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Investigation of the Causes of Accidents in the Electric Power Industry: Assessment of the Need for Changes and the Concept of Regulatory Development

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Аннотация

The occurrence of accidents at electric power facilities and power receivers has a significant impact on the quality of energy supply to electricity consumers, the functioning of the fuel and energy complex, the socio-economic development of the country and national security. The attainment of the objective of the electric power industry specified in the Energy Strategy for the period up to 2035 and the implementation of the general principles and objectives of regulating reliability and safety in the electric power industry and the quality of electricity established in the Electric Power Industry Law is impossible without the development, adoption and timely updating of regulations governing the procedure for investigating the causes of accidents in the electric power industry. Previously, issues related to the regulation of the procedure for investigating the causes of accidents in the electric power industry were not considered in legal studies, with the exception of certain procedural issues in judicial practices in cases of appeal against investigation reports on the causes of accident. The purpose of the study is to establish the need to amend the legal regulation of the procedure for investigating the causes of accidents in the electric power industry and to form a concept for the development of the accident investigation procedure.

Ключевые слова: energy law, electric power industry, legal regulation of the investigation of causes of accident

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I. The Importance of Legal Regulation for the Procedure for Investigating the Causes of Accidents in the Electric Power Industry

2 As part of the implementation of the Energy Strategy of the Russian Federation for the period up to 2035 (hereinafter referred to as the “Energy Strategy up to 2035”), improving the quality of energy supply to consumers is a key objective of the electric power industry.

3 The attainment of this objective involves the improvement of the sectoral system of monitoring the activities of electric power companies for the preparation and reliable sustaining peak loads by electric power facilities, including in order to reduce the risks of accidents in power-supply systems.

4 The accidents at electric power facilities and power receivers have an impact on the quality of energy supply to electricity consumers, the functioning of the fuel and energy complex, the socio-economic development of the country and national security.

5 Reliable and safe functioning of the UES of Russia and technologically isolated power-supply systems, availability of electricity for consumers, energy and environmental safety, priority of ensuring the life and health of personnel at electric power facilities and power receivers are the basic principles and methods of the state regulation and control in the electric power industry in accordance with Federal Law No. 35-ФЗ dated March 26, 2003, on Electric Power Industry (hereinafter referred to as the “Federal Law on Electric Power Industry”).

6 The state regulation of reliability and safety in the electric power industry and the quality of electricity is aimed at ensuring sustainable, reliable and safe functioning of the industry, as well as preventing the occurrence of accidents related to the operation of electric power facilities and power receivers.

7 Accordingly, the attainment of this objective of the electric power industry specified in the Energy Strategy up to 2035 and the implementation of the general principles and objectives of regulating reliability and safety in electric power industry and the quality of electricity established in the Federal Law on Electric Power Industry is impossible without the development, adoption and timely updating of regulations governing the procedure for investigating the causes of accidents in the electric power industry.

8 The establishment of an algorithm for investigating the causes of accidents in the electric power industry in laws and regulations ensures:

9 □ Implementation of a comprehensive investigation of the causes of technological disturbances by the Federal Service for Environmental, Technological, and Nuclear Supervision (Rostekhnadzor), proprietors, other legal owners of electric power facilities and/or power receivers or organizations operate and maintain them within a formally defined investigation procedure;

10 □ Detection of deficiencies in the operation, design, manufacture of equipment, construction of buildings and structures that led to an accident or incident; elaboration of a plan of preventive actions by electric power industry entities and electricity consumers to prevent similar technological disturbances;

11 □ Timely technical assessment of the operation of electric power facilities and power receivers; justification of technical solutions adopted by the entities of the electric power industry and consumers of electricity;

12 □ Assessment of the economic consequences of accidents at electric power facilities and power receivers;

13 □ Increased responsibility of the personnel of the electric power industry companies and the design companies involved by them;

14 □ Accumulation, processing and systematization of information about accidents.

15 Legal regulation of the procedure for investigating the causes of accidents in the electric power industry has a direct impact on improving the regulatory framework for ensuring the safe, reliable and sustainable functioning of infrastructure and energy industry facilities in accordance with the provisions of the Energy Security Doctrine of the Russian Federation, approved by Executive Order of the President of the Russian Federation No. 216 dated May 13, 2019. Besides, the availability of unambiguously interpreted rules for investigating the causes of accidents helps to avoid problems in law enforcement practice, helps to reduce conflicts between the electric power industry entities and electricity consumers.

16 The existence of accidents of systemic importance is a factor in the development of legal and technical regulation in the Russian electric power industry. [1] At the same time, the effective functioning of the legal and technical regulation system in the electric power industry is achieved not only through the development and adoption of laws and regulations, technical regulations and standards, but also through the creation of mechanisms to ensure their implementation and control. [2]

17 Previously, issues related to the regulation of the procedure for investigating the causes of accidents in the electric power industry were not considered in legal studies, with the exception of certain procedural issues in judicial practices in cases of appeal of the report of the investigation of causes of accidents in the electric power industry [3].

18 The purpose of the study is to establish the need to amend the legal regulation of the procedure for investigating the causes of accidents in the electric power industry and to form a concept for the development of the legal regulation for the accident investigation procedure. The achievement of this research objective is ensured by

studying the existing legal regulation, including its formation and development; conducting a comparison with legal regulation in the countries of the Eurasian Economic Union (hereinafter referred to as the “EAEU”); analyzing judicial practices on the issue under consideration, researching Rostekhnadzor statistics data.

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II. The Evolution of Legal Regulation of the Procedure for Investigating the Causes of Accidents in the Electric Power Industry

20 In the pre-reform period, the regulation of issues related to the investigation of the causes of accidents in the electric power industry was performed by the regulatory documents of RAO UES of Russia.

21 Such documents included Instructions for the Investigation and Reporting of Technical Disturbances in the Operation of Power Plants, Grids and Power-Supply Systems ПД 34.20.801-90 and ПД 34.20.801-93 (hereinafter referred to as “ПД 34.20.801-93 Instruction”), as well as Instructions for the Investigation and Reporting of Technical Disturbances in the Operation of Power-Supply Systems, Power Plants, Boilers, Electrical Grids and Heating Networks ПД 153-34.0-20.801-2000 (hereinafter referred to as “ПД 2000 Instruction”).

22 In accordance with ПД 34.20.801-93 Instruction, taking into account the nature and severity of the consequences (impact on personnel, loss of stability of the electrical grid and power-supply systems, deviations in the parameters of the energy carrier, environmental impact, damage to equipment, other factors reducing the reliability of power generation), disturbances in the operation of power plants were divided into accidents, technological and functional failures.

23 Each accident or technological failure was investigated within 10 days by a commission, the composition of which was determined depending on the nature and severity of the disturbance having occurred. At the same time, commissions to investigate disturbances in the operation of the power facilities of RAO UES of Russia could be appointed by an order of the relevant territorial Department of Energy Industry, and commissions to investigate disturbances in the operation of power facilities of joint-stock companies of power-supply systems, by the corresponding order of an energy JSC.

24 Accidents and technological failures involving power plants and grids of adjacent power-supply systems, as well as related to the destruction of buildings, structures and equipment, were investigated by commissions appointed by the management of RAO UES of Russia.

25 The composition of the commissions investigating accidents and failures had to be coordinated with the relevant representatives of energy technical supervision authorities, and an employee of the regional of energy technical supervision enterprise had to be included in the commission. Disturbances in the operation, the causes of which were defects in design, manufacture, construction, installation or repair, were investigated with the involvement of specialists, including representatives of manufacturing plants.

²⁶ The next stage in the development of legal regulation was the approval of PД 2000 Instruction, [4] which abolished the requirements established by PД 34.20.801-93 Instruction.

²⁷ The classification of disturbances in the operation of power plants has been changed. According to PД 2000 Instruction, depending on the nature and severity of the consequences, disturbances were divided into accidents and incidents.

²⁸ An accident was the destruction of structures and/or technical devices used at a hazardous production facility, uncontrolled explosion and/or release of hazardous substances.

²⁹ An incident was defined as failure or damage to technical devices used at a hazardous production facility, deviation from the technological process regime, disturbance of the provisions of the Industrial Safety Law, other federal laws and other laws and regulations of the Russian Federation, as well as regulatory and technical documents establishing the rules for conducting operations at a hazardous production facility (if they did not contain signs of accidents).

³⁰ The investigation procedure also assumed that the necessary activities would be held within 10 days by commissions that could be appointed by order of RAO UES of Russia, the corresponding regional of Energy technical supervision enterprise, energy JSCs and their branches, power plant JSCs, main power networks, the owner organization of the power facility.

³¹ The work of the commission was to be performed in accordance with the rules established by its chairperson. The results of the investigation of accidents and incidents were documented in the form of an investigation report. All disturbances of the power equipment of power plants, electrical grids, heating networks and boiler houses were taken into account by enterprises operating the corresponding equipment.

³² Due to the formation of a new legal and technical regulation structure in the Russian electric power industry, PД 2000 Instruction was declared invalid by the Ministry of Energy of the Russian Federation. [5]

³³ The main regulations in the modern laws of the Russian Federation on the electric power industry regarding the investigation of accidents are the Rules for Investigating the Causes of Accidents in the Electric Power Industry, approved by Decree of the Government of the Russian Federation No. 846 dated October 28, 2009 (hereinafter referred to as the “Investigation Rules”), and the laws and regulations of the Ministry of Energy of Russia enacted in pursuance thereof.

³⁴ In the first edition of the Investigation Rules, the definition of “accident” was established; the categorization of accidents was performed depending on the consequences that are investigated by the commission of an authorized body in control and supervision in the electric power industry and the commissions of owners of electric power facilities and power receivers. The term of investigation of the causes of accidents by the authorized body in control and supervision in the electric power industry is 20 days from the date of the beginning of the investigation with the possibility of extension by the head of the specified body, but not more than 45 days, which is significantly longer than according to the instructions of RAO UES of Russia.

³⁵ Also, the Investigation Rules establish a list of circumstances to be clarified when organizing an investigation, the actions required to be taken, the rights of the commission, the content of the report of the investigation of causes of accident, the procedure for transmitting, recording and systematizing information on accidents in the electric power industry by the operational dispatch management entity in the electric power industry.

³⁶ The most significant amendments to the Investigation Rules were made by Decrees of the Government of the Russian Federation No. 525 dated June 10, 2016, and No. 619 dated May 24, 2017. The amendments introduced by these regulations concerned the concept of “accident”, the allocation of regulations for the investigation of accidents of hydraulic engineering installations and electrical equipment at nuclear power plants, categories of accidents investigated by Rostekhnadzor and proprietors, other legal owners of electric power facilities and/or power receivers and organizations operating and maintaining them; the procedure for transmitting, collecting and systematizing information on the accidents in the electric power industry.

³⁷

III. Experience of Legal Regulation of the Procedure for Investigating the Causes of Accidents in the Electric Power Industry in the EAEU Countries

³⁸

3.1 The Republic of Belarus

³⁹ In the laws of the Republic of Belarus, the investigation of the causes of accidents in the electric power and heat supply industry is regulated at several levels: the Technical Code of Common Practices (hereinafter referred to as the “Code”), [6], as well as regulation of the EMERCOM of the Republic of Belarus.

⁴⁰ In the Republic of Belarus, the Investigation and Reporting of Disturbances in the Operation of Power Facilities of Electricity and/or Heating Power Consumers technical code of common practice (hereinafter referred to as “Code 387-2012”) is applied [7], which establishes uniform requirements for the investigation of technical disturbances in the operation of power facilities of electricity and/or heating power consumers.

⁴¹ Code 387-2012 is not used in the investigation of technical disturbances in the operation of facilities of power supply companies of Belenergo State Production Association, as well as hazardous production facilities and/or potentially hazardous facilities, technical investigation of the causes of accidents and incidents on which is regulated by the Law of the Republic of Belarus *On Industrial Safety* [8] and the Instruction on the Procedure for Technical Investigation of the Causes of Accidents and Incidents, and Recording Thereof. [9]

⁴² In accordance with Code 387-2012, an accident is a disturbance of the operation of power facilities due to the destruction of the facility as a whole or its parts, equipment, networks due to an explosion, fire or other incident. Failures are events that consist in a disturbance in the operable state of a facility. Disturbances in the normal operation of power facilities, as well as cases of damage to power equipment and structures are classified depending on the nature of the disturbance, the degree of

damage and consequences and are reported as an accident or failure of the 1st or 2nd degree.

⁴³ Code 387-2012 also established a list of circumstances that should be studied and evaluated during investigation, the time limits of investigation (10 days), the procedure for forming commissions, including in investigation of accidents involving representatives of a State Energy and Gas Supervision authority, the procedure for involving manufacturers, design companies in the investigation, the procedure for registering and recording for accidents and failures in operations that occurred on power plants.

⁴⁴ Another regulatory document regulating the procedure for investigating the causes of accidents is the Instruction on the Procedure for Technical Investigation of the Causes of Accidents and Incidents, and Recording Thereof. The specified instruction defines the rights of the commission, the procedure for organizing expert evaluation and involving specialists, the time limits of investigation, the registration of the results of investigation, as well as the organization of activities for recording accidents and incidents.

⁴⁵

3.2.The Republic of Kazakhstan

⁴⁶ The regulation of the procedure for investigating the causes of accidents in the electric power industry in the Republic of Kazakhstan is reflected in the Rules for Investigating and Reporting on Disturbances in the Operation of the Unified Electric Power System, Power Plants, District Boilers, Electrical Grids and Heating Networks. [10]

⁴⁷ The investigation is defined in these Rules as an activity held by a commission established to identify the causes of a disturbance.

⁴⁸ The investigation of technical disturbances begins no later than 3 business days, which are calculated from the next business day after the moment of occurrence of a disturbance, and ends within 10 business days from the moment of the commission's establishment. The results of the investigation of individual causes of the accident are documented in a report in the prescribed form or are documented at the energy company in the log of technical disturbances.

⁴⁹ The specific feature of the legal regulation of the issue under consideration in the Republic of Kazakhstan is the establishment of the procedure for calculating the shortage in the supply of electric and heating power to consumers in connection with the disturbance that has occurred, at the regulatory level.

⁵⁰

3.3.The Kyrgyz Republic

⁵¹ The fundamental documents regulating the procedure for investigating the causes of accidents are the Rules for Investigating and Recording of Disturbances in the Operation of Power Generating, Transmitting and Distributing Companies of the Power Supply System of the Kyrgyz Republic and the Methodology Guidelines on the

Procedure for Investigating Accidents and Failures in Operation adopted for further development thereof. [11]

⁵² Depending on the nature and severity of the consequences of disturbances in the operation of power plants, they are divided into accidents, failures of the 1st or 2nd degree and consumer outages. Accidents include station disturbances; disturbances in electrical grids (heating networks), as well as systemic disturbances, which, according to the said Rules, include disturbances that occur in the electric power complex and lead to disturbances.

⁵³ Accidents with massive damage to power transmission lines are investigated by commissions, which shall necessarily include representatives of design and construction and installation departments. An accident investigation commission, if the same are related to the analysis of design solutions, shall necessarily include representatives of the general design contractor of the facility.

⁵⁴ Investigation of accidents and failures in operation that occur in facilities controlled by an authorized state body for technical supervision are investigated by representatives of the authorized state body for technical supervision. The total period of investigation of the causes of an accident is 10 days with the possibility of extension up to 30 days.

⁵⁵ In accordance with the Methodology guidelines, each accident and failure in operation that occur at a power plant, in electrical grids and heating networks, should be thoroughly investigated with the establishment of the causes and culprits and specific measures to prevent similar cases should be identified.

⁵⁶ **IV. Assessment of the Need to Improve Laws and regulations Governing the Investigation of the Causes of Accidents**

⁵⁷ Currently, it is especially important to solve issues related to minimizing the number of accidents and the duration of failures in the operation of equipment of electric power facilities and consumers' power receivers, leading to a threat to life and/or health, environmental safety and/or state security, to irreversible disruption of continuous technological processes, prevention and elimination of disruptions of power supply for consumers.

⁵⁸ According to the reports of Federal Service for Environmental, Technological, and Nuclear Supervision (Rostekhnadzor), during the implementation of federal state energy supervision in the period from 2010 to 2021, 1,057 accidents that occur at electric power facilities and/or power receivers were investigated (see Figure 1). [12] These statistics data do not include the number of accidents investigated by the owners of facilities and receivers; therefore, the actual number of accidents is significantly higher.

⁵⁹ *Figure 1.*

⁶⁰ The occurrence of accidents in the electric power industry and their consequences affect the provision of consumers with electricity of appropriate quality in the required volumes, the controllability and survivability of the electric power system

and its elements, the organization of an effective system of maintenance and repairs, reconstruction and modernization of equipment that is part of electric power facilities, improving the level of personnel training and maintaining their qualifications.

⁶¹ The main causes of accidents in accordance with reports of Rostekhnadzor are:

⁶² ☐ Non-compliance with deadlines and non-fulfillment of the required volumes of maintenance and repair of equipment and devices;

⁶³ ☐ Poor quality of maintenance, with subsequent equipment failures due to failures in the operation of the relay protection and automatic equipment, short-circuiting, flashover of porcelain insulators;

⁶⁴ ☐ Incompetent actions of the staff;

⁶⁵ ☐ Relay protection and automatic equipment malfunction due to design errors, deviations from projects during installation and operation of equipment;

⁶⁶ ☐ Malfunction of emergency or regime automatics caused by erroneous actions of personnel;

⁶⁷ ☐ Wear and tear of equipment, manufacturing defects of equipment leading to mechanical damage and destruction of equipment and possible fire.

⁶⁸ The preservation of the Investigation Rules in the current version entails the risks of wrong determination of the causes of Technical Disturbances at electric power facilities and power receivers, does not stimulate electric power industry entities and electricity consumers to predict similar disturbances in the future and develop appropriate emergency measures. According to the statistics of Rostekhnadzor, accidents at electric power facilities and power receivers often occur for the same reasons.

⁶⁹ Besides, the problems of implementing the Investigation Rules in law enforcement practices were revealed in terms of the grounds for Rostekhnadzor to investigate an accident; [13] existing signs of an accident in the current edition of the Investigation Rules; [14] compliance with the requirements for the procedure for investigating the causes of an accident in the electric power industry; [15] the possibility of challenging the report of the investigation of causes of accident in the electric power industry; [16] distribution of responsibility for the occurrence of accidents between the electric power industry entities and electricity consumers; [17] distribution of responsibility for the occurrence of accidents between electric power industry entities and design companies involved by them on the basis of civil contracts; [18] bringing to administrative liability based on the results of an investigation of the causes of accidents. [19]

⁷⁰ The issues identified in judicial practices indicate the need to improve the procedural requirements for investigating the causes of accidents in the electric power industry.

⁷¹ Thus, in order to improve the efficiency of the procedure for investigating the causes of accidents, and to eliminate gaps in regulation, a revision of the current Investigation Rules is required.

V. Description of Proposed Regulatory Changes

The basis for the development of the draft resolution of the Russian Federation on Approval of the Rules for Investigating the Causes of Accidents in the Electric Power Industry (hereinafter referred to as the “draft resolution”) is Clause 15 of the Plan for the Preparation of Laws and regulations of the Government of the Russian Federation and the Ministry of Energy of Russia for 2023. [20] The draft resolution can be conceptually structured as follows.

Purview

The draft resolution approves the Rules for Investigating the Causes of Accidents in the Electric Power Industry.

The Ministry of Energy of the Russian Federation is required to instruct to bring the procedure for transmitting operational information about accidents in the electric power industry, the procedure for filling out the report form on accidents in the electric power industry; the form of the report of the investigation of causes of accident in the electric power industry; the procedure for filling in the report of the investigation of causes of accident in the electric power industry; the list of information provided by the electric power industry entities, the forms and the procedure for its provision; the rules of conducting emergency response drills in companies of electric power industry of the Russian Federation into compliance with the draft resolution.

Rostekhnadzor should bring the procedure for forming commissions for investigating the causes of accidents in the electric power industry into compliance with the draft resolution.

The draft resolution comes into force from the date of official publication (excluding the requirements of Federal Law No. 247-Φ3 dated July 31, 2020 on Mandatory Requirements in the Russian Federation).

1. General Provisions

The draft resolution defines the procedure for investigating and recording for the causes of accidents and incidents at electric power facilities and/or power receivers operating as part of the Unified Energy System of Russia or technologically isolated territorial electric power-supply systems.

The requirements of the draft resolution apply to the electric power industry entities and electricity consumers who own, on the right of ownership or other legal grounds, electric power generation facilities or electric grid facilities; the system operator of electric power-supply systems of Russia and operational dispatch management entities in technologically isolated territorial electric power-supply systems; guaranteeing suppliers, energy sales, energy supply companies; companies engaged in export and import operations for the purchase and sale of electricity (electric capacity); design companies.

The investigation of the causes of accidents in the electric power industry is proposed to be defined in the draft resolution as a procedure aimed at establishing the

circumstances and causes of accidents (incidents), the amount of damage caused to the environment and property of individuals and legal entities, determining the persons responsible for the accidents (incidents) that have occurred, as well as developing measures to eliminate the consequences of accidents (incidents) and preventive actions in relation thereto.

⁸³ For the purposes of applying the draft resolution, it is proposed to classify disturbances into accidents and incidents.

⁸⁴ Accidents mean disturbances at an electric power facility and/or an energy receiver that led to:

⁸⁵ ☐ Destruction or damage to buildings, structures and/or technical devices (equipment) of electric power facilities and/or receivers;

⁸⁶ ☐ Uncontrolled explosion, fire and/or release of hazardous substances;

⁸⁷ ☐ Deviation from the established technological mode of operation of electric power facilities and/or power receivers;

⁸⁸ ☐ Disturbance in the operation of relay protection and automatic equipment, automated operational dispatching or operational technological management system in the electric power industry or communication systems that ensure their functioning;

⁸⁹ ☐ Full or partial restriction of the mode of consumption of electricity (electric capacity);

⁹⁰ ☐ Occurrence or threat of an emergency electric power mode of operation of the power supply system.

⁹¹ Accidents, depending on the severity and consequences, are investigated either by the Rostekhnadzor commission, or by commissions of proprietors, other legal owners of electric power facilities and/or power receivers and companies operating and maintaining them. The criteria should be established in the draft resolution based on the results of the elaboration of the issue with the electric power industry entities, electricity consumers, and federal executive authorities.

⁹² Incidents are proposed to include failures or damage to technical devices used at electric power facilities and power receivers, deviation from the technological process mode, violation of Federal Law No. 116-ΦЗ, other federal laws and other laws and regulations, as well as regulatory and technical documents (if failures and damage do not contain signs of an accident).

⁹³ It is proposed to preserve the existing specific features of regulation of investigation of technical disturbances in the operation of electrical equipment of nuclear power plants that led to an accident (incident), and investigation of the causes of accidents of hydraulic engineering installations in the draft resolution.

⁹⁴ **2.Procedure for Investigating Causes of Accidents**

⁹⁵ Taking into account the experience of pre-reform regulation, the experience of the EAEU countries, materials of judicial practices and statistics, this section of the draft resolution should include:

96 ☐ The procedure for transmitting information on the accident (incident) to the dispatch center, the Ministry of Energy of the Russian Federation, Rostekhnadzor, local self-government bodies, the headquarters for safe electricity supply; [21] the Federal Service for Supervision of Natural Resources (Rosprirodnadzor) (in case of environmental consequences caused by the accident (incident)), the territorial body of the EMERCOM of Russia;

97 ☐ Necessary actions of the electric power industry entities and electricity consumers after the occurrence of an accident (incident);

98 ☐ The procedure for the establishment of commissions for investigation of the causes of accidents and incidents (the time limits of the establishment of the commission, the composition of the commission);

99 ☐ Rights and obligations of investigation commissions, as well as the electric power industry entities and electricity consumers;

100 ☐ Stages of investigation of the causes of accidents (incidents), the procedure for involving experts, representatives of companies, manufacturers, as well as companies that performed contract, design and construction work in relation to electric power facilities and/or power receivers, as well as cases when the involvement of such entities is mandatory;

101 ☐ Circumstances established by the commission during the investigation at each stage;

102 ☐ Time limits of investigation of the causes of accidents (incidents);

103 ☐ The obligation of the electric power industry entities and electricity consumers to develop a list of emergency measures to eliminate the causes and prevent the occurrence of similar accidents (incidents) at electric power facilities and/or power receivers;

104 ☐ The obligation of the electric power industry entities and electricity consumers to assess the economic consequences of accidents and communicate the same to the Ministry of Energy of the Russian Federation;

105 ☐ Registration of the results of the investigation of accidents (incidents) and the composition of materials generated by the results of the investigation;

106 ☐ The procedure for appealing against the results of the investigation;

107 ☐ The procedure for monitoring the results of the investigation of the causes of accidents and incidents and the implementation of emergency prevention activities.

108 **3.Registration of the Results of Investigation**

109 It is proposed to maintain the existing procedure for documenting the results of investigation in a report. The requirements to the form, order of filling it in, content of the information recorded shall be approved by the Ministry of Energy of the Russian Federation. All investigation materials obtained during the work of a commissions shall be attached to the investigation report.

110 **4.Order of Systematization of Information on Accidents and Incidents**

111 The above section of the draft resolution describes the procedure for processing and systematization of information, reporting on accidents (incidents) at electric power facilities and/or power receivers and the results of their investigation. It is advisable to assign the functions of collecting and structuring this information to the proprietors, other legal owners of electric power facilities and/or power receivers or companies operating and maintaining them; the operational dispatch management entity in the electric power industry; the Situation Analysis Center of the Ministry of Energy of Russia.

112 **Conclusions**

113 1.The development, adoption and updating of laws and regulations governing the procedure for accidents in the electric power industry is an objective necessity for the development of the industry and the improvement of the regulatory framework for safe, reliable and sustainable functioning of the energy infrastructure and facilities. The occurrence of accidents in the electric power industry should be considered as a factor of the development of legal and technical regulation in the Russian electric power industry.

114 2.Currently, the regulatory framework for investigating the causes of accidents in the electric power industry is formed by the Investigation Rules and the regulations of the Ministry of Energy of Russia approved for the further development thereof.

115 3.The EAEU countries have also developed and adopted special laws and regulations governing the procedure for investigating the causes of accidents in the electric power industry and heat supply.

116 4.At the moment, issues related to solving problems related to minimizing the number of accidents and the duration of failures in the operation of equipment of electric power facilities and power receivers, as well as preventing and eliminating the disruptions of power supply for consumers, are particularly relevant.

117 5.In order to improve the efficiency of the procedure for investigating the causes of accidents and the regulatory issues identified by the results of law enforcement practices, it is required to improve the regulations of the Government of the Russian Federation and the Ministry of Energy of the Russian Federation.

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Investigation of the Causes of Accidents in the Electric Power Industry: Assessment of the Need for Changes and the Concept of Regulatory Development

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Abstract

The occurrence of accidents at electric power facilities and power receivers has a significant impact on the quality of energy supply to electricity consumers, the functioning of the fuel and energy complex, the socio-economic development of the country and national security. The attainment of the objective of the electric power industry specified in the Energy Strategy for the period up to 2035 and the implementation of the general principles and objectives of regulating reliability and safety in the electric power industry and the quality of electricity established in the Electric Power Industry Law is impossible without the development, adoption and timely updating of regulations governing the procedure for investigating the causes of accidents in the electric power industry. Previously, issues related to the regulation of the procedure for investigating the causes of accidents in the electric power industry were not considered in legal studies, with the exception of certain procedural issues in judicial practices in cases of appeal against investigation reports on the causes of accident. The purpose of the study is to establish the need to amend the legal regulation of the procedure for investigating the causes of accidents in the electric power industry and to form a concept for the development of the accident investigation procedure.

Keywords: energy law, electric power industry, legal regulation of the investigation of causes of accident

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