

Strategies for the Construction and Operation of HSE Management System in Petroleum Engineering Construction Enterprises under the New Situation

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Abstract: HSE management system is a standardized and institutionalized management tool, which is very important for the long-term development of enterprises and safety and environmental management. It is a kind of prior risk analysis method, which can clearly understand the harm brought by the enterprise's own activities, so as to take scientific and effective management measures and preventive means to avoid personal injury and property loss. HSE management system is the result of years of experience accumulated in the current petroleum engineering industry. The international adoption of HSE management mode has achieved relatively ideal results. This paper will analyze the necessity of building HSE management system in petroleum engineering construction enterprises, and put forward scientific and reasonable operation and development strategies in combination with various problems existing during HSE management.

1. Introduction

petrochemical industry has always been accompanied by more risks, and its engineering construction is also a high-risk industry. At the same time, petroleum engineering construction enterprises are full of fire, poisoning, object strike and explosion risks in all work links. In the context of the continuous improvement of China's social and economic level, relatively strict production standards have been put forward for the petrochemical field and engineering construction, which requires that petroleum engineering must use scientific and reasonable management measures during the construction period to strengthen its own safety management level and ensure the stable development of petroleum engineering construction enterprises. However, although the HSE management system has been widely used in China's petrochemical industry, there are still some problems that need to be improved.

2. Development background of HSE management system in petroleum industry

HSE management system refers to a healthy and safe environmental management system, which is the current international management requirements for the petrochemical industry ^[1]. The establishment of HSE management system is mainly due to the particularity of petrochemical industry, which has a great impact on the environment. In the stage of industrial development, oil is one of the most important energy sources, but because the mining technology is relatively backward, people have brought serious damage in the mining process. And with the continuous occurrence of global disasters and the frequent occurrence of safety problems during oil exploitation, people realize the importance of safe production for environmental protection. Through in-depth understanding of HSE management system, not only can all staff participate in risk identification and prevention and control under the leadership of leaders, but also can reduce the safety accidents and environmental pollution problems existing in petroleum engineering during construction. In addition, HSE management mode is an efficient management mode proved by long-time work experience, which can fully reflect the advanced management ideas of the contemporary petroleum industry. With the development of social economy, the HSE management mode applied by

petroleum engineering construction enterprises will become more targeted and scientific. However, there are still some problems to be solved in the process of practical application.

3. Necessity of establishing HSE management system for petroleum construction projects

3.1 Meet the development trend of the new era

With the development of economic integration and the revolution of information technology, the implementation of HSE management system has become an inevitable development trend^[2]. At the same time, HSE management has also become the current international theme. The establishment and effective implementation of HSE management system in petroleum engineering construction can cope with the current fierce competitive environment in the international market, and it is also an inevitable choice for petrochemical construction units.

3.2 Implement the national strategic development requirements

In order to meet the needs of human survival and development, China has also put forward a very important sustainable development strategy, taking environmental protection as a basic national policy. The petrochemical industry is often accompanied by greater risks, which have a wide impact on the surrounding environment^[3]. Therefore, in the process of petroleum engineering construction, the implementation of the HSE management system established by China's relevant laws and regulations and environmental protection standards can clearly regulate the production activities, so as to smoothly carry out various production activities, and the whole process will be safely and healthily controlled, which can also meet the basic needs of the current healthy development of people, which is the social responsibility that petrochemical enterprises must bear, It has made valuable contributions to the sustainable development of social economy in China.

3.3 Meet the requirements of entering the international market

After China's entry into WTO, the operation of petrochemical enterprises can basically be in line with international standards. After some large petroleum and petrochemical enterprises in the world have applied the HSE management mode, the international market has put forward specific requirements for its management mode. Petrochemical enterprises that do not implement the HSE management mode will face many restrictions in their foreign cooperation and cannot be in line with the international market. Therefore, the application of HSE management system in petroleum engineering construction can enable enterprises to establish a good image and lay a good foundation for the smooth integration of construction teams into the international market.

4. Main problems in HSE management system of petroleum engineering construction enterprises

4.1 Risk identification is not comprehensive enough

Some petroleum and petrochemical enterprises have not established a dynamic risk assessment mechanism for the design, operation, overhaul and maintenance of engineering project construction, especially for direct operation links and risk operation activities, and have not recognized the importance of identifying and analyzing unsafe behaviors of personnel. For each risk identified, they have not carried out systematic inspection from the perspective of management system, safety training and emergency plan, and lack targeted preventive measures. Moreover, some post staff did not realize the distribution of hazard factors and the control of potential risks, and the efforts in the safety risk identification and control of subcontractors need to be strengthened, and there are often cases of contracting and ignoring.

4.2 Unqualified element management

Nowadays, petroleum engineering construction enterprises have more comprehensive HSE management documents, but in the actual production process, the management elements of

petroleum engineering construction enterprises are not implemented in the corresponding system documents, and do not operate in accordance with the requirements of the system documents. Most of them are implemented in accordance with the instructions of the higher authorities. The element management is not flexible enough, which is different from the requirements of the system operation management standards.

4.3 Imperfect performance appraisal

During the operation of petroleum engineering construction enterprises, the performance assessment scope of HSE management system did not cover all links of production, and the construction site and functional departments at all levels involved in the elements of HSE system were not assessed. And there are also many irregularities in management review, which often do not pay attention to the actual effect, the review data are not complete, and the enterprise is relatively single in the way of storing data.

5. Effective strategies for the operation and development of HSE management system in petroleum engineering construction enterprises

5.1 Strengthen HSE management system awareness training

In the process of operation and development of petroleum engineering construction enterprises, it is necessary to regularly carry out safety and environmental protection awareness training, so as to create a good environment for HSE management system. And the most important factor in the operation of HSE management system is people. The awareness of all staff is very important, and the effective way to improve the awareness of employees is to strengthen training. In this process, first of all, we should strengthen the training and education of leading cadres, so that they can fully understand the importance of HSE management system for the development of petroleum engineering construction enterprises, actively and effectively implement the leadership commitments, and play the leading role of leading cadres. The second is to train the managers of relevant departments. The person in charge of each department plays a vital role in the operation of the HSE management system. Therefore, the enterprise must carry out in-depth training in combination with the responsibilities of each department and system elements to strengthen the operation and execution of the HSE management system. Third, we should carry out training for the staff of grassroots operation posts. The training content and training objectives should be formed into a systematic written manual and inspection form. In addition, it is also necessary to investigate the employees' mastery and implementation of the HSE system during the training process, and give corresponding rewards in combination with the mastery of the HSE system by the employees at the grass-roots level, so as to ensure that all the employees at the grass-roots level can form a deeper impression on the management of the HSE system, so as to achieve full participation.

5.2 Pay attention to the commitments made by leaders for the construction of HSE management system

The leaders of petroleum engineering construction enterprises are not just shouting slogans about the construction and operation of HSE management system, but should pay attention to its actual value, play a leading role from top to bottom, and actively participate in the construction of HSE management system. Only in this way can employees actively participate in the HSE management system and ensure that the construction and operation of the management system are more efficient. At the same time, we can also carry out personal safety action plans for leading cadres, conduct safety observation and communication, and implement the reporting of key projects. Leaders of affiliated units and grass-roots units should regularly report safety reports to their superiors to fundamentally solve problems and ensure that key safety work can be better implemented.

5.3 Establish the whole process control mechanism of petroleum engineering construction enterprises

In the HSE management system, risk management and control is a very basic content, which

must always be implemented in the business processes of petroleum engineering construction enterprises. On the one hand, we should establish a top-down risk identification mechanism. Because the safety and environmental protection risks of petroleum engineering construction enterprises basically come from the front-line operation links, it is necessary to mobilize all employees to carry out risk identification one by one. During this period, we should carry out risk identification training for all staff, and hire relevant experts to carry out technical guidance. On the other hand, we should implement the hierarchical control system. In order to effectively manage and control the potential risks in all links, it is also necessary to grade the risks, and the managers in different positions will manage and control the risks of different levels, and implement the responsibilities to people one by one. On this basis, we should also publish the harm degree and control measures of different risks, so that all employees can pay attention to it and take action.

6. Conclusion

To sum up, from the safety accidents occurred in the petroleum engineering construction industry in recent years, although many enterprises have widely used the HSE management system, there are still many problems in the HSE management system within the enterprise, resulting in non-standard operation and inadequate improvement. Therefore, only by strengthening the construction of HSE management system of petroleum engineering construction enterprises and constantly improving it in the process of operation, can we ensure the development of enterprises in a better direction.

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