Safety Risk Analysis and Prevention and Control Countermeasures of Petroleum Enterprises under the Background of Intelligent Era

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Abstract. In the age of the Internet and other new technology under the background, this article analyzed the risk sources of petroleum enterprise with the background both at home and abroad, discusses the era of big data. The public security organs should be known how to use intelligent systems, cloud computing, video technology, unmanned aerial vehicles, 5G technology, new technology such as mobile phone monitoring method for the prevention and control technology, in order to effectively deal with all kinds of petroleum enterprise emergencies, and then maximum early to make predictions, using intelligent control technology to strengthen the security risk prevention and control in the field of petroleum enterprise, which become passive to active work mode, implement the public security organ for dangerous goods and manage wisdom leapfrog development.

Keywords: Intelligence, Petroleum Enterprise, Risk Analysis Prevention, Control Countermeasures.

Introduction
The arrival of the information age for big data enables the rapid development of technology with big data and related industries [1]. Big data has become an important basic strategic resource in China and an engine to improve social governance capacity. Petroleum, as a kind of inflammable and explosive substance, is an important strategic resource and the artery of the national economy. The main source of the income of state-owned economic enterprises is petroleum enterprises. Therefore, it plays an important role in improving the national economy. However, there are certain safety risks in petroleum exploration, production, storage, transportation, safety, public security management and other aspects. A slight negligence will cause great losses to the national and individual economy, and social stability will also be affected to a certain extent. The integration for the Internet of things and public security business will make the security system more perfect, establish a cross-regional and cross-departmental security management linkage mechanism, and realize the security risk management and control of oil enterprises under the background of "smart" era, which is an important task and challenge facing the security work of public security organs [2].
1. Practical Necessity of the Research on the Prevention and Control of Safety Risks in Petroleum Enterprises under the Background of Intelligentization

In the "Wisdom" era under the background of petroleum enterprise safety risk analysis and control research, the research is in the Internet technology development and innovation of social management requirements under the premise of improving, depth excavation of the public security organ and the correlation between oil business, systematic and in-depth research. The change of the public security organ traditional ways of thinking is to build petroleum enterprise intelligence and policing management mode, greatly enhancing the public security organ dangerous goods of the management work efficiency of the new task.

Public security organs of how to use wisdom big data and cloud computing, video technology, unmanned aerial vehicles, 5G technology, new technology, such as mobile phone monitoring using intelligent control technology, the application of the modeling analysis to data system, through the intelligent sensor, analysis, integration of police intelligence system runs all the key information, safety risk analysis of oil enterprises, become passive to active work mode, make fast, flexible, intelligent response, to strengthen the security risk prevention and control in the field of petroleum enterprise, prevent and reduce accidents, is of great significance to the national economy development.

At present, PetroChina operates 91 oil and gas investment projects in 35 countries and regions around the world, and has built five international oil and gas cooperation zones, three international oil and gas operation centers and four international oil and gas channels. The international business of oil companies also faces security risks. No matter from the analysis of international or domestic situation, the traditional methods and modes of security control of public security organs at the present stage cannot adapt to the identification and control of security risks in oil enterprises. Once these accidents happen, they will disturb the social order, cause property losses, and even threaten the personal safety of citizens [4]. At the same time, they are not conducive to the normal operation of oil enterprises. New smart technologies must be added [5].

With the rapid development of science and technology, China's scientific and technological strength has been greatly improved, and more and more high-tech means and products have been applied to the safety prevention and control work of oil enterprises, playing a vital role in responding to emergencies, counter-terrorism, criminal investigation, public security and other aspects.

2. Safety Risk Analysis of Petroleum Enterprises under the Background of Intelligence

Petrochemical industry is the core of China's national economy, and oil companies occupy a dominant position in the construction of national economy. At present, on a global scale, the oil industry is not stable, widespread unrest, oil companies in many countries there are was under the terrorist attack, the threat of crime and other social security risk, however, oil companies are now for the risk control is not enough, make China's oil enterprises face huge challenges [4].

2.1. Analyze From the International Situation

On September 14, 2019 night, two oil facilities are located in Saudi Arabia's state oil company drone attacks, made into may "Geiger oil company and rice fields suspended oil production, Saudi oil supply cut about 5.7 million barrels a day, every day, or 5% of the world's oil supply, Saudi ethane and liquefied natural gas supply fell by almost 50%. On September 16th the price of Brent crude jumped to its highest level in almost half a year, and the drone incident shocked the world. The drone attack on Aramco's oil facilities has caused shock, public concern and conflicts around the world [6]. Eighteen drones and seven cruise missiles hit the Aramco oil facility.

The attack on Saudi Arabia's oil facilities shows that the threat posed by intelligent small unmanned aerial vehicles is increasingly prominent, and oil companies are insufficient in the comprehensive prevention capability of control technology and international community strategy, and fail to effectively prevent and intercept

2.2. Analyze From the Domestic Situation
2.2.1. **The production technology of petroleum enterprises is not perfect.** Because of its particularity, petrochemical enterprises have their own hazard sources. In the production process, it is characterized by high temperature, high pressure, low temperature and low pressure, inflammable and explosive, etc., which is prone to major fire and explosion hazards, and is difficult to organize safe production. Most of the domestic petrochemical enterprises have many deficiencies in the production technology, the safety production technology related system of enterprises is not sound, safety equipment, facilities are not perfect. During long-term operation, corrosion and aging of oil production equipment will occur, pipelines and equipment cannot be maintained in time, explosion protection measures of well control and electrical facilities are not in place, and some equipment in production and operation do not meet safety standards.

2.2.2. **The safety management of petroleum enterprises is not in place.** Some oil companies only pay attention to economic benefit and ignore the development of security, lack of investment in safety in production technology, on the degree of attention to safety is not enough, in response to national security checks, some safety production and technical personnel training is only become a mere formality, safety supervision department in enterprise safety risk management system is not perfect enough [7]. Most of them are technical production organizations, and only a few are safety management organizations. Relevant leaders do not take corresponding responsibilities, and safety education and publicity for employees are not in place. Illegal operations are common in the process of oil production. This makes petrochemical enterprises consume a lot of resources, reduces the quality of safety management in petrochemical enterprises, and damages the local ecosystem and water quality system.

2.2.3. **Lack of professional safety management personnel.** In the era of global smart big data, the degree of refinement in production safety of oil enterprises is low [8]. The main performance in the supervision is too one-sided, can not take into account the overall situation; Safety inspection is superficial and not thorough enough; There are more details, less hidden trouble; More static problems, less dynamic problems. In order to improve the professional level, increase the training of high-level talents and talents in shortage departments, cultivate more professional and technical talents, expand the overall scale of the team, and improve the business quality, it is related to the economic development of enterprises, but also related to the safety of oil enterprises [9].

At the same time, new network threats emerge in endlessly, petrochemical enterprises network big data center infrastructure is vulnerable to attack [10], resulting in data loss and leakage risk increased, the rapid development of oil enterprises need big data support, security network security information personnel play a vital role. Network information security technology, big data technology, artificial intelligence technology and other high-tech frontier technology fields, which is not only the requirements of public security management work, but also the inherent driving force of modern public security police reform [11].

3. **Countermeasures for the Prevention and Control of Safety Risks in Petroleum Enterprises under the Background of Wisdom**

In view of the current political instability, terrorist attacks, armed conflicts, internal criminal cases, public security cases and other social security risks and uncertain factors, in order to strengthen the management and control of security risks of oil enterprises, to avoid causing great threats to the safety of state property and people's lives and property [12].

In addition to strengthening the internal security management of petroleum enterprises, perfecting the organization, safety management system and strengthening the cultivation of smart police personnel in the era of big data, the informatization construction of public security police has become an important means for the public security organs to fight against illegal and criminal activities of petroleum enterprises under the current background of intelligentization [13]. Specific
countermeasures can be taken to strengthen the safety risk prevention and control work of oil enterprises under the background of the era of wisdom.

3.1. The Application of Technology to Strengthen Security Risk Prevention and Control

In short, Unmanned aerial vehicles, or UAVs and Unmanned aircraft are usually operated using radio remote controls and associated program controls. The complete UAV system is composed of space vehicle, remote control station, data link, pilot and other parts [14]. It can be divided into military, police, civil and other levels in terms of application.

The advantages of technology are: first, intelligent, high stealth, low attack cost. Second, the operation is simple. With the development of unmanned aerial vehicle (UAV) industry, intelligent technology makes control more and more simple, and operators can operate skillfully through a short period of professional training. Third, the acquisition cost is low. Another convenience brought by the industrial development is the variety of purchasing methods, which can be purchased at will in offline convenience stores and online shopping platforms. Fourth, concealment is high, save police force, improve the ability of public security management.

Not only it is not easy to be found by the lawbreakers, but also alleviates the difficulty for the public security administration departments to strike. The application of UAV in oil production and detection reflects the prevention and control of safety risks in oil enterprises in the era of intelligence.

Because the UAV can use GPS technology to select the preferred route, it can avoid the smoke and fly automatically, and is not disturbed by the bad environment and obstacles. The application of technology to the public security accidents in petroleum enterprises can quickly complete the field survey and evidence collection with wide range and high precision. It can be integrated into the work of public security in more aspects to solve the problem of insufficient police force in the real society.

3.2. The Anti Technology Is Used To the Protection

In the new era of intelligence, with the booming development of industry, UAV has been widely used in various fields, with wide applications and easy operation. Also be because of these characteristics, can be used in disorder by a few lawless element, appear plan of oil factory spot is stolen, the oil inside petrochemical plant is stolen wait for chaos like. There have been a number of terrorist attacks using drones in high-risk countries and regions [15].

Data show that more and more terrorist organizations and armed forces use drones as an important means to detect and make terrorist attacks, which poses a great threat to the security defense of China's overseas oil enterprise projects. There is an urgent need to establish a scientific, standardized and systematic anti-UAV system, integrate anti-UAV technology into the prevention system of China's overseas oil projects, make anti-UAV work report through detecting and tracking unmanned aerial vehicles, and provide intelligence support for anti-UAV work. Anti technology is analyzed from the aspects of radar detection, spectrum detection technology, composite technology and photoelectric technology, which can realize more accurate detection, tracking and identification of it.

3.3. Use of Intelligent Patrol Robots to Enhance Daily Patrol

Patrol is important way of public security service and unit interior public security prevention and control of the important measures and means, especially to the key unit of public security, such as oil companies and the important part of the public security, rapid development in science and technology as well as the illegal crime is becoming more and more intelligent today, patrol has depended not only on traditional way of patrol, but traditional patrol shall be combined with technology, the use of the functions of police patrol robot is one of good choice [16].

3.4. Use High Technology to Build A Highly Interconnected Police Terminal System

To investigate and analyze the characteristics of production technology and business process of petroleum enterprises, integrate with the business system of petroleum enterprises, and build police terminals and information system platform. Oil companies can provide intelligent policing activities
need huge amounts of business data, police terminal system by designing algorithm model for business data processing, can from the data resources, such as business process into line integration, public security construction of wisdom, and actively make big data as the core of intelligent policing model, and strive to improve the early warning ability, make the public security work gradually improve the intelligent level.

At present, Internet technology represented by Huawei's fifth Generation mobile communication (5G) technology has been put into use, and AI artificial intelligence technology and equipment represented by Ali Intelligence have gradually entered all aspects of social life.

Under the background of Internet +, the development of security management in petroleum enterprises needs to constantly look into the future, keep up with the changing trend of the industry and grasp the forefront of technological development, so that the security risk and control of petroleum enterprises in the era of "wisdom" will always have the characteristics of continuous improvement and the ability of sustainable development.

5G big data technology, mobile phone monitoring and HD video monitoring terminal are not only the source of big data information collection for public security, but also the most important assistant for frontline police officers in police processing. (5G) deployment of wireless mobile communication technology, will build a low latency, self-organization, highly interconnected police terminal and information system, a large number of new technology and equipment to the combat, such as the police patrol robot, augmented reality (AR) glasses, 4 k HD video monitoring, police formation, etc., it is not only the growth of the network data bandwidth, mobile police will get from the technology and equipment to tactical methods, the significant changes, even the law enforcement concept to make lots of new mode of police body wisdom [17].

3.5. Establish the Administration Organization of Production Safety and Carry out the Principal Responsibility

Oil companies are the core of the national economy. Leaders at all levels should take effective measures according to the changing new situation of public security in petroleum enterprises, strengthen public security prevention, and implement the safety production mechanism of multi-level management with some leaders and others taking the lead. The daily supervision and inspection of oil enterprises shall be strengthened, and the list of daily inspectors shall be implemented to ensure that whoever checks the oil shall be responsible for it.

Adopt new technology, new process, new equipment and new materials with reliable safety performance to avoid the aging of equipment parts, thus ensuring the safety facilities of the project. We should strengthen emergency management, improve emergency rescue teams, formulate emergency plans for emergencies and conduct regular drills. In the event of an accident, we should respond in an orderly and effective manner. At the same time, at the end of each production safety accident, we must ensure that the cause of the accident has not been identified, the responsible personnel have not been dealt with, the responsible person and the masses have not been educated, and the rectification measures have not been implemented. It is necessary to find out the cause of the incident, assign relevant responsibilities to leaders and employees, draw lessons from this incident and improve safety measures.

4. Conclusions

In the era of big data on the Internet, we should actively prevent malignant accidents in oil enterprises, always be alert for danger in times of peace, and resolutely eliminate hidden dangers before accidents happen. Strengthen the petroleum enterprise security disaster accident risk early warning, monitoring, improve intelligence warning leading policing work, early warning and prevention and control and emergency rescue work to realize the transformation and upgrading, promoting the new era of intelligent security risk prevention and control system construction, many measures simultaneously, we will be able to create a new situation to enterprise security and social stability.
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