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Research on Safety Risk Management of Aerospace Enterprises

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Abstract: ***Safe production is the premise of factory development, and scientifically promoting safe production management is the focus of factory development. Based on the status quo of factory safety production management and combined with the risk control methods, this paper proposes the concept of safety risk identification and control in the whole system, all elements and the whole process, and provides a theoretical basis for the factory to improve the whole process of safety production management mechanism. This paper integrates risk management into enterprise safety production, Analyzed the management and control ideas of combining safety production and risk management, and further proposed specific implementation measures for safety risk management.***

Keywords: safe production; risk control; whole process control

1 Introduction

Aerospace is a high-tech and high-risk industry. Due to the special requirements of aerospace products, in the process of product realization, special operating environments such as high temperature, high pressure, high speed, flammable and explosive are often encountered. The aerospace system has also experienced many production safety accidents with serious losses and profound lessons[1]. With the new generation of products ushering in the production peak, the factory presents a situation of multi-task parallel, multi-location production, complex technical status, and difficult quality control, which puts forward higher challenges and requirements for factory safety production management. For example, the increase of safety risks caused by changes in processing equipment, workshops and tooling, the increase of operational hazards caused by the differences in the adaptability of personnel to the new environment, the increase of risks caused by the centralized storage of hazardous chemicals or explosives, and so on. The high-intensity situation of scientific research, production and model tasks is highlighted, which makes the technical difficulty and complexity of safety production management more and more difficult, and the attendant risks are also increasing. Strengthening the management and control of safety production risks and realizing the scientific management of safety production are the prerequisites for the factory to achieve "scientific and safe development". After years of exploration, the safety management of aerospace enterprises has transformed from traditional accident management to management of the whole process of event analysis, measurement and prevention. Combining the idea of "risk management", this paper puts forward the concept of safety management and control of the whole system, all elements and the whole process, so that the safety risk of the factory can always be controlled.

2 Status Quo of Safety Risk Management in Aerospace Enterprises

2.1 Factory Risk Management

(1) Hazard identification and evaluation

China's "Occupational Health and Safety Management System Specification" [2] (GB/T 28001-2001) defines a hazard as "the source or state that may lead to injury or illness, property damage, damage to the working environment, or a combination of these conditions."

The factory determines the scope of hazard identification according to the "Occupational Health and Safety Management System Specification", including: multi-professional operation activities in each workshop; various front-line staff; facilities and equipment of outsourcing supporting enterprises; reception of visitors, etc.

According to the scope of hazard identification, the types of work are divided into work steps. For each process step, identify the unsafe state of related objects, incomplete human behavior, operating environment problems and other hazard sources, and organize and form a factory "hazard source list". The identification of hazard sources should be repeated and deepened continuously, and the list of hazard sources should be kept updated.

Based on the latest "Hazardous Source List", the factory organizes relevant personnel and departments to conduct risk assessment on the identified hazard sources. A combination of qualitative evaluation and quantitative evaluation can be adopted to obtain different levels of risk by determining risk areas, risk ranking and acceptable risk benchmarks [3]. According to the risk assessment results, medium and high risks are screened, summarized, and reviewed on a regular basis to form a "medium and high risk list", and the factory conducts risk assessment updates at least once a year.

(2) Factory Risk Control and Supervision

The core of risk control is risk prevention and control [4]. Risk management should not only emphasize emergency response, but should also emphasize prevention. Factories should gradually establish relevant systems for risk management, adhere to the principles of prevention first and legal management, and formulate corresponding control measures for different risks, such as: formulating goals and management plans, organizing safety training and education, formulating emergency plans, and strengthening on-site supervision Check etc.

Risk supervision is a measure to prevent low-level risks from becoming larger and beyond the scope of low-level risks through self-inspection of each production unit and supervision and inspection of technical security departments. The significance of risk monitoring is to eliminate hazards and reduce the probability and severity of injury and damage.

2.2 Factory safety production management

According to the "Safety Production Law", the factory has completed the construction of the safety production organization framework, formulated a relatively complete safety target management responsibility system, established a safety production management organization system at all levels, and formulated a feasible safety production management specification. It can ensure sufficient investment in safety production, implement comprehensive safety education and training, and implement effective safety supervision and inspection. It can provide employees with labor protection products that meet the requirements, establish an occupational health and safety management system, and organize scientific and technological research on safe production.

3 Integration of Risk Management and Safety Production

3.1 Improve the safty risk identification and control mechanism of the whole system, the whole process

Improve the closed-loop management mechanism of safety risk identification, assessment, early warning, prevention, control, and verification in the whole process of product production, use, and disposal. Comprehensively carry out safety risk identification, all-round and whole-process identification of safety risks existing in production process, equipment implementation, operating environment, personnel behavior and management system, etc., and improve the safety risk catalog. Promote risk classification management, effectively identify risks in terms of management, process, technology, products, operations, personnel, equipment, materials, processes, and environment, scientifically determine safety risk levels, and draw a spatial distribution map of safety risks. Effectively manage safety risks in terms of organizational systems, processes, norms, and emergency response. Improve the safety risk notification system, prepare post safety risk notification cards and emergency response cards, and carry out dynamic assessment of the safety status of major hazard sources and Class I hazard points to ensure that control measures are in place.

3.2 Strengthening process design safety risk identification

Improve the safety risk identification requirements in process design, and establish a technology safety review system for equipment scientific research and production. Strengthen the implementation of the safety work responsibilities of process personnel. Strengthen the identification, transmission and control of safety production risks in process design to reduce inherent risks. Strengthen the identification of safety risks of new technologies, new processes, new materials, and new equipment, clarify safety management and control measures, and implement them in process documents.

3.3 Specific Implementation Measures for Safety Risk Management

(1) Strictly implement the "three simultaneous" management of construction project safety facilities and occupational disease protection facilities, and strictly implement safety one-vote veto for projects that do not have safety conditions.

(2) Complete safety access system, carry out project safety assessment for projects involving the use, transportation and disposal of a large number of hazardous chemicals.

(3) Strengthen product safety review, and check the identification, transmission and control of product safety risks and management and control requirements.

(4) Continue to promote the re-identification, re-evaluation and re-confirmation of hazardous workplaces with more than 10 people. By strengthening basic capacity building, technical method improvement, process layout adjustment, process flow optimization, automated and intelligent production and other means, it can effectively reduce dangerous workplaces and personnel of more than 10 people.

(5) Strengthen the construction of occupational health management and control system, strengthen the source control of occupational hazards and the implementation of technical preventive measures, strengthen the supervision and inspection of toxic and harmful workplaces and the maintenance of protective facilities, and carry out special rectification of dust and poisonous workplaces.

(6) Improve the emergency management system, strengthen the construction of the factory's emergency linkage mechanism, improve the effectiveness of emergency plans, emergency materials, emergency communications, and emergency training, and improve employees' on-site emergency response and escape from danger.

(7) Improve the hidden danger investigation and management system, strengthen the implementation of the workshop self-inspection responsibilities, and improve the hidden danger closed-loop rectification system.

(8) Improve the hidden danger analysis and improvement system for safety production problems, strengthen the management factor analysis of safety problems, establish a common problem identification mechanism, and improve accident prevention capabilities.

4 Conclusions

This paper makes an in-depth analysis from the perspective of factory risk management and safety production management. Combined with the characteristics of the factory, the idea of combining safety production management and risk management and control is proposed. Based on the development trend of safety production risk management and the specific problems faced by enterprises in safety production, the specific implementation measures of factory safety risk management are put forward, and suggestions for factory safety risk management are provided.

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