Research on Security Management Strategy of Power Dispatching Operation in New Situation

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Abstract: With the improvement of people's living standard, the demand for electric power is increasing gradually. Although the construction of science and technology in China is relatively perfect and the dispatching of electric power is relatively sufficient, there are corresponding problems in the safety management. Therefore, in order to meet the development demand of the market, it is necessary to update the system for these problems Good service to society.

1. Introduction

With the vigorous development of society, the speed of national power grid construction is faster and faster, so the current in power dispatching is also faster and faster, so there are many safety problems. With the reform of power system, the safety problems of power dispatching are also facing great challenges, among which the safety problems of equipment are controllable, but in the natural environment, the conditions are correspondingly It's more complicated and changeable. It's very difficult to operate safely. The main work of power dispatching is to ensure the safe use of electricity in the life of residents, so how to achieve more perfect power safety dispatching under the development of the new situation is a very important work link, the relevant power management departments should take corresponding measures according to these problems.

2. New Situation in Power Dispatching

The continuous development of China's economic level makes the demand for electric power increasing day by day, but the continuous improvement of China's social system provides a long-term good development foundation for the construction of these infrastructure, which enables the power grid to have good external environment support in the construction process, and plays an irreplaceable role in the development of national electric power, and the construction scale of national power grid is even larger Large, transmission lines are also increasing, a variety of machinery and equipment and science and technology have also made considerable development. Due to the improvement of economic level and the diversification of power market requirements, various power security problems also follow. The current power dispatching system can not adapt to the development of the current situation, showing a relatively backward trend, so we need to constantly update in this regard [1].

2.1. Natural Disasters in Power Dispatching

The construction of power grid is outdoor, which is greatly affected by natural disasters. When natural disasters happen, the damage to power facilities is also quite serious. The common natural disasters in our life are earthquakes, typhoons, hailstorms, mudslides and so on. Once these natural disasters occur, they will cause serious damage to the power facilities, which requires a lot of manpower to maintain. This has caused a certain amount of difficulties to people's living standards, but also more impact on the power dispatching. Because the natural environment is more serious to the damage of the power grid, so how to do a good job of early warning and prevention when it occurs.

China's power development is relatively rapid, and power dispatching plays a very important role

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in the living standard of residents. However, there are many deficiencies in power standardization, so high-end new equipment is adopted in power grid equipment to effectively solve the problems [2].

2.2. Security Problems in Power Dispatching

There are also many problems in the security of power dispatching, and the following analysis is made for these problems.

The professionalism of power dispatching personnel is also very important. In ordinary work, many power dispatching personnel are not professional enough, do not operate strictly, ignore the rules and regulations, and do not understand the problems of power dispatching. At the same time, the safety awareness of the company is insufficient. On September 23, 2019, one person died in the Ulan wind farm of Guohua Bayannur (Middle Banner of Ulat) wind power Co., Ltd. affiliated to Guohua Energy Investment Co., Ltd. of the state energy group. During the defect elimination operation of 363 line × 05 tower of 35kV Power collection line of Guohua Bayannur Ulan wind power project undertaken by China Gezhouba Group Power Co., Ltd. (hereinafter referred to as "Gezhouba Group") under China Gezhouba Group Power Co., Ltd., the outsourcing unit of China energy construction group, one of the outsourcing personnel of Gezhouba Group mistakenly boarded 362 line × 05 tower and died after rescue. Casualties due to lack of safety awareness. In addition, in terms of the handover and distribution of work, the rights and responsibilities are unclear, and when there is a problem again, they pass each other's buck, resulting in the inability to accurately determine the cause of the problem, and the problem is not repaired in time. Because of their own professional quality is not high, in the face of problems will appear at a loss, leading to many problems can not be solved in time, or in the emergence of problems, blind handling, aggravating the power problem, but also to their own safety.

In the process of power dispatching, there are likely to be one or other problems. If the power equipment is aging, it is likely to cause irreparable losses to the safety of power dispatching personnel and state property. At 20:08 on September 17, 2019, an unplanned unit outage occurred in Taishan nuclear power joint venture Co., Ltd. of China Guanghe Nuclear Power Group Co., Ltd. The 500 kV Xiangguo line B from Zhuhai to Zhongshan has a single-phase short circuit fault, and the protection has correctly removed the fault. Due to the lack of logic anti-interference ability of unit super acceleration protection of Taishan nuclear power joint venture Co., Ltd. of China Guanghe Group Co., Ltd., the turbine super acceleration protection action of unit 1 caused unplanned shutdown of the unit, and the loss of output in the plant was 1730mw. The system frequency decreased from 50.003 Hz to 49.913 Hz. Due to the impact of the environment, the power system will be more or less overloaded, which will affect the normal operation of the system, increase the number of equipment, and seriously reduce the power resources of the country.

Although the scale of power grid construction in our country is large, the natural environment of each region is different, so some mountainous areas and areas with frequent natural disasters will have security problems in power dispatching, resulting in extremely unstable power dispatching and increasing the difficulty of power dispatching. Therefore, the regional limitation in power dispatching is very large. The deterioration of the natural environment aggravates the difficulty of power dispatching, which makes the staff unable to grasp the current environment and make the corresponding power dispatching plan.

3. The Way to Realize Power Dispatching Security

From 2010 to 2018, calculated at current prices, the GDP increased from 41.3 trillion yuan to 90.0 trillion yuan, and the power consumption of the whole society increased from 4.20 trillion kwh to 6.84 trillion kwh. In 2018, the power consumption of 10000 yuan of GDP increased by 6994 billion kwh, an increase of 8.4% compared with that of the previous year, 1.8 percentage points higher than that of the previous year. As shown in Figure 1, the power development of the country was steady Upward trend.

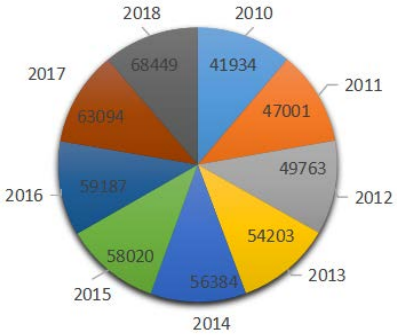

Figure 1 Trend of China's full scale power generation from 2010 to 2018

3.1. Strengthen the Training of Power Dispatching Personnel

In terms of power dispatching, first of all, we should cultivate the professional quality of power dispatching personnel, be able to correctly use their own professional knowledge in the process of work, timely carry out skill training for power dispatching personnel, carry out expert forum, and determine whether there is a problem through their own professional skills when they are working, and how to solve it, At the same time, the highly skilled technical personnel are invited to drill and test the skills of the staff, cultivate the basic business ability of the power dispatching personnel, improve the overall technical ability, carry out lectures on safety technical knowledge, and teach the power dispatching personnel how to protect their own safety, and protect their own life safety during the operation. Establish a power dispatching team with excellent professional knowledge and sound system through skill training [3].

3.2. Improve the Construction of Electric Power Infrastructure

To increase capital investment, we need to be more humane in infrastructure construction, be able to adapt to environmental conditions, and ensure the safety of power supply. As shown in Figure 2, the construction scale of national power grid has been very perfect. Combined with the construction of regional environmental conditions to adapt to the current development of national power grid, better help the work of power dispatching personnel and technical personnel to repair the relevant infrastructure, which can effectively prevent the power supply problems caused by the aging of infrastructure lines due to the impact of natural environment. (Fig. 3) the technicians are repairing the power supply box, replacing it in time according to the problems, aging of the circuit and other problems, so as to prolong the service life [4].

Figure 2 Infrastructure construction

Figure 3 Maintenance of power supply box

3.3. Development of Renewable Energy

With the development level of the country becoming faster and faster, the demand for electricity is gradually increasing. According to regional differences, the country continues to develop renewable energy. Renewable energy refers to the renewable energy of raw materials, such as hydropower, wind power, solar energy, bioenergy (biogas), geothermal energy (including ground and water sources), sea tide energy. There is no possibility of energy exhaustion in renewable energy, so the country uses these energy in the development process, transforms them into electricity, and finally provides them for people to use, which greatly reduces the security problems in power dispatching. As shown in Figure 4, the form of alternating current powered by power grid in China is changing into renewable energy power through the improvement of science and technology. Power windmills, solar panels and other power generation facilities, to a large extent, provide support for the development of power in China.

Figure 4 Reduces security issues in power dispatching

4. Conclusion

Under the new situation of electricity security, the security problem in power dispatching has become an inevitable link. The destruction of natural weather, human factors and so on have seriously caused the emergence of security problems in power dispatching. To avoid these problems, we need to develop a new system, from a new perspective, to strengthen the cultivation of professional quality and safety of power dispatching personnel We should be fully aware of and improve infrastructure construction to avoid power supply safety problems caused by aging facilities. The implementation of the new system can not only greatly reduce the occurrence of accidents, but also improve work efficiency and meet people's needs for safe electricity use.

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