced blowing; The underground mine adopts three multiple-stage centrifugal pumps for drainage; The industrial stockyard is equipped with the water supply pond to supply water for the auxiliary production area, living area and underground fire and dust control; The safety rescue "six systems" have all been laid into place. The enterprise safety management mainly includes the safety management institute, safety production responsibility system, safety production management regulation and position operation procedure, safety training certification and safety production emergency plan etc.

### **2.3. Evaluation Unit Division and Evaluation Method Selection**

Dividing the system into the evaluation units of different types for performing the evaluation can not only simplify the evaluation work, reduce the evaluation work load and avoid the missing, but also more effectively identify the risk and hazard for all evaluation units so as to avoid representing the entire system with the most hazardous unit, as well as avoid the over-generalization and exaggerating the hazard of entire system. The purpose of dividing evaluation unit is to facilitate the evaluation work to be performed in an orderly manner, and enhance the accuracy of evaluation work.

Combined with the safety facility completion acceptance sheet of metal and non-metal underground mine construction project, this paper divides the safety acceptance evaluation unit for this mine into: safety facility "Three Simultaneities" program, development and mining, improvement of transportation system, ventilation system, water control system, drainage system, water supply system, fire fighting system, power supply and distribution, safety rescue "six systems" and safety management unit.

According to types of existing main risk and hazardous factor for this mine, and combined with the production process characteristics of underground mine, this evaluation mainly applies the Safety Check List method (SCL) to perform the evaluation.

### **2.4. Qualitative and Quantitative Evaluation**

This paper lists the check list for various evaluation units, carries out the safety acceptance compliance evaluation to all evaluation units by comparing with the design of safety facilities according to the national laws, legal regulations and relevant standards, and then seeks the compliance items and non-compliance items; Transforms the qualitative problems of compliance and non-compliance in the check list into the number of item for the quantitative treatment so as to obtain the design compliance rate. That is, it will reach the acceptance conditions if the rate is less than 5% according to the regulations.

### **2.5. Safety Measure and Advice**

In order to strengthen the control to risk and hazardous factor, enhance the safety of production system in mine, the working personnel raise the following safety measures and advice for the reference of enterprises according to the field survey of mine, as well as the relevant laws, legal regulations and industrial standards.

- (1) Safety measures and advice on development system
- (2) Safety measures and advice on enhancing transportation system
- (3) Safety measures and advice on ventilation and dust control
- (4) Safety measures and advice on drainage and fire fighting
- (5) Measures on evaluation unit of power supply and distribution
- (6) Measures on evaluation unit of underground drainage and fire fighting system
- (7) Measures on evaluation unit of safety rescue “six systems”
- (8) Safety measures and advice on General layout
- (9) Safety measures and advice on safety management

## 2.6. Safety Acceptance Evaluation Conclusion

This paper performs the safety acceptance evaluation to the suitability of safety management, as well as whether the production place, facilities etc. comply with the requirements of national relevant laws, legal regulations and standards, and the conclusion is made as below:

There are 108 check items of safety facilities for this project. In which, there are 14 class veto items that are all in compliance; 94 general items, 91 of which are in compliance and 3 are in non-compliance. The proportion for non-compliance items in all check items of safety facilities is 2.8%.

The safety facilities are constructed and put into use according to the requirements of “Three Simultaneities” with the safety management and safety facilities can all meet the requirements of safety production. It has the acceptance conditions, but the owner should perform the modification in a timely manner to the other existing non-compliance items.

## 3. CONCLUSION

Through the safety acceptance evaluation, it is able to strongly promote the evaluated entity to reach the regulatory conditions of safety production, and effectively prevent the occurrence of accident so as to raise the corresponding safety measures and advice, as well as reduce the property loss and personal casualty and damage. It helps the governmental safety supervision management department to perform the macro-control to the safety production of production and operation entity, helps the reasonable selection of safety investment for the enterprises, helps to enhance the safety management level of production and operation unit, as well as helps the production and operation unit to transform the resource advantages into economic benefit as soon as possible.

## REFERENCES

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